2020 Annual Report

Hidden Valley Landfill
Puyallup, Washington

Pierce County Recycling, Composting
& Disposal, LLC dba LRI
17925 Meridian Street East
Puyallup, Washington 98375

SCS ENGINEERS

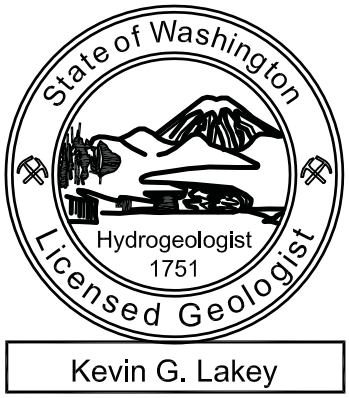
04221002.02 | March 31, 2021

2405 140th Avenue NE, Suite 107
Bellevue, WA 98005
425-746-4600

This 2020 Annual Report for the Hidden Valley Landfill located in Puyallup, Washington, was prepared by Sam Graber and Kevin Lakey, LHG, and was reviewed by Daniel Venchiarutti, LHG, of SCS Engineers.

Sam Graber
Staff Scientist
SCS ENGINEERS

Kevin Lakey, PE, LHG
Project Director
SCS ENGINEERS



Daniel A. Venchiarutti, LG, LHG
Project Director
SCS ENGINEERS

Table of Contents

List of Tables

No. Page

List of Figures

No. Page

Appendices

1.0 INTRODUCTION

This document represents the 2020 Annual Monitoring Report for the Hidden Valley Landfill (HVL) prepared on behalf of Pierce County Recycling, Composting and Disposal LLC, dba LRI (LRI). The facility is a closed municipal solid waste landfill that stopped accepting waste on December 31, 1998. The Hidden Valley Landfill is located at 17925 Meridian Street East, Puyallup, Washington (Figure 1). Post-closure activities are performed consistent with Consent Decree No. 032146876 between the Washington Department of Ecology (Ecology), Pierce County (County) and LRI. Ecology is the lead agency for post-closure activities. In addition, the Tacoma-Pierce County Health Department (TPCHD) is kept informed of post-closure activities and provided with the opportunity to review and comment upon proposed remedial action plans.

1.1 FACILITY CONTACT INFORMATION

Hidden Valley Landfill
17925 Meridian East
Puyallup, Washington 98375
Facility Contact: George Duvendack (253) 847-7555

1.2 FACILITY DESCRIPTION

The landfill property is approximately 92 acres in size and is situated in the north half of the northwest quarter of Section 34, Township 19N, Range 4E. The landfill includes approximately 56 acres of unlined fill and a 30-acre lined cell. Also present at the site are an office, maintenance shop, leachate pre-treatment facility, transfer station, household hazardous waste collection site, recycling center and composting facility.

Hidden Valley Landfill began operations in the mid-1960s and accepted waste until December 31, 1998. Waste disposed of at the landfill included municipal solid waste, demolition wastes, commercial waste, industrial wastes, and small quantities of bulk liquids and sludge.

1.3 PROJECT HISTORY

The U.S. Environmental Protection Agency (EPA) conducted an environmental assessment of the Hidden Valley Landfill between 1981 and 1985 and prepared a Preliminary Assessment (PA) and a Hazard Ranking System (HRS) score for the site. As a result of the HRS, the Hidden Valley Landfill was placed on the National Priority List (NPL) in April 1989.

A Remedial Investigation (RI) was conducted under Ecology Consent Order DE 86 S173. The final RI report was submitted to Ecology in March 1992. The RI identified groundwater impacts downgradient of the landfill. Groundwater contaminants have included dissolved iron and manganese, chloride, ammonia, nitrate, sulfate, specific conductance, total dissolved solids, and low levels of volatile organic compounds (VOCs) including benzene, chlorobenzene, tetrachloroethene, 1,1-dichloroethane, and 1,4-dichlorobenzene.

In January 2004, Consent Decree No. 032146876 was finalized and signed. The Consent Decree and associated Cleanup Action Plan address long-term maintenance and monitoring activities at the landfill and establish groundwater cleanup levels.

In April 2014, the Consent Decree was amended (First Amendment) to revise the groundwater monitoring plan. In August 2014, the Groundwater Monitoring Plan (GWMP) was modified to include

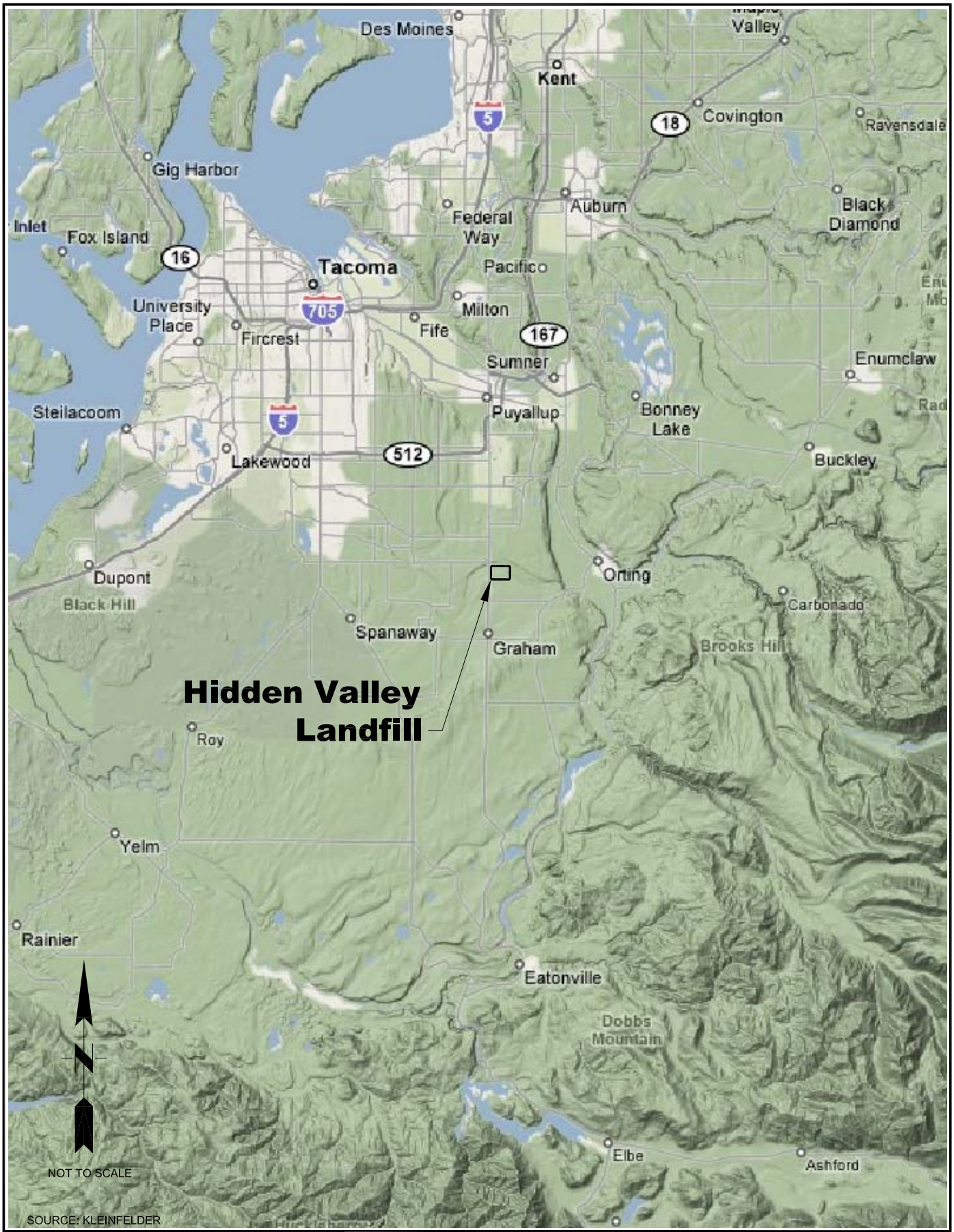
Appendix I WAC 173-351 metals testing. This requirement included eight rounds of total and dissolved metals testing for 15 metals from 23 monitoring wells. Total metals testing began in July 2014 and was completed in April 2016. Following completion of the required monitoring, a Groundwater Monitoring Optimization Report was submitted to Ecology and the TPCHD in December 2016.

Consistent with the Groundwater Monitoring Optimization Report and approval received from Ecology, the groundwater monitoring frequency was changed from quarterly to semi-annual in 2017. The GWMP was revised in October of 2018 to reflect updates to the groundwater monitoring network, groundwater monitoring on a semi-annual schedule, and Appendix I metals testing on a five year schedule beginning in 2021. The October 18, 2018 GWMP is the current, approved, plan for HVL.

1.4 2020 MONITORING ACTIVITIES

Groundwater monitoring was performed in January (first semi-annual monitoring event) and August (second semi-annual monitoring event) during 2020. Leachate monitoring was conducted in January. Landfill gas (LFG) monitoring was performed monthly.

Monitoring results for the first semi-annual monitoring event of 2020 were previously submitted to Ecology and the TPCHD in a report dated October 22, 2020. Groundwater laboratory reports for the second semi-annual monitoring event of 2020 and an updated groundwater database will be provided to the TPCHD in a separate submittal. Groundwater laboratory reports will also be provided to Ecology as pdf files and groundwater data from 2020 will be uploaded into Ecology's Environmental Information Management (EIM) system database.



SCS ENGINEERS Environmental Consultants and Contractors 2405 140th Avenue NE, Suite 107 Bellevue, Washington 98005 (425) 746-4600 FAX: (425) 746-6747	PROJECT NO. 04221002.03	DES BY LEL	SITE LOCATION MAP HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	DATE MARCH 2021
	SCALE NOT TO SCALE	CHK BY S.G.		FIGURE 1
	CAD FILE FIGURE 1	APP BY KGL		

2.0 LANDFILL GAS MONITORING

Landfill gas probes were monitored monthly during 2020. Gas probe locations are illustrated on Figure 2. Parameters measured at the gas probes included carbon dioxide, oxygen, and combustible gas (measured as methane). Soil gas probe readings were less than five percent methane by volume in all probes each month during 2020. Monthly gas probe monitoring results are included in Appendix A.

On-site buildings were monitored for the presence of combustible gas (measured as methane) on February 25, June 18, September 25 and 29, and December 21, 2020 using a flame ionization detector (FID). The main office, maintenance building, scale house/pay booth, recycling building, leachate treatment buildings No. 1 and No. 2, gas to energy building, and transfer station were monitored. No significant methane detections were reported above background concentrations in any of the buildings during 2020. Copies of the building survey reports are included in Appendix A.

A portion of the LFG extraction system on the south slope of the landfill was shut off in September 2009 in response to a suspected area of subsurface oxidation (affected gas wells include N42, N43, N60, N61, N62, and N54). Although the suspected subsurface oxidation event has ceased and the affected landfill cover was repaired in 2014, this section of the LFG extraction system will remain off-line until in-situ methane levels measured in interior waste probes LFG-1, -2, and -3, increase and stabilize.

E 52,500 E 53,000 E 53,500 E 54,000 E 54,500

N 26,000

N 25,500

N 25,000

SR-161 (MEDIDIAN STREET)

GP-22 LOCATED IN RIFLE RANGE

MAINTENANCE BUILDING

OFFICE BUILDING

FLARE NO.1

FLARE STATION

FLARE NO.2

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17 GP-18 GP-19

CS-1 CS-2 CS-3 CS-4 CS-5 CS-6 CS-7 CS-8 CS-9 CS-10

N1 N2 N3 N4 N5 N6 N7 N8 N9 N10 N11 N12 N13 N14 N15 N16 N17 N18 N19 N19A N20 N21 N23 N24 N25 N26 N27 N28 N29 N30 N31 N32 N33 N34 N35 N36 N36A N37 N37A N38 N39 N41 N42 N43 N44 N45 N46 N47 N48 N49 N50 N51 N52 N53 N54 N55 N55A N56 N57 N58 N59 N60 N60A N61 N62 N63 N64 N64A N64B,C N65 N66 N67 N68 N69 N70 N71 N72 N73 N75

E2 E2A E3A E5 E6B E7 E8A E9 E10 E11 E12 E13 E14 E15 E16 E17 E18 E19 E20 E21 E22 E23 E24 E25 E25A E26 E27 E28 E29 E31 E32 E33 E34 E34A E36 E37 E38 E39 E40 E41 E42 E43

H1 H2

12"x10" REDUCER

12"ø TEE

10"x8" REDUCER

8"x6" REDUCER

10"x6" REDUCER

12"ø SCH 40 PVC

10"ø SCH 40 PVC

3"ø SCH 40 PVC LATERAL (TYP.)

VERTICAL EXTRACTION WELLS AND HORIZONTAL COLLECTORS UNDER EAST LINED AREA SIDESLOPE LINER

LIMIT OF REFUSE

CONDENSATE DISPOSAL TRENCH

LEACHATE COLLECTION PIPE CLEANOUT

LEACHATE PRETREATMENT FACILITY

GAS TO ENERGY FACILITY

TRANSFER STATION

RECYCLING CENTER

PROPERTY LINE

UNDERGROUND AIR SUPPLY & CONDENSATE DISCHARGE PIPE

LFG-1 LFG-2 LFG-3

LEGEND:

- GP-1 Gas Probe
- Vertical Extraction Well Buried Under Liner
- Vertical Extraction Well
- CO Leachate Cleanout Riser
- Condensate Sump
- Control Valve
- Reducer
- Condensate Recirculation Lines
- Header Pipes
- 12"ø Header Pipe
- 10"ø PVC
- 8"ø PVC
- 6"ø PVC
- 4"ø PVC
- Underground Header Pipe

N

0 200

Scale in Feet

NOTE: GAS PIPING SHOWN IN RED IS ROUTED TO THE GAS ENERGY FACILITY

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04221002.03	DES BY KGL	GAS SYSTEM HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	DATE MARCH 2021
SCALE AS SHOWN	CHK BY S.G.		FIGURE 2
CAD FILE FIGURE 2	APP BY KGL		

3.0 LEAK DETECTION MONITORING

3.1 LEAK DETECTION SYSTEM

The East Lined Area at the Hidden Valley Landfill includes a leak detection system between the primary geosynthetic liner and the secondary composite liner in the portion of the cell that was constructed over refuse (side slope liner area). Pursuant to Section II C of the Stipulation and Agreed Order of Dismissal (Order), LRI was required to implement the March 1994 Leak Detection Response Action Plan (RAP) once refuse was placed onto the side slope liner. The RAP provides a mechanism for evaluating the performance of the side slope liner. Major components of the plan include routine monitoring of leachate quantities and fluid in the leak detection system, data analysis, record keeping, delineation of acceptable liner performance levels, response actions, and an outline of how groundwater impacts would be evaluated in the event that excessive leakage is observed in the leak detection system.

3.2 LINER PERFORMANCE STANDARD

The RAP defines an acceptable performance standard of 300 gallons per acre per day for the primary side-slope liner in the Cell 2 East Lined Area. The side slope liner covers approximately 13.5 acres of refuse, and therefore, the corresponding liner performance standard is 4,050 gallons per day.

3.3 SUMMARY OF PERFORMANCE DATA

Leachate volumes pumped from the main sump (Cell 1) and side-slope liner sump (Cell 2), as well as volumes pumped from the side-slope leak detection system and rainfall totals from an on-site rain gauge, are recorded on a daily basis by on-site personnel. A summary of monthly leachate volume data is provided in Table 1, and copies of the monthly reports are included in Appendix B. The volume of fluid pumped from the side-slope liner leak detection system in 2020 remained well below the performance standard of 4,050 gallons per day defined in the RAP.

Table 1. 2020 Leachate and Side Slope Liner Volumes Pumped Data

Month	Cell 1 Monthly Leachate Volume (gallons)	Cell 2 Monthly Leachate Volume (gallons)	Cell 2 Monthly Leakage Volume (gallons)	Monthly Rainfall (inches)
January	1,331	0	1,052	12.60
February	12,710	0	0	4.17
March	8,293	0	0	5.35
April	13,979	0	0	3.78
May	20,500	0	0	3.25
June	10,260	0	0	3.16
July	7,829	0	0	0.25
August	8,246	0	0	0.65
September	0	0	0	4.20
October	28,552	4,759	6,006	4.40
November	4,181	636	0	11.35
December	21,460	0	0	9.46
Year to date:	**137,341**	**5,395**	**7,058**	**62.62**

3.4 SUMMARY OF LEAK DETECTION MONITORING DATA

A sample of fluids that accumulate in the side-slope liner leak detection system was collected on January 31, 2020. The test results for this sample were similar to previous results and to the January 2020 test results from the side-slope leachate sump (see Appendix D, Table 10 Semi-Annual Monitoring Event No. 1).

3.5 HYDRAULIC GRADIENT CONTROL SYSTEM MONITORING

In addition to the leak detection system, a hydraulic gradient control system is present beneath the main leachate collection sump for the East Lined Area. This system is routinely checked for the presence of liquid. If liquids are removed, the volume pumped is recorded.

The hydraulic gradient control system was not pumped in 2020. However, a sample was collected from the hydraulic gradient control system on January 23, 2020. The results from this sample do not exhibit elevated levels of leachate indicator parameters such as ammonia, chloride, or total dissolved solids (see Appendix D, Table 10 Semi-Annual Monitoring Event No. 1).

4.0 GROUNDWATER LEVELS AND FLOW DIRECTIONS

4.1 LOCAL HYDROGEOLOGY

Hidden Valley Landfill is situated within a Vashon age glacial melt-water channel that trends in an east-west direction and is approximately 50 to 100 feet deep and several hundred feet wide. The northern boundary of the channel lies just north of the landfill. The landfill is underlain by glacial outwash deposits consisting of coarse sand and gravel to a depth of about 55 feet below grade. North of the landfill (and the outwash channel), the outwash deposits are overlain by Vashon till (upper till unit). The outwash deposits are underlain by successive layers of Vashon till (lower till unit), Vashon advance outwash, Salmon Springs till and interglacial deposits, and Salmon Springs advance outwash.

Three aquifers underlie the Hidden Valley Landfill. The aquifers are referred to as the shallow perched aquifer, the upper regional aquifer, and the lower regional aquifer. An intermittent aquitard, referred to as the Vashon till aquitard, is present between the shallow perched aquifer and the upper regional aquifer. A thick section of low permeability deposits referred to as the Salmon Springs aquitard separates the upper regional aquifer and the lower regional aquifer.

The shallow perched aquifer is an unconfined (water table) aquifer that occurs within the Vashon recessional outwash deposit. The shallow perched aquifer represents the uppermost-saturated unit at the site. Depth to groundwater within the lower areas of the glacial melt-water channel ranges from approximately 11 to 15 feet below ground surface (bgs) in winter and spring months to about 25 feet bgs in late fall. Groundwater flow in the shallow perched aquifer beneath the site is towards the northwest with local components to the north and west. The downgradient extent of the shallow perched aquifer appears to be limited. Northwest of the landfill, the recessional outwash is either not saturated, or saturated to only a few feet. In areas where the recessional outwash is unsaturated, the uppermost zone of groundwater saturation occurs within the lower Vashon till unit.

The upper regional aquifer is present within Vashon advance outwash deposits. This aquifer is confined beneath the Vashon till aquitard and appears to be of regional extent. Groundwater flow, water level gradients, and seasonal water level fluctuations in the upper regional aquifer are similar to the shallow perched aquifer.

The lower regional aquifer is present within the Salmon Springs advance outwash deposits. The aquifer is confined and is interpreted to be of regional extent. Monitoring wells BC-4R, MW-14R, and MW-20R are completed at similar depth elevations and display similar water levels. Monitoring well MW-26R is completed approximately 80 feet higher in elevation and may be installed within a water-bearing zone in the Salmon Springs aquitard.

Detailed descriptions of the hydrogeologic units, as well as geologic cross-sections and boring logs/monitoring well details are included in the *Hidden Valley Landfill Remedial Investigation Report* (EMCON, 1991) and *Hidden Valley Landfill Hydrogeologic Report Addendum* (EMCON, 1998).

4.2 WATER LEVEL MEASUREMENTS

Static water levels were measured on January 22 and August 25, 2020. The water level database and water level contour maps are presented in Appendix C.

Groundwater flow within both the shallow perched aquifer and the upper regional aquifer was generally toward the northwest during all of the 2020 monitoring events. Horizontal hydraulic gradients for both the shallow perched aquifer and the upper regional aquifer were less than 0.005 ft/ft in the central part of the site and approximately 0.025 ft/ft northwest of the landfill. This flow pattern remains consistent with previous data reported for the site. Water level gradients were similar to past measurements, indicating that the previously reported flow rates of 3.2 ft/day to 6.5 ft/day for the shallow perched aquifer and 0.5 to 1.3 ft/day for the upper regional aquifer have not changed significantly. Water level data for wells MW-14R, MW-20R, and BC-4R indicate that the groundwater flow direction in the lower regional aquifer is towards the northeast.

Background monitoring well MW-10S has a blockage approximately 5 feet down in the well. The blockage appears to be due to a compression fitting that was used to repair the pump tubing. The fitting prevents advancement of the water level probe beyond that point. An attempt to remove the pump and tubing was made during the Second Quarter 2013 sampling event; however, this attempt was unsuccessful and the pump appears to be wedged at depth. Rather than risk pulling the tubing loose from the pump, or possibly damaging the well screen, the pump will remain in place until it needs to be repaired or replaced. Until that time, there is adequate water level elevation data to determine groundwater flow directions and gradients without a measurement from MW-10S.

5.0 GROUNDWATER QUALITY

During 2020, groundwater samples were collected on a semi-annual basis from twenty-one monitoring wells; including eleven wells completed within the shallow perched aquifer, seven wells completed within the upper regional aquifer, and three wells completed within the lower regional aquifer. Groundwater sampling locations are shown on Figure 3.

Copies of groundwater quality summary data tables for each semi-annual monitoring event are provided in Appendix D. The summary tables include field parameters, laboratory parameters, and quality control samples. Time series plots for selected water quality parameters are included in Appendix E. Trilinear diagrams for each aquifer and leachate data are included in Appendix F. Statistical calculations performed on groundwater data are presented in Appendix G. The groundwater database was provided to the TPCHD as a Microsoft Access file in electronic format (on compact disk). In addition, groundwater data generated from the Hidden Valley Landfill during 2020 were validated and input into Ecology's EIM database system.

5.1 WATER SUPPLY WELL DATA

Water quality samples were collected from water supply wells at Corliss Resources, Inc. (Corliss) located immediately south of the landfill, and at the Paul Bunyan Rifle and Sportsman's Club (Paul Bunyan) located west of the landfill across Meridian East (see Figure 4) in January and August of 2020. Water quality results for the two water supply wells in 2020 were generally typical of previous results. However, a detection of carbon disulfide was reported in the sample collected from Corliss during the first semi-annual monitoring event at a concentration of 0.57 ug/L. Carbon disulfide was also detected in an associated trip blank at a concentration of 0.57 µg/L and in an associated laboratory method blank at 0.60 µg/L. Therefore, the reported detection of carbon disulfide appears to be the result of a laboratory artifact, and not representative of groundwater quality. No other VOCs were detected in the water supply well samples collected during 2020. Low concentrations of total metals and inorganic parameters, including chloride and nitrate, indicate the water quality at the Corliss and Paul Bunyan water supply wells is not affected by the Hidden Valley Landfill. A summary of the laboratory test results for the water supply wells is provided in Table 2.

5.2 BACKGROUND WATER QUALITY

Background water quality at the Hidden Valley Landfill is monitored using wells MW-10S (shallow perched aquifer) and MW-10D (upper regional aquifer). These wells have provided background water quality information since 1985.

In 2020, concentrations of inorganic parameters in samples from the background wells remained low and consistent with previous results. No detections of dissolved iron or manganese were reported above the laboratory method reporting limit in the background well samples during 2020.

5.3 DOWNGRADIENT WATER QUALITY

Phased closure of the unlined portion of the landfill, which began in 1989 and was completed in 1993, included capping the waste with a low permeability composite cover and installing a landfill gas collection and control system (GCCS). These closure activities were designed to minimize the infiltration of precipitation through the refuse and remove landfill gas. These actions have improved the groundwater quality in the shallow perched aquifer and the upper regional aquifer.

Time series plots for specific conductance, ammonia, nitrate, dissolved iron, and dissolved manganese were prepared for wells in the shallow perched and upper regional aquifers that are

located close to and downgradient of the landfill (MW-11S, MW-11D(2), MW-12S, MW-12D, MW-13S, MW-13D, MW-14S, MW-14D, and MW-17S, see Appendix E). These plots graphically display consistent trends of decreasing concentrations of these parameters in monitoring wells located downgradient of the landfill when the full data set is evaluated. However, over the last 10 years, slightly increasing trends were noted at MW-12S for dissolved manganese, at MW-13S for dissolved iron and at MW-14D for dissolved iron and manganese.

A cation-anion balance was prepared based in milliequivalents per liter (meq/L) for each water sample to determine whether it was electro-neutral (balanced cation and anion charges). A threshold of ten percent difference was used if the total sum of cations and anions were less than or equal to 5.0 meq/L, and a threshold of five percent difference was used if the total cation-anion sums was greater than 5.0 meq/L. Calculated cation-anion balances were found to exceed these thresholds during at least one monitoring event during 2020 at MW-12S, MW-15S, MW-18S, and FMMW-2 (see Appendix D).

Trilinear (Piper) diagrams were prepared for groundwater sample results from each of the three water bearing zones at the landfill; the shallow perched aquifer, upper regional aquifer, and lower regional aquifer (see Appendix F). As shown on the attached trilinear diagrams, the groundwater sample results from all three aquifers and the hydraulic gradient control system plot within a consistent area of the graph, while the leachate results (sampled annually in January) plot in a second, chemically distinct area.

The Hidden Valley Landfill Consent Decree established site groundwater cleanup levels and the groundwater point of compliance. Table 3 provides a summary of the site-specific groundwater cleanup levels and identifies the monitoring events in 2020 when water quality results were greater than the site-specific cleanup levels.

Shallow perched aquifer water quality results exceeded the cleanup level for the following parameters during at least one of the semi-annual monitoring events: nitrate (MW-12S and FMMW-2) and dissolved manganese (MW-12S, MW-15S, MW-17S, and MW-29S). Upper regional aquifer water quality results exceeded the cleanup level for the following parameters during at least one of the semi-annual monitoring events: dissolved iron (MW-14D) and dissolved manganese (MW-14D). Lower regional aquifer water quality results exceeded the cleanup level for the following parameters during at least one of the semi-annual monitoring events: dissolved iron (MW-26R) and dissolved manganese (MW-14R and MW-26R).

Results for the lower regional aquifer are interpreted to represent background water quality. As discussed in previous reports, the presence of dissolved iron and manganese in the lower regional aquifer does not appear to be related to the Hidden Valley Landfill. This interpretation is based on an overall assessment of the groundwater quality data, which include low concentrations of inorganic parameters and a general absence of VOCs.

The following VOC's were reported present in groundwater samples collected at the Hidden Valley Landfill in 2020:

- Carbon disulfide was reported present in samples from MW-11D(2) and MW-14D during the first semi-annual monitoring event at concentrations of 0.57 µg/L and 0.57 µg/L, respectively. Carbon disulfide was also detected in the associated trip blank at a concentration of 0.57 µg/L and in one of the laboratory method blanks at 0.60 µg/L. Therefore, the reported detections of carbon disulfide appear to be the result of a laboratory artifact, and not representative of groundwater quality.

- Tetrachloroethene (PCE) was reported present in samples from MW-11D(2) during both semi-annual monitoring events at concentrations of 1.1 and 1.2 µg/L, respectively. These detections are slightly greater than the WAC 173-200 groundwater quality criteria of 0.80 µg/L, but are consistent with recent monitoring results and are lower than the primary drinking water standard of 5.0 µg/L.
- Tetrachloroethene (PCE) was reported present in samples from MW-15D during both semi-annual monitoring events at concentrations of 0.64 and 0.51 µg/L, respectively. These detections are both below the WAC 173-200 groundwater quality criteria of 0.80 µg/L.

5.4 STATISTICAL ANALYSIS

Groundwater quality data for the five-year period of January 2016 through August 2020 were statistically evaluated and compared to site-specific cleanup levels for all monitoring wells in the groundwater-monitoring network. A compound-specific evaluation was used to determine the data distribution type for each compound as normal, lognormal, or non-parametric. The Consent Decree established a cleanup level for 1,4-dichlorobenzene at 1.82 micrograms per liter (µg/L). Only one detection of 1,4-dichlorobenzene has been reported in samples collected over the last five years; 0.73 µg/L at well MW-12S in April 2016. No other VOCs have Consent Decree defined cleanup levels for the Hidden Valley Landfill. However, the distribution of data was also determined for tetrachloroethene at well MW-11D(2) for tracking purposes. Chlorobenzene was evaluated in previous reports, but no detections of chlorobenzene were reported in groundwater samples collected over the past five years. Therefore, a statistical evaluation for this compound was discontinued.

If the data distribution was either normal or lognormal, the upper 95 percent confidence limits of the mean (UCL 95) were calculated for each data set using the MTCAStat 97: Site Module, obtained from Ecology. The MTCAStat program was used to evaluate data distributions (i.e., normal, lognormal, or neither) for constituents that were detected in at least 50 percent of the sampling events. One-half the MRL was used when a parameter was not detected at a concentration above the MRL.

If the distribution was neither normal nor lognormal, the UCL 95 was determined using the method of Van der Parren (1970) as described in the Statistical Guidance for Ecology Site Managers (Ecology 1992). For the data evaluated, this procedure defaults to the highest reported value. In addition, the highest reported value was used if either lognormal or normal distributions had the UCL 95 value outside of the data sample range. The UCL 95 was not calculated (NC) when any of the evaluated parameters were either not detected for 50 percent of the sampling events, or had less than five data entries.

Table 4 provides a summary of UCL 95 values. Shallow perched aquifer UCL 95 values that exceed site-specific cleanup levels include nitrate (MW-12S, MW-17S, MW-18S, and FMMW-2) and dissolved manganese (MW-12S, MW-13S, MW-14S, MW-15S, and MW-17S). Upper regional aquifer UCL 95 values that exceed site-specific cleanup levels include dissolved iron (MW-14D) and dissolved manganese (MW-14D and MW-15D). Lower regional aquifer UCL 95 values that exceed site-specific cleanup levels include dissolved iron (MW-26R) and dissolved manganese (MW-14R and MW-26R). Statistical calculations are provided in Appendix G. These statistical results are consistent with previous analyses.

Table 2. 2020 Water Supply Well Data Summary

Parameter	MRL	Corliss		Paul Bunyon	
		January-22	August-27	January-23	August-27
Volatile Organics (µg/L)					
Carbon disulfide	0.5	0.57 B	*	*	*
Total Metals (mg/L)					
Arsenic	0.005	*	*	*	*
Iron	0.01-0.18	*	*	*	*
Manganese	0.001	0.0020	0.0011	0.0011	*
Zinc	0.01	*	*	0.02	0.014
Inorganic Parameters (mg/L)					
Chloride	0.6-1.2	5.7	5.5	7.0	6.8
Ammonia as Nitrogen	0.1	*	*	*	*
Nitrate as Nitrogen	0.2	1.3	1.4	2.3	2.1
Nitrite as Nitrogen	0.5	*	*	*	*
Sulfate	0.2-0.5	13	9.8	11	11
Chemical Oxygen Demand	8.7	27	*	*	*
Total Organic Carbon	1.0	*	*	*	*
Color	5.0	5.0	*	5.0	5.0
Field Parameters					
pH	—	6.53	6.78	6.38	6.51
Conductance (µS/cm)	—	243	261	285	308
Temperature (^{0}C)	—	8.59	19.9	10.95	13.69

^{0}C = Degrees Celsius
B = Compound was found in the blank and the sample
µS/cm = microSiemens per centimeter
* = Not reported at or above the Method Reporting Limit

Table 3. 2020 Groundwater Quality Data versus Site-Specific Cleanup Levels
Shallow Perched Aquifer

Parameter	Cleanup Level	MW-10S (BG)	MW-11S	MW-12S	MW-13S	MW-14S	MW-15S	MW-17S	MW-18S	MW-29S	FMMW-1	FMMW-2
Inorganic (mg/L)												
Chloride	250	–	–	–	–	–	–	–	–	–	–	–
Nitrate as Nitrogen	10.0	–	–	**SA 1**	–	–	–	–	–	–	–	**SA 1**
Sulfate	250	–	–	–	–	–	–	–	–	–	–	–
Specific Conductance	700	–	–	–	–	–	–	–	–	–	–	–
TDS	500	–	–	–	–	–	–	–	–	–	–	–
Metals (mg/L)												
Iron	0.30	–	–	–	–	–	–	–	–	–	–	–
Manganese	0.05	–	–	**SA 2**	–	–	**SA 1, 2**	**SA 1, 2**	–	**SA 1, 2**	–	–
Volatile Organics (µg/L)												
1,4-Dichlorobenzene	1.82	–	–	–	–	–	–	–	–	–	–	–

Notes:
– indicates results were less than cleanup level
SA indicates results were greater than cleanup level
1 & 2 indicate the semi-annual monitoring event in which results were greater than the cleanup level

Table 3. 2020 Groundwater Quality Data versus Site-Specific Cleanup Levels (Continued)
Upper Regional Aquifer and Lower Regional Aquifer

Parameter	Cleanup Level	Upper Regional Aquifer							Lower Regional Aquifer		
		MW-10D (BG)	MW-11D(2)	MW-12D	MW-13D	MW-14D	MW-15D	MW-18D	MW-14R	MW-20R	MW-26R
Inorganic (mg/L)											
Chloride	250	–	–	–	–	–	–	–	–	–	–
Nitrate as Nitrogen	10.0	–	–	–	–	–	–	–	–	–	–
Sulfate	250	–	–	–	–	–	–	–	–	–	–
Specific Conductance	700	–	–	–	–	–	–	–	–	–	–
TDS	500	–	–	–	–	–	–	–	–	–	–
Metals (mg/L)											
Iron	0.30	–	–	–	–	**SA 2**	–	–	–	–	**SA 2**
Manganese	0.05	–	–	–	–	**SA 1, 2**	–	–	**SA 1, 2**	–	**SA 1, 2**
Volatile Organics (µg/L)											
1,4-Dichlorobenzene	1.82	–	–	–	–	–	–	–	–	–	–

Notes:
– indicates results were less than cleanup level
SA indicates results were greater than cleanup level
1 & 2 indicate the semi-annual monitoring event in which results were greater than the cleanup level

Table 4. Summary of 5-Year Groundwater Statistics
Shallow Perched Aquifer

Parameter	Cleanup Level	MW-10S (BG)	MW-11S	MW-12S	MW-13S	MW-14S	MW-15S	MW-17S	MW-18S	FMMW-1	FMMW-2
Inorganic (mg/L)											
Chloride	250	9.2	17.5	20.7	19.1	16.2	15.9	21.7	20.56	22.0*	19.62
Nitrate as Nitrogen	10.0	1.04	6.81	**40.0***	10.0*	2.2*	9.1*	**21.0***	**11.0***	2.15	**20.31**
Sulfate	250	14.56	12.92	7.42	17.57	10.57	11.0*	5.68	7.3	13.9	13.1
Specific Conductance	700	272.9	422*	392.8	360.5	226.6	317.4	468.5	384.7	328.06	410.1
TDS	500	161.0	176.03	380*	215.5	133.0	184.0	340*	260*	240*	260.3
Metals (mg/L)											
Iron	0.30	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Manganese	0.05	NC	NC	**0.70**	**0.15***	**0.20**	**1.05**	**1.8***	NC	NC	0.048
Volatile Organics (µg/L)											
1,4-Dichlorobenzene	1.82	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tetrachloroethene	—	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC

Notes:
Values shown are the upper confidence limit on the mean (UCL 95). Evaluated data are from January 2016 through August 2020.
Bold indicates greater than Cleanup Level.
(—) = not applicable.
(NC) = not calculated; less than 50 percent detection frequency.
(*) = maximum detected concentration listed because the UCL 95 calculated value was greater than the data range, or the distribution was neither normal nor lognormal.

Table 4. Summary of 5-Year Groundwater Statistics (Continued)
Upper Regional Aquifer and Lower Regional Aquifer

Parameter	Cleanup Level	Upper Regional Aquifer							Lower Regional Aquifer		
		MW-10D (BG)	MW-11D(2)	MW-12D	MW-13D	MW-14D	MW-15D	MW-18D	MW-14R	MW-20R	MW-26R
Inorganic (mg/L)											
Chloride	250	7.06	7.2*	8.9	14.4	11.1	9.25	7.65	2.0*	1.8*	4.61
Nitrate as Nitrogen	10.0	2.0	1.9*	1.46	2.41	NC	0.87	1.7*	NC	NC	NC
Sulfate	250	12.52	8.88	7.08	16.81	11.41	10.37	8.0*	3.62	3.11	9.66
Specific Conductance	700	244.9	328*	304.5	351.1	254.2	291.7	320*	196*	228*	335*
TDS	500	180*	260*	200.86	230*	153.88	380*	190*	104.36	97.11	150*
Metals (mg/L)											
Iron	0.30	NC	NC	NC	NC	**2.7**	NC	NC	NC	NC	**0.711***
Manganese	0.05	NC	NC	NC	NC	**1.2**	**0.16**	NC	**0.42***	NC	**0.42***
Volatile Organics (µg/L)											
1,4-Dichlorobenzene	1.82	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC
Tetrachloroethene	—	NC	1.01	NC	NC	NC	NC	NC	NC	NC	NC

Notes:
Values shown are the upper confidence limit on the mean (UCL 95). Evaluated data are from January 2016 through August 2020.
Bold indicates greater than Cleanup Level.
(—) = not applicable.
(NC) = not calculated; less than 50 percent detection frequency.
(*) = maximum detected concentration listed because the UCL 95 calculated value was greater than the data range, or the distribution was neither normal nor lognormal.

LEGEND:

MW-12S — Existing Monitoring Well Location

E 51,500 E 52,000 E 52,500 E 53,000 E 53,500 E 54,000 E 54,500

BC-4R
BC-4S

FMMW-2

FMMW-1

MW-18D
MW-18S

MW-11D(2)
MW-11S

MW-15D
MW-15S

MW-26(R)

MW-14D
MW-14R
MW-14S

MW-17S

MW-12D
MW-12S

MW-29S

MW-13D
MW-13S

MW-10D
MW-10S

MW-19D
MW-19S

MW-20R

GP-1 GP-2 GP-3 GP-4 GP-5 GP-6 GP-7 GP-8 GP-9 GP-10 GP-11 GP-12 GP-13 GP-14 GP-15 GP-16 GP-17 GP-18 GP-19 GP-20 GP-21 GP-22

MAINTENANCE BUILDING

OFFICE BUILDING

Paved

LIMIT OF REFUSE

GP-22 LOCATED IN RIFLE RANGE

0 300 600

SCALE: 1" = 300'

CONTOUR INTERVAL = 5 FEET

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04221002.03	DES BY SG	GROUNDWATER MONITORING WELL LOCATIONS	DATE MARCH 2021
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 3
CAD FILE FIGURE 3	APP BY KGL		

0 400 800

APPROX SCALE IN FEET

LEGEND

WATER SUPPLY WELL LOCATION

SOURCE: KLEINFELDER

SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO.	DES BY
04221002.03	LEL
SCALE	CHK BY
NOT TO SCALE	S.G.
CAD FILE	APP BY
FIGURE 4	KGL

WATER SUPPLY WELL LOCATION

HIDDEN VALLEY LANDFILL
PIERCE COUNTY, WASHINGTON

DATE
MARCH 2021

FIGURE
4

6.0 LEACHATE QUALITY

Leachate quality is monitored on an annual basis. Samples of untreated leachate were collected from the East Lined Area leachate collection system (main sump [Cell 1]) and the Side Slope Area leachate collection system (Cell 2) on January 23 and January 31, 2020. The leachate samples were analyzed for the same parameter suite analyzed for the groundwater samples, as specified in the approved specified in the GWMP. Leachate quality results for 2020 were generally typical of previous results. The analytical results for the leachate samples are summarized below in Table 5 and are included with the groundwater results in Appendix D.

Table 4. 2020 Leachate Quality Data Summary

Parameters	MRL	Leachate – East Area Cell 1	Leachate – Side Slope Cell 2
Volatile Organics (µg/L)			
1,4-Dichlorobenzene	0.5-0.8	1.4	*
Acetone	10.0	28	17
Benzene	0.5-0.8	1.1	2.8
Carbon disulfide	0.5-0.84	3.0	6.4
cis-1,2-Dichloroethene	0.5-0.75	*	*
Ethylbenzene	1.00	1.9	1.8
m-Xylene & p-Xylene	0.5-0.77	4.9	1.0
o-Xylene	0.5-0.95	2.4	*
Toluene	0.5-0.85	5.4	3.2
Total Metals (mg/L)			
Calcium	0.2-0.78	99	17
Iron	0.18	2.2	1.0
Magnesium	0.1-0.26	52	28
Manganese	0.0	1.6	0.10
Potassium	2-2.4	270	500
Sodium	1-3.7	2,600	6,100
Inorganic Parameters (mg/L)			
Alkalinity	10	4,700	7,800
Ammonia	0.1-2.2	360	460
Chloride	0.2-300	2,500	7,600
Nitrate as N	0.5-0.9	1.8	* H
Sulfate	0.2-5.0	89	590
Total Dissolved Solids	10-470	9,600	24,000
Total Organic Carbon - Quad	1-69	500	730
Total Suspended Solids	4.0	19	7.6
Field Parameters			
pH (SU)	—	7.42	8.37
Specific Conductivity (µS/cm)	—	15,608	32,722
Temperature (°C)	—	12.2	20.9

Notes:
Analyses performed by TestAmerica, Arvada, CO.
VOCs were not listed when not present at concentrations exceeding the MRL.
µg/L = micrograms per liter, mg/L = milligrams per liter.
* = Not detected above MRL.
H = Sample was prepped or analyzed beyond specified holding time.

7.0 POST-CLOSURE MAINTENANCE

7.1 COVER SYSTEM MAINTENANCE

The landfill cover system was inspected on a quarterly basis during 2020. Informal cover inspections were also performed on an ongoing basis by LRI staff, as well as during the monthly LFG monitoring events. The cover system was found to be in good condition with minor areas of vegetative growth observed on top of the cover liner on the east side of the landfill during the first quarter inspection and on the north side of the landfill during second quarter inspection. The vegetation observed on the east side was removed by May 2020, and the vegetation observed on the north side was removed by September 2020. Copies of the inspection reports are included in Appendix H.

7.2 LANDFILL GAS COLLECTION & CONTROL SYSTEM (GCCS) MAINTENANCE

The LFG extraction wells, piping and blower/flare station were inspected, monitored and maintained on a monthly basis throughout 2020. In addition, the LFG condensate recirculation system was inspected quarterly during 2020 and the condensate sumps were observed to be working as designed, except Sump 9 which had a broken valve in December. The valve at Sump 9 was repaired on January 28, 2021. Sumps 5 and 10 did not collect condensate for a number of years, and therefore, the pumps were previously removed. Monthly records of GCCS maintenance activities and quarterly records of condensate sump inspections are included in Appendix I.

A record of the monthly volume of LFG combusted and the average monthly methane concentration at the flare station is provided in Table 6.

Table 5. 2020 Flare Station Data

Month	LFG Volume Combusted (scf)	Methane (% by volume)
January	8,907,082	32.6
February	8,981,364	30.6
March	7,410,220	33.0
April	9,830,458	32.4
May	6,575,262	34.5
June	6,281,604	33.7
July	6,098,534	35.3
August	7,477,302	36.4
September	8,230,114	35.2
October	5,324,276	35.7
November	6,737,054	41.8
December	6,323,122	36.7
Totals	**88,176,392**	**34.8 (Average)**
Note: (scf) indicates standard cubic feet		

7.4 GROUNDWATER WELL MAINTENANCE

No significant well maintenance activities were performed in 2020.

Appendix A

LANDFILL GAS MONITORING DATA

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04220002.02

PCRCD dba LRI

January 20, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	20-Jan-20	9:35	0.21	0.0	4.3	12.3	-	-	
GP-1B	20-Jan-20	9:38	0.19	0.0	6.9	13.7	-	-	
GP-1C	20-Jan-20	9:40	0.18	0.0	4.8	15.6	-	-	
GP-2A	20-Jan-20	9:43	0.18	0.1	1.3	19.5	-	-	
GP-2B	20-Jan-20	9:45	0.16	0.0	0.2	21.1	-	-	
GP-3S	20-Jan-20	9:49	0.19	0.0	4.0	11.4	-	-	
GP-3M	20-Jan-20	9:51	0.19	0.0	2.9	11.9	-	-	
GP-3D	20-Jan-20	9:53	0.16	0.0	1.3	17.9	-	-	
GP-4A	20-Jan-20	9:59	0.17	0.0	0.2	21.1	-	-	
GP-4B	20-Jan-20	10:01	0.18	0.0	0.1	21.2	-	-	
GP-5A	20-Jan-20	10:04	0.16	0.0	0.2	21.2	-	-	
GP-5B	20-Jan-20	10:06	0.16	0.0	0.1	21.3	-	-	
GP-6	20-Jan-20	10:11	0.16	0.0	0.1	21.1	-	-	
GP-7S	20-Jan-20	10:18	0.16	0.0	0.2	21.1	-	-	
GP-7D	20-Jan-20	10:16	0.16	0.0	0.2	21.0	-	-	
GP-8A	20-Jan-20	10:25	0.16	0.0	0.7	20.9	-	-	
GP-8B	20-Jan-20	10:27	0.16	0.0	0.3	21.0	-	-	
GP-9	20-Jan-20	10:31	0.16	0.0	2.9	18.8	-	-	
GP-10	20-Jan-20	10:39	0.16	0.0	0.1	21.2	-	-	
GP-11	20-Jan-20	10:43	0.16	0.0	1.6	20.0	-	-	
GP-12	20-Jan-20	10:48	0.15	0.0	1.5	18.1	-	-	
GP-13A	20-Jan-20	10:52	0.26	0.0	2.4	19.1	-	-	
GP-13B	20-Jan-20	10:55	0.25	0.0	0.2	21.2	-	-	
GP-14S	20-Jan-20	10:59	0.15	0.0	3.6	18.5	-	-	
GP-14D	20-Jan-20	11:01	0.15	0.0	2.7	16.2	-	-	
GP-15A	20-Jan-20	11:05	0.15	0.0	1.0	19.5	-	-	
GP-15B	20-Jan-20	11:07	0.15	0.0	2.6	17.3	-	-	
GP-16A	20-Jan-20	11:11	0.14	0.0	2.4	18.0	-	-	
GP-16B	20-Jan-20	11:13	0.19	0.0	2.8	17.6	-	-	
GP-17	20-Jan-20	11:20	0.20	0.0	1.4	20.2	-	-	
GP-18	20-Jan-20	11:25	0.14	0.0	0.9	20.0	-	-	
GP-19	20-Jan-20	11:29	0.17	0.0	3.1	18.7	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

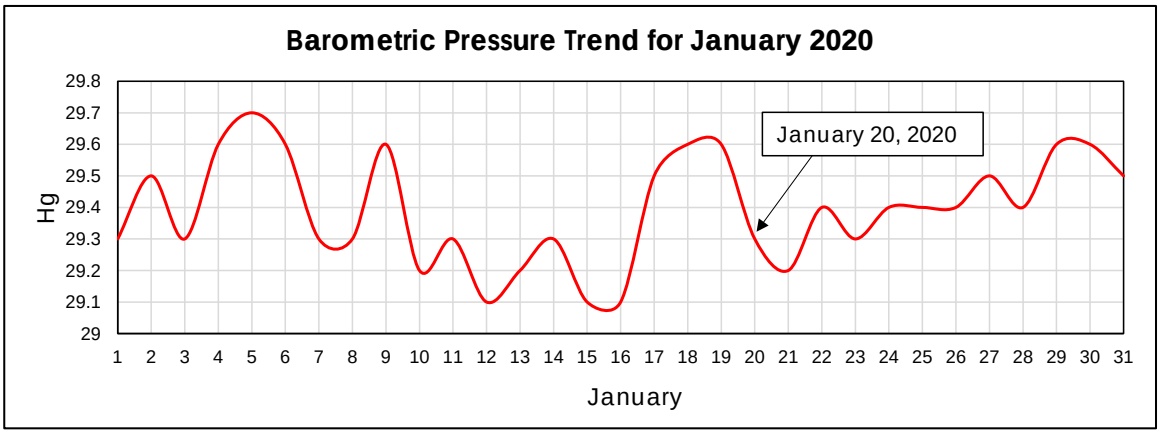
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Overcast
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	20-Jan-20	Temperature (^{o}F):	50

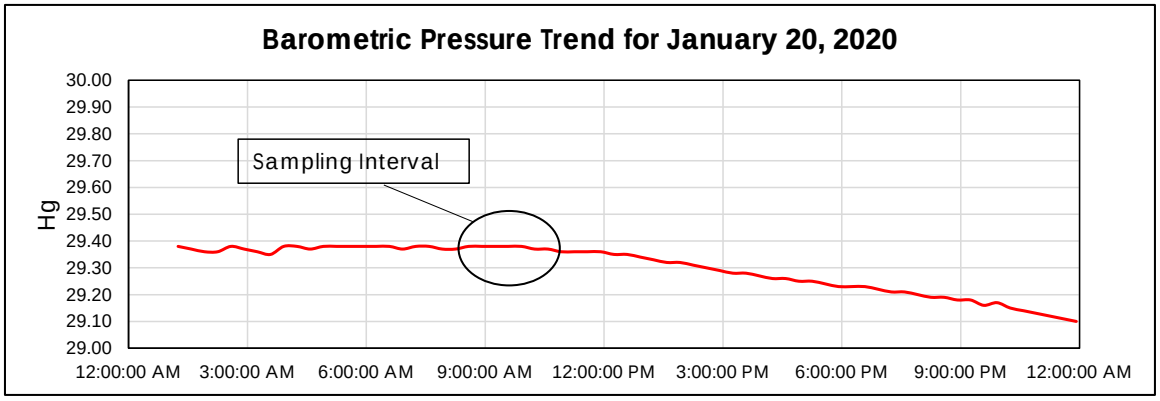
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - January 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source:https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-1

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-1-20

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04220002.02

PCRCD dba LRI

February 25, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	25-Feb-20	8:10	0.17	0.0	3.5	14.3	-	-	
GP-1B	25-Feb-20	8:12	0.17	0.0	7.8	13.1	-	-	
GP-1C	25-Feb-20	8:15	0.18	0.0	4.3	16.8	-	-	
GP-2A	25-Feb-20	8:18	0.17	0.0	0.3	21.1	-	-	
GP-2B	25-Feb-20	8:20	0.16	0.0	0.1	21.1	-	-	
GP-3S	25-Feb-20	8:24	0.18	0.0	4.0	10.4	-	-	
GP-3M	25-Feb-20	8:27	0.18	0.0	2.9	10.9	-	-	
GP-3D	25-Feb-20	8:29	0.17	0.0	1.0	20.1	-	-	
GP-4A	25-Feb-20	8:34	0.18	0.0	0.1	21.3	-	-	
GP-4B	25-Feb-20	8:36	0.20	0.0	0.1	21.3	-	-	
GP-5A	25-Feb-20	8:40	0.17	0.0	0.1	21.4	-	-	
GP-5B	25-Feb-20	8:42	0.17	0.0	0.1	21.5	-	-	
GP-6	25-Feb-20	8:47	0.17	0.0	0.1	21.4	-	-	
GP-7S	25-Feb-20	8:55	0.18	0.0	0.4	21.3	-	-	
GP-7D	25-Feb-20	8:52	0.18	0.0	0.2	21.1	-	-	
GP-8A	25-Feb-20	9:02	0.19	0.0	0.5	21.2	-	-	
GP-8B	25-Feb-20	9:04	0.18	0.0	0.2	21.4	-	-	
GP-9	25-Feb-20	9:09	0.18	0.0	3.1	18.6	-	-	
GP-10	25-Feb-20	9:16	0.18	0.0	0.1	21.3	-	-	
GP-11	25-Feb-20	9:21	0.18	0.0	1.2	20.3	-	-	
GP-12	25-Feb-20	9:27	0.18	0.0	2.0	17.7	-	-	
GP-13A	25-Feb-20	9:32	0.26	0.0	2.2	19.5	-	-	
GP-13B	25-Feb-20	9:34	0.30	0.0	0.1	21.1	-	-	
GP-14S	25-Feb-20	9:40	0.15	0.0	3.4	18.0	-	-	
GP-14D	25-Feb-20	9:42	0.16	0.0	2.4	16.3	-	-	
GP-15A	25-Feb-20	9:47	0.16	0.0	1.3	18.1	-	-	
GP-15B	25-Feb-20	9:49	0.20	0.0	2.6	17.0	-	-	
GP-16A	25-Feb-20	9:53	0.14	0.0	2.3	18.1	-	-	
GP-16B	25-Feb-20	9:56	0.15	0.0	2.8	17.5	-	-	
GP-17	25-Feb-20	10:07	0.14	0.0	1.5	19.9	-	-	
GP-18	25-Feb-20	10:13	0.14	0.0	1.2	20.1	-	-	
GP-19	25-Feb-20	10:17	0.16	0.0	2.7	18.9	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

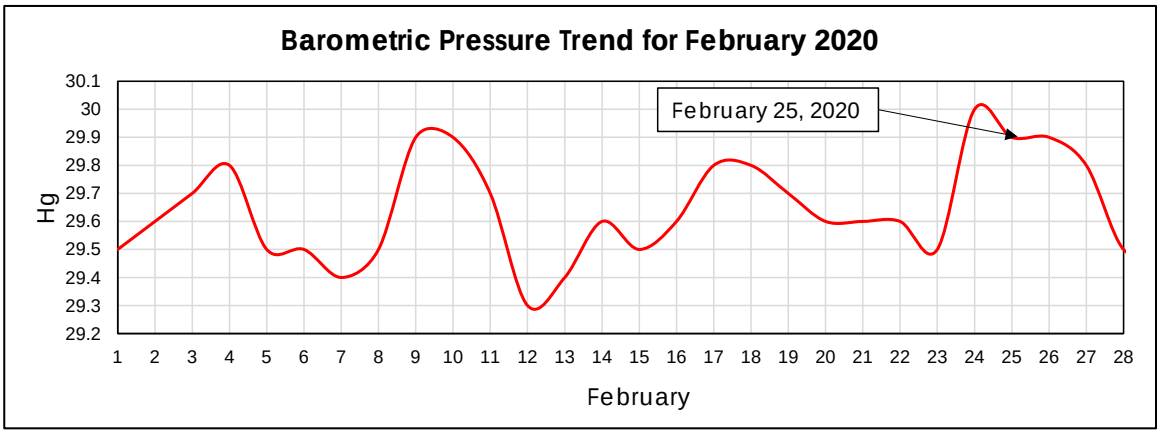
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Overcast
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	25-Feb-20	Temperature (^{o}F):	44

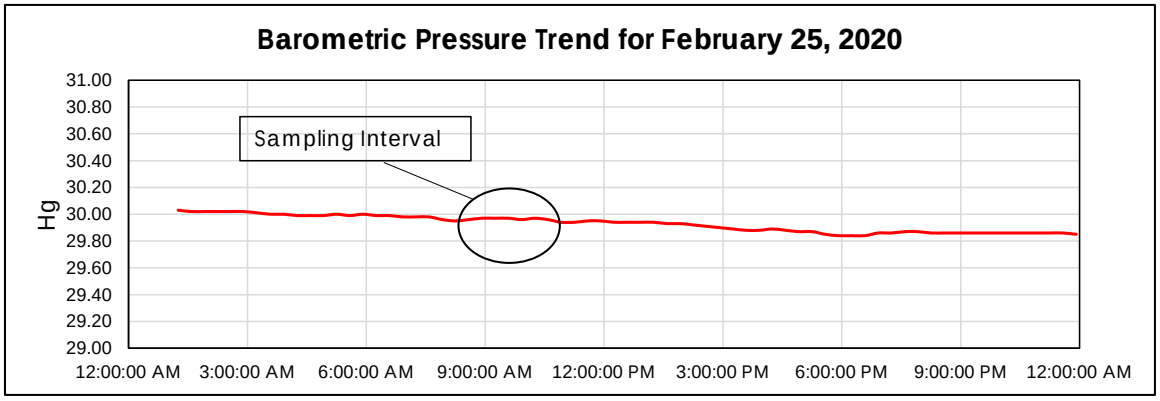
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - February 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source:https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-2

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-2-25

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04220002.02

PCRCD dba LRI

March 20, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	20-Mar-20	7:20	0.12	0.0	4.7	11.3	-	-	
GP-1B	20-Mar-20	7:22	0.10	0.0	8.1	12.4	-	-	
GP-1C	20-Mar-20	7:25	0.10	0.0	2.4	18.3	-	-	
GP-2A	20-Mar-20	7:29	0.08	0.0	0.5	20.4	-	-	
GP-2B	20-Mar-20	7:31	0.20	0.0	0.2	20.9	-	-	
GP-3S	20-Mar-20	7:35	0.11	0.0	3.6	11.2	-	-	
GP-3M	20-Mar-20	7:37	0.12	0.0	2.2	12.9	-	-	
GP-3D	20-Mar-20	7:39	0.13	0.0	4.0	16.6	-	-	
GP-4A	20-Mar-20	7:45	0.14	0.1	0.3	20.9	-	-	
GP-4B	20-Mar-20	7:47	0.23	0.1	0.2	21.1	-	-	
GP-5A	20-Mar-20	7:52	0.15	0.0	0.1	21.2	-	-	
GP-5B	20-Mar-20	7:54	0.14	0.0	0.1	21.2	-	-	
GP-6	20-Mar-20	7:59	0.16	0.0	0.1	21.1	-	-	
GP-7S	20-Mar-20	8:06	0.16	0.0	0.5	20.7	-	-	
GP-7D	20-Mar-20	8:04	0.15	0.0	0.1	20.9	-	-	
GP-8A	20-Mar-20	8:14	0.17	0.0	0.6	20.3	-	-	
GP-8B	20-Mar-20	8:16	0.17	0.0	0.2	21.0	-	-	
GP-9	20-Mar-20	8:20	0.16	0.0	0.3	20.8	-	-	
GP-10	20-Mar-20	8:27	0.16	0.0	0.1	20.9	-	-	
GP-11	20-Mar-20	8:31	0.15	0.0	0.9	19.9	-	-	
GP-12	20-Mar-20	8:36	0.15	0.0	1.3	18.5	-	-	
GP-13A	20-Mar-20	8:46	0.16	0.0	0.1	20.7	-	-	
GP-13B	20-Mar-20	8:48	0.14	0.0	0.1	20.7	-	-	
GP-14S	20-Mar-20	8:52	0.14	0.0	5.7	16.2	-	-	
GP-14D	20-Mar-20	8:55	0.22	0.0	8.0	4.6	-	-	
GP-15A	20-Mar-20	8:59	0.13	0.0	2.0	17.2	-	-	
GP-15B	20-Mar-20	9:03	0.13	0.0	10.6	4.3	-	-	
GP-16A	20-Mar-20	9:07	0.12	0.0	0.8	19.8	-	-	
GP-16B	20-Mar-20	9:08	0.17	0.0	0.2	20.5	-	-	
GP-17	20-Mar-20	9:13	0.31	0.0	0.4	20.3	-	-	
GP-18	20-Mar-20	9:17	0.12	0.0	0.7	20.1	-	-	
GP-19	20-Mar-20	9:21	0.11	0.0	0.1	20.8	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

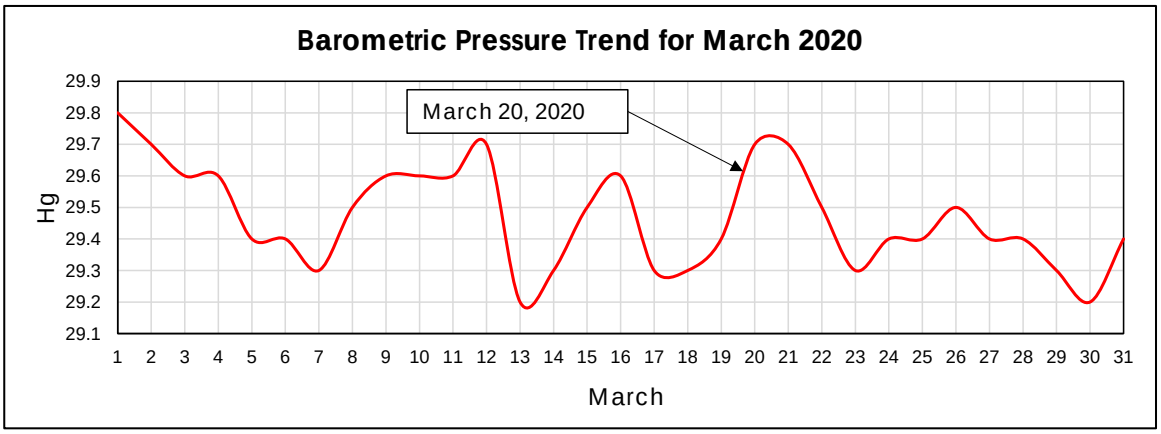
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Clear
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	20-Mar-20	Temperature (^{o}F):	41

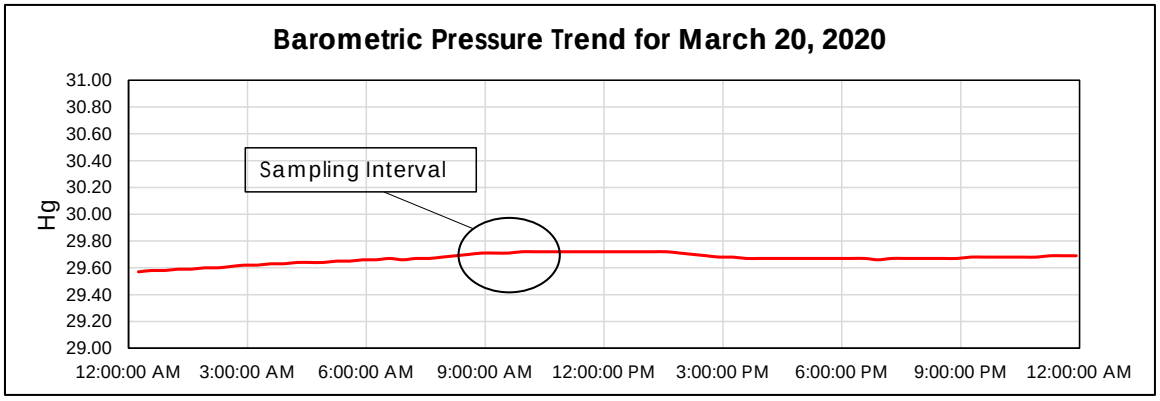
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - March 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source:https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-3

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-3-20

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04220002.02

PCRCD dba LRI

April 20, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	20-Apr-20	8:43	0.14	0.0	3.0	13.7	-	-	
GP-1B	20-Apr-20	8:44	0.11	0.0	7.3	13.3	-	-	
GP-1C	20-Apr-20	8:46	0.12	0.0	1.0	19.7	-	-	
GP-2A	20-Apr-20	8:49	0.13	0.0	0.6	20.0	-	-	
GP-2B	20-Apr-20	8:51	0.15	0.0	0.1	20.8	-	-	
GP-3S	20-Apr-20	8:56	0.11	0.0	2.3	14.0	-	-	
GP-3M	20-Apr-20	8:58	0.11	0.0	2.1	11.9	-	-	
GP-3D	20-Apr-20	8:59	0.11	0.0	3.9	17.3	-	-	
GP-4A	20-Apr-20	9:06	0.11	0.0	0.2	20.7	-	-	
GP-4B	20-Apr-20	9:08	0.17	0.0	0.1	20.8	-	-	
GP-5A	20-Apr-20	9:11	0.11	0.0	0.0	20.8	-	-	
GP-5B	20-Apr-20	9:13	0.11	0.0	0.0	20.8	-	-	
GP-6	20-Apr-20	9:17	0.11	0.0	0.2	20.6	-	-	
GP-7S	20-Apr-20	9:22	0.10	0.0	0.5	20.1	-	-	
GP-7D	20-Apr-20	9:24	0.10	0.0	0.1	20.7	-	-	
GP-8A	20-Apr-20	9:33	0.11	0.0	0.7	19.0	-	-	
GP-8B	20-Apr-20	9:36	0.10	0.0	0.4	20.2	-	-	
GP-9	20-Apr-20	9:40	0.23	0.0	1.8	19.3	-	-	
GP-10	20-Apr-20	9:46	0.09	0.0	0.1	20.4	-	-	
GP-11	20-Apr-20	9:50	0.22	0.0	1.2	19.4	-	-	
GP-12	20-Apr-20	9:55	0.07	0.0	0.7	18.2	-	-	
GP-13A	20-Apr-20	9:59	0.31	0.0	2.1	17.4	-	-	
GP-13B	20-Apr-20	10:00	0.10	0.0	0.2	20.5	-	-	
GP-14S	20-Apr-20	10:04	0.06	0.0	5.2	16.0	-	-	
GP-14D	20-Apr-20	10:06	0.06	0.0	7.4	4.9	-	-	
GP-15A	20-Apr-20	10:09	0.06	0.0	1.8	17.7	-	-	
GP-15B	20-Apr-20	10:11	0.06	0.0	7.3	9.9	-	-	
GP-16A	20-Apr-20	10:15	0.05	0.0	0.3	20.4	-	-	
GP-16B	20-Apr-20	10:17	0.05	0.0	0.1	20.6	-	-	
GP-17	20-Apr-20	10:23	0.02	0.0	0.6	20.0	-	-	
GP-18	20-Apr-20	10:28	0.06	0.0	1.7	19.1	-	-	
GP-19	20-Apr-20	10:32	0.05	0.0	0.1	20.8	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

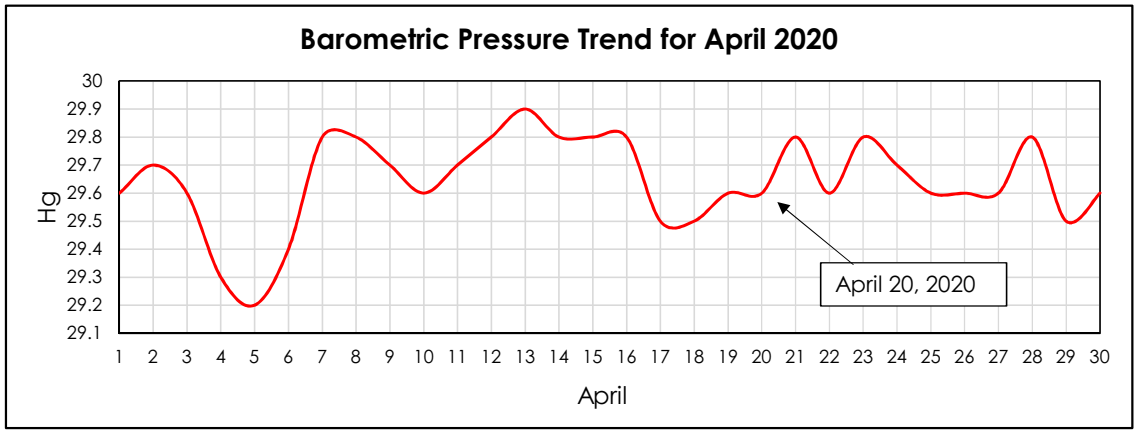
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Sunny
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	20-Apr-20	Temperature (^{o}F):	45

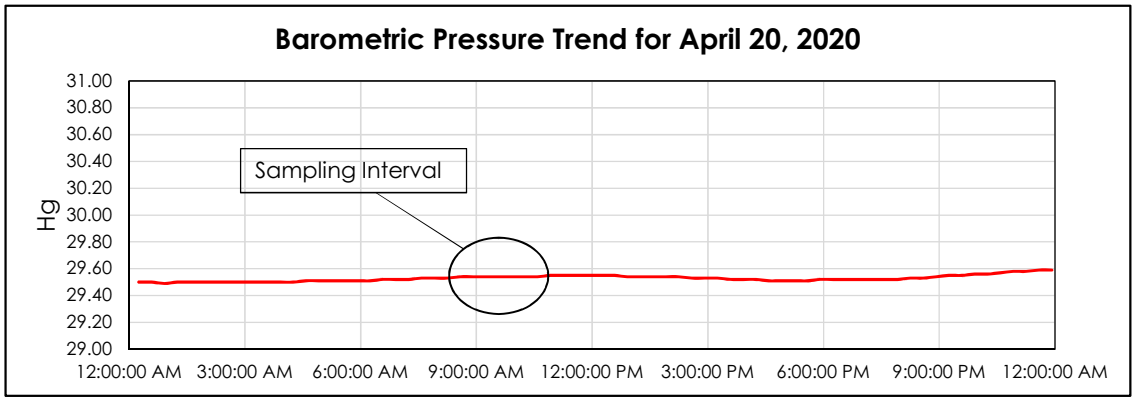
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - April 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-4

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-4-20

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04220002.02

PCRCD dba LRI

May 20, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	20-May-20	8:43	0.11	0.0	2.8	13.2	-	-	
GP-1B	20-May-20	8:46	0.08	0.0	7.9	13.0	-	-	
GP-1C	20-May-20	8:48	0.11	0.0	0.9	20.0	-	-	
GP-2A	20-May-20	8:51	0.11	0.0	0.2	20.8	-	-	
GP-2B	20-May-20	8:53	0.13	0.0	0.1	21.0	-	-	
GP-3S	20-May-20	8:57	0.11	0.0	1.2	17.2	-	-	
GP-3M	20-May-20	8:59	0.11	0.0	1.9	11.7	-	-	
GP-3D	20-May-20	9:01	0.11	0.0	2.9	16.3	-	-	
GP-4A	20-May-20	9:06	0.11	0.0	0.4	20.7	-	-	
GP-4B	20-May-20	9:07	0.28	0.0	0.2	20.8	-	-	
GP-5A	20-May-20	9:11	0.09	0.0	0.0	21.1	-	-	
GP-5B	20-May-20	9:13	0.11	0.0	0.0	21.1	-	-	
GP-6	20-May-20	9:17	0.11	0.0	0.1	21.0	-	-	
GP-7S	20-May-20	9:22	0.12	0.0	0.6	20.1	-	-	
GP-7D	20-May-20	9:24	0.12	0.0	0.4	20.5	-	-	
GP-8A	20-May-20	9:32	0.12	0.0	0.8	19.2	-	-	
GP-8B	20-May-20	9:35	0.12	0.0	0.8	20.2	-	-	
GP-9	20-May-20	9:39	0.13	0.0	2.7	18.8	-	-	
GP-10	20-May-20	9:48	0.12	0.0	0.2	20.9	-	-	
GP-11	20-May-20	9:52	0.12	0.0	1.4	19.6	-	-	
GP-12	20-May-20	9:56	0.12	0.0	1.3	18.4	-	-	
GP-13A	20-May-20	10:07	0.31	0.0	2.6	17.9	-	-	
GP-13B	20-May-20	10:09	0.16	0.0	0.2	20.8	-	-	
GP-14S	20-May-20	10:13	0.12	0.0	4.2	16.5	-	-	
GP-14D	20-May-20	10:15	0.19	0.0	7.1	6.2	-	-	
GP-15A	20-May-20	10:19	0.12	0.0	2.2	17.3	-	-	
GP-15B	20-May-20	10:21	0.11	0.0	7.6	10.1	-	-	
GP-16A	20-May-20	10:32	0.12	0.0	0.3	20.7	-	-	
GP-16B	20-May-20	10:35	0.12	0.0	0.1	20.9	-	-	
GP-17	20-May-20	11:09	0.14	0.0	1.7	19.0	-	-	
GP-18	20-May-20	11:13	0.13	0.0	3.2	17.4	-	-	
GP-19	20-May-20	11:18	0.12	0.0	0.2	20.8	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

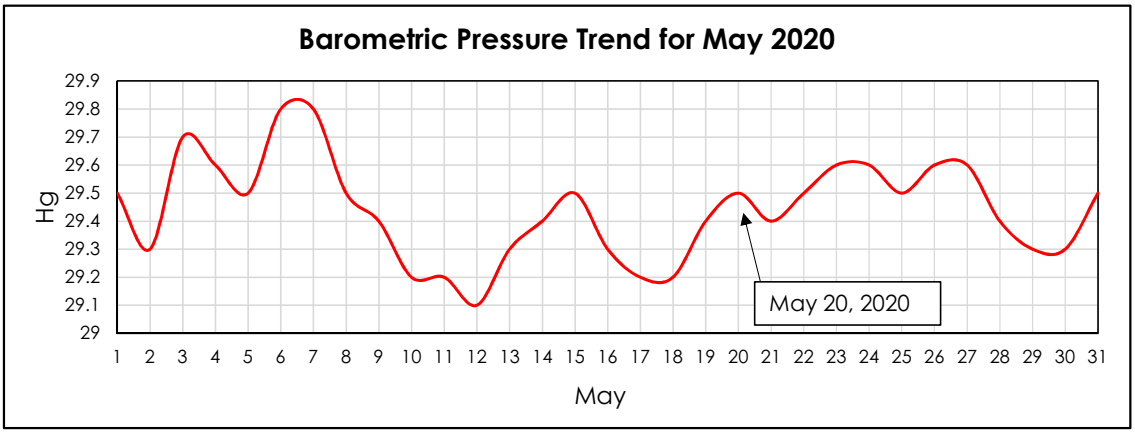
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	Light Rain
Calibration Date:	20-May-20	Temperature (^{o}F):	53

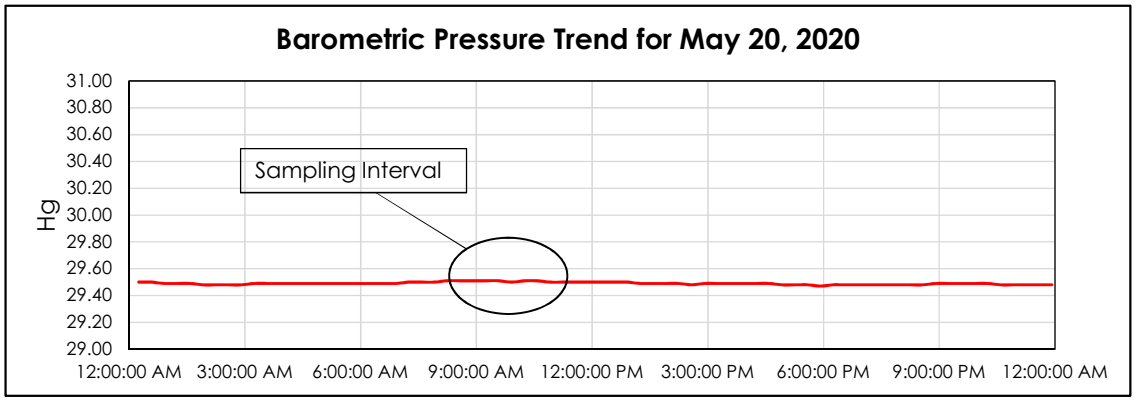
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - May 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-5

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-5-20

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

04220002.02

PCRCD dba LRI

June 18, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	18-Jun-20	7:20	0.11	0.0	3.4	11.4	-	-	
GP-1B	18-Jun-20	7:22	0.25	0.0	7.7	13.0	-	-	
GP-1C	18-Jun-20	7:24	0.09	0.0	0.8	20.1	-	-	
GP-2A	18-Jun-20	7:28	0.09	0.0	0.3	20.5	-	-	
GP-2B	18-Jun-20	7:30	0.10	0.0	0.1	20.9	-	-	
GP-3S	18-Jun-20	7:34	0.07	0.0	1.3	17.5	-	-	
GP-3M	18-Jun-20	7:37	0.08	0.0	3.1	8.8	-	-	
GP-3D	18-Jun-20	7:39	0.09	0.0	3.7	15.5	-	-	
GP-4A	18-Jun-20	7:44	0.09	0.0	0.3	20.6	-	-	
GP-4B	18-Jun-20	7:46	0.16	0.0	0.1	20.9	-	-	
GP-5A	18-Jun-20	7:50	0.09	0.0	0.3	20.6	-	-	
GP-5B	18-Jun-20	7:52	0.09	0.0	0.3	20.3	-	-	
GP-6	18-Jun-20	7:57	0.08	0.0	0.5	20.4	-	-	
GP-7S	18-Jun-20	8:03	0.08	0.0	1.0	20.0	-	-	
GP-7D	18-Jun-20	8:05	0.07	0.0	0.4	20.4	-	-	
GP-8A	18-Jun-20	8:13	0.09	0.0	1.5	19.0	-	-	
GP-8B	18-Jun-20	8:15	0.08	0.0	1.3	19.7	-	-	
GP-9	18-Jun-20	8:20	0.09	0.0	2.7	17.8	-	-	
GP-10	18-Jun-20	8:27	0.09	0.0	0.3	20.4	-	-	
GP-11	18-Jun-20	8:31	0.09	0.0	1.8	18.9	-	-	
GP-12	18-Jun-20	8:47	0.08	0.0	0.1	20.7	-	-	
GP-13A	18-Jun-20	8:52	0.08	0.0	3.1	15.9	-	-	
GP-13B	18-Jun-20	8:54	0.15	0.0	0.3	20.4	-	-	
GP-14S	18-Jun-20	8:58	0.07	0.0	3.8	16.2	-	-	
GP-14D	18-Jun-20	9:01	0.07	0.0	7.3	5.5	-	-	
GP-15A	18-Jun-20	9:04	0.06	0.0	2.6	17.4	-	-	
GP-15B	18-Jun-20	9:06	0.05	0.0	6.2	13.1	-	-	
GP-16A	18-Jun-20	9:12	0.05	0.0	1.3	18.3	-	-	
GP-16B	18-Jun-20	9:14	0.47	0.0	1.7	17.9	-	-	
GP-17	18-Jun-20	9:21	0.02	0.0	2.5	17.7	-	-	
GP-18	18-Jun-20	9:26	0.05	0.0	6.2	13.5	-	-	
GP-19	18-Jun-20	9:30	0.04	0.0	0.9	20.3	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

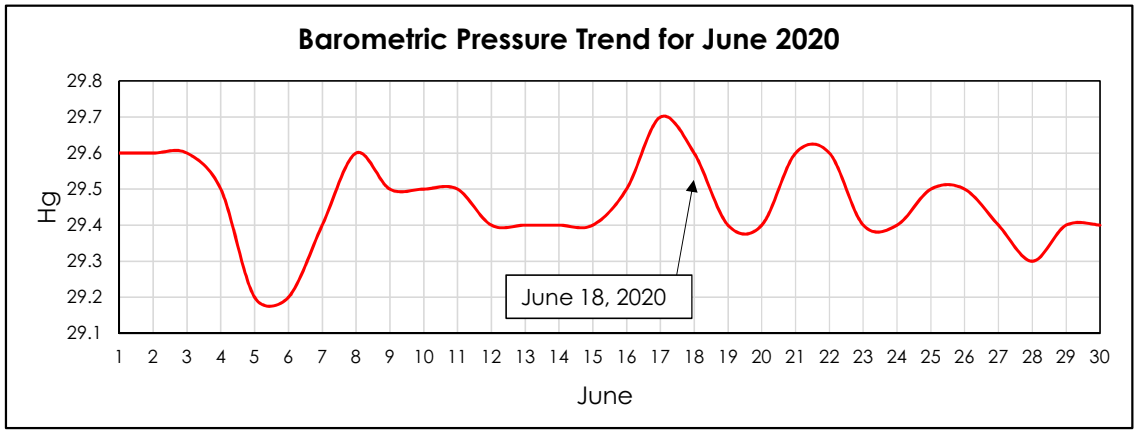
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Clear
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	18-Jun-20	Temperature (^{o}F):	57

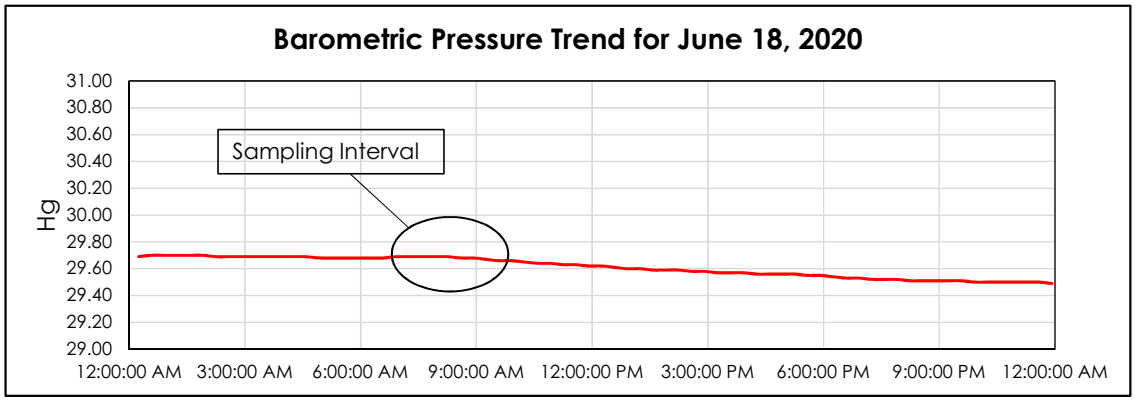
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - June 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-6

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-6-18

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4220002.02

PCRCD dba LRI — July 17, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	17-Jul-20	9:08	0.02	0.0	2.8	12.2	-	-	
GP-1B	17-Jul-20	9:10	0.01	0.0	6.8	13.9	-	-	
GP-1C	17-Jul-20	9:13	0.03	0.0	0.9	20.0	-	-	
GP-2A	17-Jul-20	9:16	0.04	0.0	0.2	20.5	-	-	
GP-2B	17-Jul-20	9:18	0.08	0.0	0.1	20.8	-	-	
GP-3S	17-Jul-20	9:22	0.03	0.0	0.9	18.6	-	-	
GP-3M	17-Jul-20	9:24	0.04	0.0	2.7	11.6	-	-	
GP-3D	17-Jul-20	9:26	0.06	0.0	4.3	13.7	-	-	
GP-4A	17-Jul-20	9:31	0.05	0.0	0.3	20.4	-	-	
GP-4B	17-Jul-20	9:33	0.09	0.0	0.1	20.8	-	-	
GP-5A	17-Jul-20	9:36	0.07	0.0	0.2	20.4	-	-	
GP-5B	17-Jul-20	9:38	0.06	0.0	0.0	20.8	-	-	
GP-6	17-Jul-20	9:42	0.08	0.0	0.2	20.6	-	-	
GP-7S	17-Jul-20	9:48	0.08	0.0	1.0	19.3	-	-	
GP-7D	17-Jul-20	9:51	0.07	0.0	0.4	20.3	-	-	
GP-8A	17-Jul-20	9:59	0.07	0.0	1.5	19.1	-	-	
GP-8B	17-Jul-20	10:01	0.08	0.0	1.8	18.8	-	-	
GP-9	17-Jul-20	10:11	0.08	0.0	2.6	16.6	-	-	
GP-10	17-Jul-20	10:15	0.08	0.0	0.4	19.9	-	-	
GP-11	17-Jul-20	10:22	0.04	0.0	1.4	19.0	-	-	
GP-12	17-Jul-20	10:28	0.06	0.0	0.1	20.5	-	-	
GP-13A	17-Jul-20	10:34	0.05	0.0	3.7	13.7	-	-	
GP-13B	17-Jul-20	10:36	0.15	0.0	0.3	20.1	-	-	
GP-14S	17-Jul-20	10:41	0.04	0.0	4.5	15.6	-	-	
GP-14D	17-Jul-20	10:42	0.04	0.0	7.6	4.6	-	-	
GP-15A	17-Jul-20	10:46	0.02	0.0	0.4	19.9	-	-	
GP-15B	17-Jul-20	10:48	0.02	0.0	4.1	16.3	-	-	
GP-16A	17-Jul-20	10:52	0.02	0.0	0.3	20.2	-	-	
GP-16B	17-Jul-20	10:54	0.01	0.0	0.2	20.4	-	-	
GP-17	17-Jul-20	11:00	0.02	0.0	3.6	14.8	-	-	
GP-18	17-Jul-20	11:04	0.03	0.0	10.6	6.7	-	-	
GP-19	17-Jul-20	11:08	0.03	0.0	1.4	20.0	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

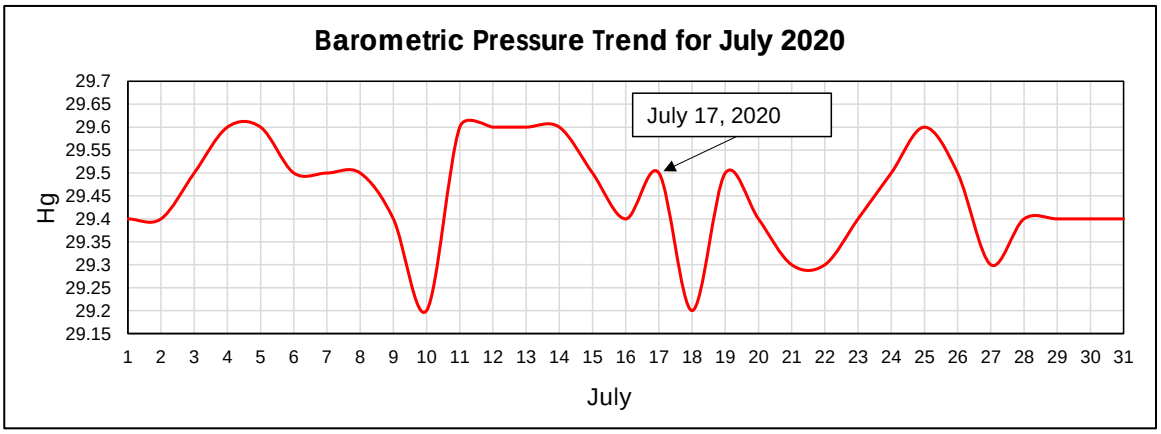
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	17-Jul-20	Temperature (^{o}F):	58

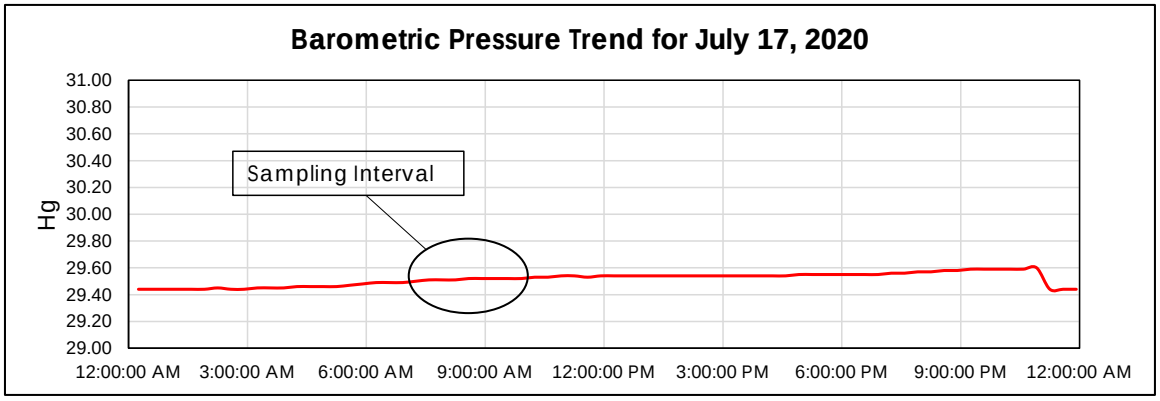
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - July 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-7

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-7-17

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill
PCRCD dba LRI

4220002.02
August 20, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	20-Aug-20	8:55	0.38	0.0	3.5	9.5	-	-	
GP-1B	20-Aug-20	8:57	0.06	0.0	4.9	15.6	-	-	
GP-1C	20-Aug-20	8:59	0.08	0.0	0.7	20.0	-	-	
GP-2A	20-Aug-20	9:03	0.10	0.0	0.2	20.5	-	-	
GP-2B	20-Aug-20	9:05	0.29	0.0	0.1	20.6	-	-	
GP-3S	20-Aug-20	9:09	0.07	0.0	0.7	19.1	-	-	
GP-3M	20-Aug-20	9:11	0.20	0.0	2.2	16.1	-	-	
GP-3D	20-Aug-20	9:13	0.32	0.0	3.5	16.5	-	-	
GP-4A	20-Aug-20	9:18	0.06	0.0	0.8	19.7	-	-	
GP-4B	20-Aug-20	9:20	0.15	0.0	0.3	20.0	-	-	
GP-5A	20-Aug-20	9:24	0.05	0.0	0.6	19.0	-	-	
GP-5B	20-Aug-20	9:26	0.05	0.0	1.7	13.7	-	-	
GP-6	20-Aug-20	9:31	0.03	0.0	0.7	18.3	-	-	*Note 3*
GP-7S	20-Aug-20	9:36	0.17	0.0	1.0	19.2	-	-	
GP-7D	20-Aug-20	9:38	0.02	0.0	0.2	20.0	-	-	
GP-8A	20-Aug-20	9:45	0.12	0.0	5.2	12.2	-	-	*Note 3*
GP-8B	20-Aug-20	9:47	0.03	0.0	6.1	12.1	-	-	*Note 3*
GP-9	20-Aug-20	9:53	0.02	0.0	0.8	20.0	-	-	*Note 3*
GP-10	20-Aug-20	9:58	0.00	0.0	1.0	15.8	-	-	
GP-11	20-Aug-20	10:03	0.00	0.0	1.3	18.8	-	-	
GP-12	20-Aug-20	10:10	0.00	0.0	1.2	17.2	-	-	*Note 3*
GP-13A	20-Aug-20	10:14	0.00	0.0	0.4	19.2	-	-	
GP-13B	20-Aug-20	10:16	-4.01	0.0	0.0	20.1	-	-	
GP-14S	20-Aug-20	10:21	0.00	0.0	3.6	16.6	-	-	
GP-14D	20-Aug-20	10:23	-0.02	0.0	5.9	7.6	-	-	
GP-15A	20-Aug-20	10:27	0.09	0.0	1.3	18.5	-	-	
GP-15B	20-Aug-20	10:29	0.00	0.0	3.9	14.8	-	-	
GP-16A	20-Aug-20	10:33	-0.01	0.0	0.7	19.4	-	-	
GP-16B	20-Aug-20	10:35	0.12	0.0	0.7	19.5	-	-	
GP-17	20-Aug-20	10:40	0.00	0.0	7.2	6.1	-	-	
GP-18	20-Aug-20	10:45	0.00	0.0	10.1	6.5	-	-	
GP-19	20-Aug-20	10:54	0.00	0.0	0.0	20.5	-	-	*Note 3*
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

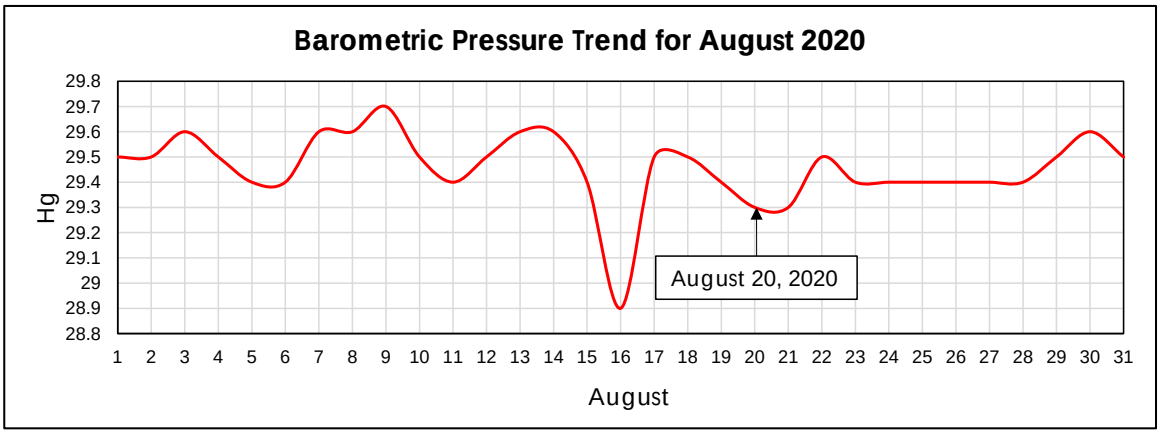
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	20-Aug-20	Temperature (^{o}F):	71

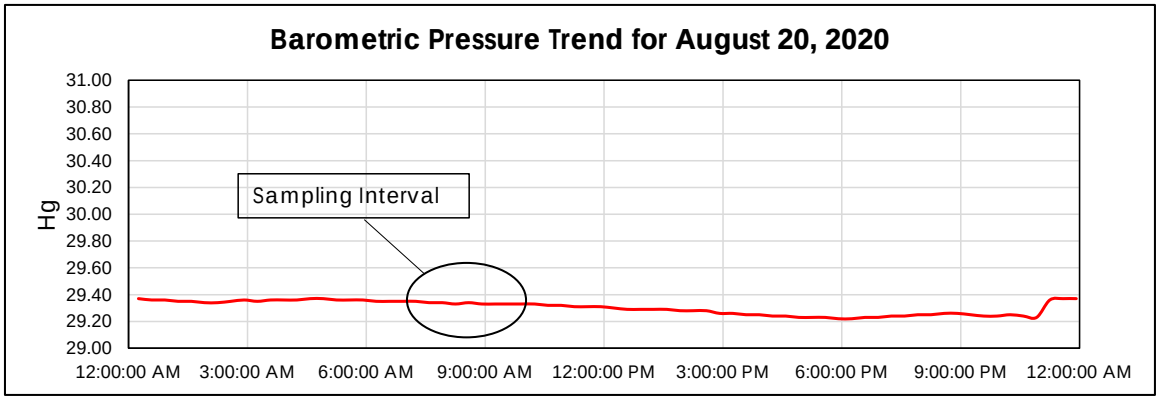
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.
3. See attached map for probe conditions

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - August 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-8

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.12 Long: 122.26 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-8-20

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill
PCRCD dba LRI

4220002.02
September 25, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	25-Sep-20	7:31	0.14	0.0	5.2	2.3	-	-	
GP-1B	25-Sep-20	7:33	0.04	0.0	5.2	15.3	-	-	
GP-1C	25-Sep-20	7:35	0.06	0.0	1.8	19.0	-	-	
GP-2A	25-Sep-20	7:53	0.05	0.0	0.9	18.8	-	-	
GP-2B	25-Sep-20	7:55	0.05	0.0	0.2	20.7	-	-	
GP-3S	25-Sep-20	7:59	0.14	0.0	0.7	19.8	-	-	
GP-3M	25-Sep-20	8:01	0.43	0.0	2.2	17.8	-	-	
GP-3D	25-Sep-20	8:03	0.13	0.0	3.6	16.5	-	-	
GP-4A	25-Sep-20	8:07	-0.03	0.0	1.5	18.3	-	-	
GP-4B	25-Sep-20	8:09	-0.02	0.0	0.2	20.8	-	-	
GP-5A	25-Sep-20	8:13	-0.05	0.0	1.3	17.3	-	-	
GP-5B	25-Sep-20	8:15	-0.06	0.0	3.1	11.2	-	-	
GP-6	25-Sep-20	8:20	-0.05	0.0	0.7	19.5	-	-	
GP-7S	25-Sep-20	8:24	0.16	0.0	1.1	19.7	-	-	
GP-7D	25-Sep-20	8:27	-0.06	0.0	0.5	20.2	-	-	
GP-8A	25-Sep-20	8:33	0.19	0.0	4.8	15.0	-	-	
GP-8B	25-Sep-20	8:36	-0.05	0.0	4.3	15.9	-	-	
GP-9	25-Sep-20	8:41	-0.04	0.0	4.6	6.4	-	-	
GP-10	25-Sep-20	8:46	-0.48	0.0	0.9	19.2	-	-	
GP-11	25-Sep-20	8:51	-0.03	0.0	1.2	18.9	-	-	
GP-12	25-Sep-20	9:17	-0.07	0.0	5.8	11.3	-	-	
GP-13A	25-Sep-20	9:29	0.03	0.0	10.9	4.6	-	-	
GP-13B	25-Sep-20	9:33	-0.02	0.0	0.7	19.5	-	-	
GP-14S	25-Sep-20	9:37	0.07	0.0	4.4	16.3	-	-	
GP-14D	25-Sep-20	9:39	0.25	0.0	7.7	2.4	-	-	
GP-15A	25-Sep-20	9:43	-0.05	0.0	0.7	20.2	-	-	
GP-15B	25-Sep-20	9:45	-2.70	0.0	7.6	5.6	-	-	
GP-16A	25-Sep-20	9:58	-0.07	0.0	2.5	16.6	-	-	
GP-16B	25-Sep-20	10:00	0.01	0.0	2.7	16.5	-	-	
GP-17	25-Sep-20	10:07	-0.06	0.0	8.7	3.1	-	-	
GP-18	25-Sep-20	10:11	-0.07	0.0	12.5	2.7	-	-	
GP-19	25-Sep-20	10:16	-0.07	0.0	2.5	17.6	-	-	*Note 3*
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

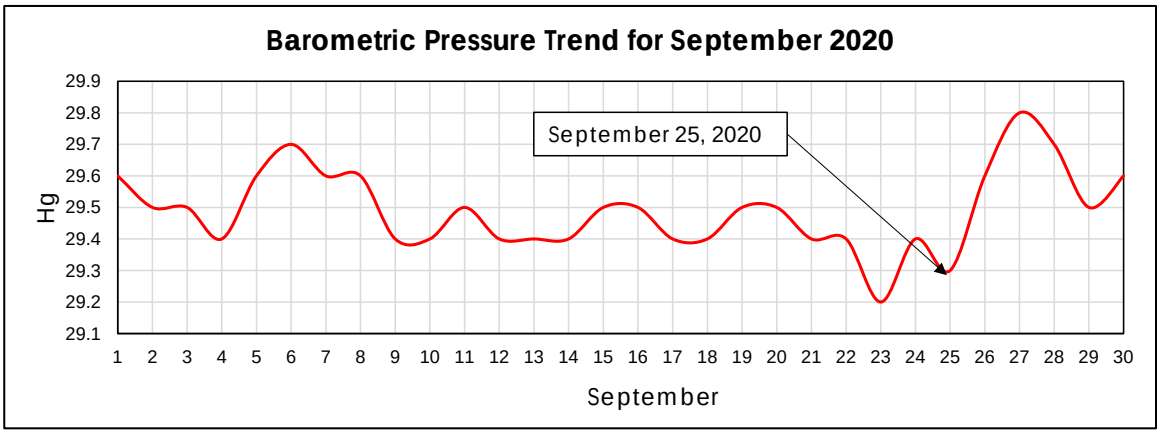
		Weather Conditions	
Monitored by:	A. Lopez	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	Rain
Calibration Date:	25-Sep-20	Temperature (^{o}F):	61

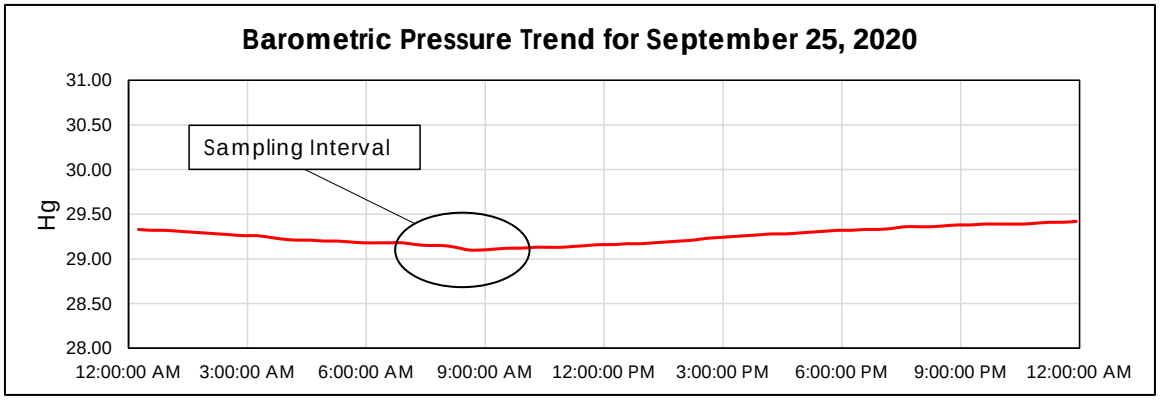
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - September 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-9

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-9-25

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4220002.02

PCRCD dba LRI — October 30, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	23-Oct-20	10:30	0.37	0.0	5.0	5.6	-	-	
GP-1B	23-Oct-20	10:33	0.35	0.0	6.7	13.6	-	-	
GP-1C	23-Oct-20	10:36	0.35	0.0	2.7	18.0	-	-	
GP-2A	23-Oct-20	10:41	0.36	0.7	4.8	13.4	0.1	-	
GP-2B	23-Oct-20	10:44	0.19	0.0	0.2	21.1	0.1	-	
GP-3S	23-Oct-20	10:49	0.33	0.0	1.1	19.5	-	-	
GP-3M	23-Oct-20	10:52	0.30	0.0	2.4	15.8	-	-	
GP-3D	23-Oct-20	10:56	0.28	0.0	4.0	13.8	-	-	
GP-4A	23-Oct-20	11:04	0.22	0.0	3.0	13.4	-	-	
GP-4B	23-Oct-20	11:07	0.26	0.0	0.3	21.0	-	-	
GP-5A	23-Oct-20	11:11	0.24	0.0	0.9	20.3	-	-	
GP-5B	23-Oct-20	11:14	0.23	0.0	0.7	19.7	-	-	
GP-6	23-Oct-20	11:39	0.21	0.0	0.5	20.4	-	-	
GP-7S	23-Oct-20	11:26	0.19	0.0	0.6	20.8	-	-	
GP-7D	23-Oct-20	11:29	0.20	0.0	0.5	20.7	-	-	
GP-8A	23-Oct-20	11:57	0.19	0.0	2.1	19.6	-	-	
GP-8B	23-Oct-20	12:03	0.19	0.0	1.0	20.2	-	-	
GP-9	23-Oct-20	11:46	0.19	0.0	4.7	12.5	-	-	
GP-10	23-Oct-20	12:16	0.18	0.0	0.5	20.6	-	-	
GP-11	23-Oct-20	12:24	0.19	0.0	2.4	13.2	-	-	
GP-12	23-Oct-20	12:32	0.18	0.0	3.1	14.7	-	-	
GP-13A	30-Oct-20	10:36	0.08	0.0	9.4	8.4	-	-	
GP-13B	30-Oct-20	10:39	0.21	0.0	0.2	20.6	-	-	
GP-14S	23-Oct-20	12:47	0.17	0.0	4.3	16.5	-	-	
GP-14D	23-Oct-20	12:50	0.17	0.0	6.9	7.4	-	-	
GP-15A	23-Oct-20	12:56	0.18	0.0	2.3	17.7	-	-	
GP-15B	23-Oct-20	12:59	0.18	0.0	8.6	8.4	-	-	
GP-16A	23-Oct-20	13:06	0.18	0.0	4.2	13.6	-	-	
GP-16B	23-Oct-20	13:09	0.22	0.0	4.7	13.4	-	-	
GP-17	23-Oct-20	13:18	0.17	0.0	4.2	16.3	-	-	
GP-18	23-Oct-20	13:27	0.18	0.0	8.0	14.1	-	-	
GP-19	23-Oct-20	13:34	0.24	0.0	3.5	16.6	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

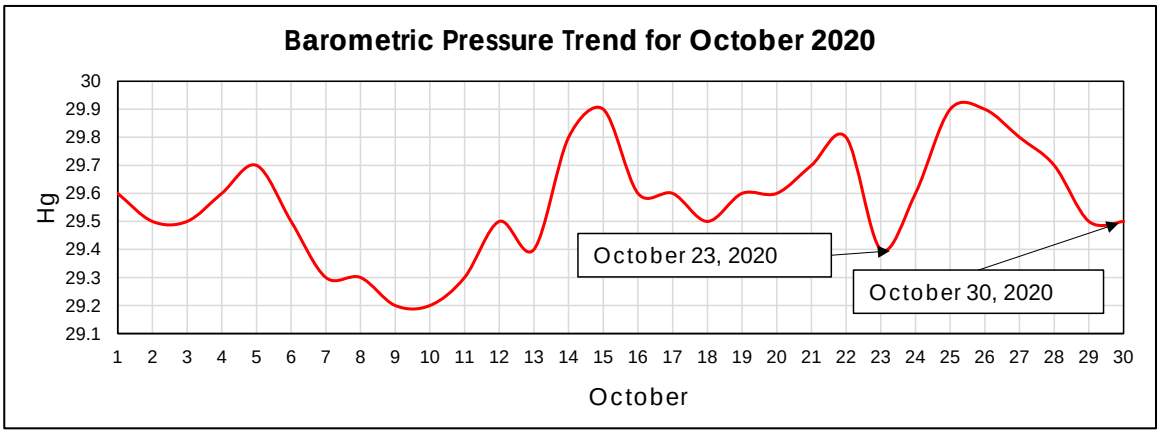
		Weather Conditions	
Monitored by:	A. Lopez	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	-
Calibration Date:	23-Oct-20	Temperature (^{o}F):	43

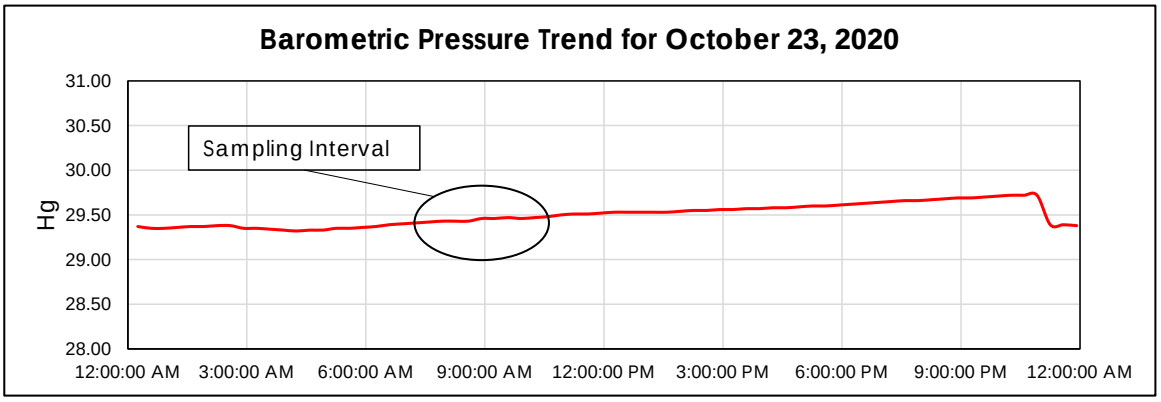
Notes

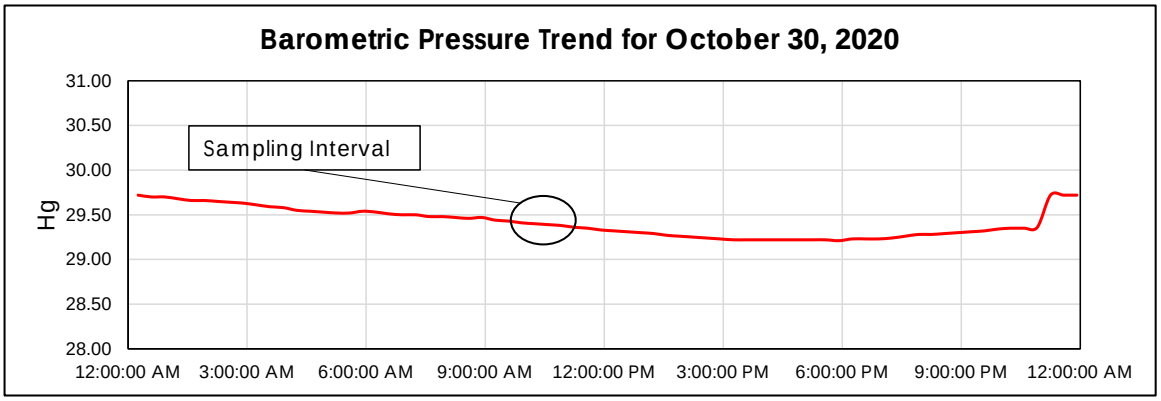
1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - October 2020
Hidden Valley Landfill, Pierce County, Washington







Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-10

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL
Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-10-23
Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-10-30

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill — 4220002.02

PCRCD dba LRI — November 17, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	17-Nov-20	9:57	0.13	0.0	5.4	5.6	-	-	
GP-1B	17-Nov-20	9:59	0.12	0.0	6.8	13.3	-	-	
GP-1C	17-Nov-20	10:01	0.19	0.0	7.0	12.1	-	-	
GP-2A	17-Nov-20	10:04	0.11	3.3	13.9	2.8	-	-	
GP-2B	17-Nov-20	10:07	0.13	0.0	0.3	20.6	-	-	
GP-3S	17-Nov-20	10:10	0.14	0.0	2.1	16.8	-	-	
GP-3M	17-Nov-20	10:12	0.12	0.0	2.5	13.6	-	-	
GP-3D	17-Nov-20	10:13	0.12	0.0	4.2	12.8	-	-	
GP-4A	17-Nov-20	10:18	0.12	0.0	1.4	17.9	-	-	
GP-4B	17-Nov-20	10:20	0.31	0.0	0.3	20.7	-	-	
GP-5A	17-Nov-20	10:24	0.12	0.0	0.1	20.9	-	-	
GP-5B	17-Nov-20	10:26	0.13	0.0	0.6	19.2	-	-	
GP-6	17-Nov-20	10:30	0.11	0.0	0.5	18.5	-	-	
GP-7S	17-Nov-20	10:34	0.23	0.0	0.4	20.6	-	-	
GP-7D	17-Nov-20	10:37	0.13	0.0	0.3	20.6	-	-	
GP-8A	17-Nov-20	10:43	0.13	0.0	1.9	18.2	-	-	
GP-8B	17-Nov-20	10:45	0.14	0.0	0.9	19.0	-	-	
GP-9	17-Nov-20	10:49	0.15	0.0	5.0	10.9	-	-	
GP-10	17-Nov-20	10:54	0.09	0.0	0.3	20.7	-	-	
GP-11	17-Nov-20	10:58	0.11	0.0	3.7	13.1	-	-	
GP-12	17-Nov-20	11:03	0.12	0.2	1.8	16.1	-	-	
GP-13A	17-Nov-20	11:07	0.20	0.0	0.1	20.8	-	-	
GP-13B	17-Nov-20	11:10	0.14	0.0	0.1	20.8	-	-	
GP-14S	17-Nov-20	11:14	0.13	0.0	5.6	15.8	-	-	
GP-14D	17-Nov-20	11:16	0.16	0.0	7.3	7.1	-	-	
GP-15A	17-Nov-20	11:19	0.11	0.1	4.5	7.9	-	-	
GP-15B	17-Nov-20	11:21	0.09	0.0	10.4	4.3	-	-	
GP-16A	17-Nov-20	11:25	0.11	0.0	1.7	17.9	-	-	
GP-16B	17-Nov-20	11:26	0.23	0.0	1.4	18.7	-	-	
GP-17	17-Nov-20	11:33	0.05	0.0	3.2	17.5	-	-	
GP-18	17-Nov-20	11:37	0.11	0.0	2.1	18.5	-	-	
GP-19	17-Nov-20	11:42	0.12	0.0	2.9	17.1	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

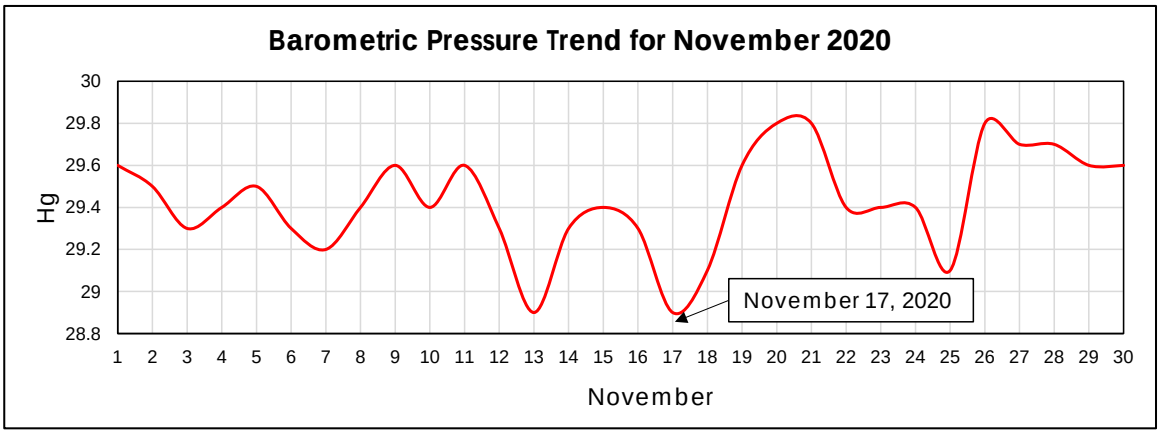
		Weather Conditions	
Monitored by:	T. Berndahl	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	Wind/Rain
Calibration Date:	17-Nov-20	Temperature (°F):	43

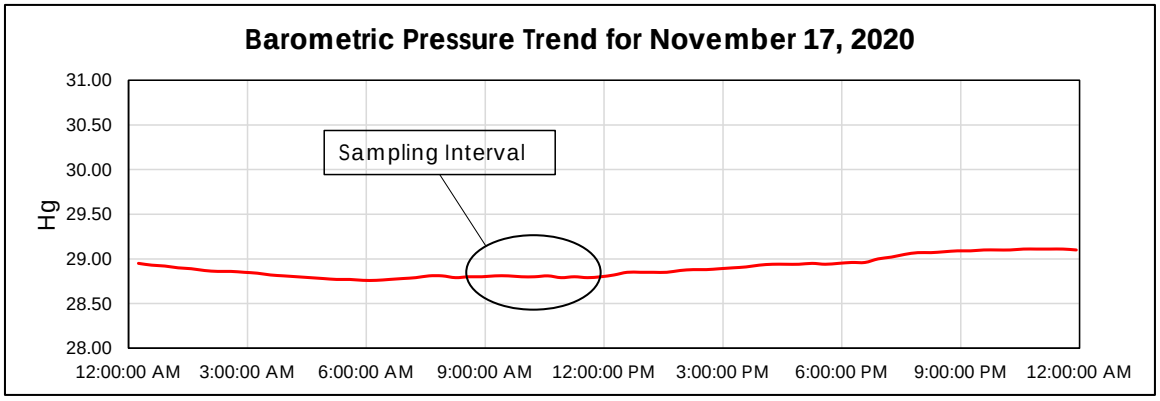
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - November 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-11

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-11-17

Landfill Gas Probe Monitoring

SCS Engineers

Hidden Valley Landfill

4220002.02

PCRCD dba LRI

December 21, 2020

Location Reference Designation	Date	Time	Pressure (in. H_2O)	CH_4 (% vol.)	CO_2 (% vol.)	O_2 (% vol.)	Comments: Spike CH4 *Note 1* (% vol.)	Comments: Spike CO2 *Note 1* (% vol.)	Comments: Other
Gas Probes									
GP-1A	21-Dec-20	13:07	0.43	0.0	5.4	6.2	-	-	
GP-1B	21-Dec-20	13:12	0.21	0.0	6.6	13.4	-	-	
GP-1C	21-Dec-20	13:16	0.40	0.0	6.8	12.2	-	-	
GP-2A	21-Dec-20	13:21	0.36	4.3	15.4	1.0	4.3	-	
GP-2B	21-Dec-20	13:24	0.15	0.0	0.2	20.8	-	-	
GP-3S	21-Dec-20	13:29	0.27	0.0	3.6	12.2	-	-	
GP-3M	21-Dec-20	13:32	0.26	0.0	3.0	11.9	-	-	
GP-3D	21-Dec-20	13:37	0.17	0.0	6.4	8.0	-	-	
GP-4A	21-Dec-20	13:44	-0.01	0.0	6.4	9.7	-	-	
GP-4B	21-Dec-20	13:47	0.19	0.0	0.2	20.9	-	-	
GP-5A	21-Dec-20	13:52	0.14	0.0	0.4	20.7	-	-	
GP-5B	21-Dec-20	13:55	0.16	0.0	1.6	18.7	-	-	
GP-6	21-Dec-20	14:01	0.15	0.0	0.4	20.2	-	-	
GP-7S	21-Dec-20	14:07	0.11	0.0	0.3	20.8	-	-	
GP-7D	21-Dec-20	14:09	0.12	0.0	0.5	20.5	-	-	
GP-8A	21-Dec-20	14:31	0.11	0.0	1.4	17.9	-	-	
GP-8B	21-Dec-20	14:34	0.08	0.0	1.1	19.0	-	-	
GP-9	21-Dec-20	14:21	0.14	0.0	5.0	12.1	-	-	
GP-10	21-Dec-20	14:43	0.08	0.0	0.1	20.9	-	-	
GP-11	21-Dec-20	14:48	0.11	0.0	3.2	13.1	-	-	
GP-12	21-Dec-20	15:51	0.10	0.0	8.8	4.2	-	-	
GP-13A	21-Dec-20	15:57	0.12	0.0	2.3	18.3	-	-	
GP-13B	21-Dec-20	16:00	0.14	0.0	0.1	20.7	-	-	
GP-14S	21-Dec-20	16:06	-3.42	0.0	5.2	16.0	-	-	
GP-14D	21-Dec-20	16:09	0.11	0.0	7.5	6.5	-	-	
GP-15A	21-Dec-20	16:14	0.12	0.0	3.2	11.5	-	-	
GP-15B	21-Dec-20	16:17	0.10	0.0	10.9	2.9	-	-	
GP-16A	21-Dec-20	16:27	0.11	0.0	1.4	19.4	-	-	
GP-16B	21-Dec-20	16:30	0.30	0.0	1.3	19.5	-	-	
GP-17	21-Dec-20	17:41	0.11	0.0	2.2	19.3	-	-	
GP-18	21-Dec-20	17:46	0.11	0.0	1.4	19.3	-	-	
GP-19	21-Dec-20	17:51	0.15	0.0	3.3	18.0	-	-	
LFG-1							-	-	*Note 2*
LFG-2							-	-	*Note 2*
LFG-3							-	-	*Note 2*

General Data

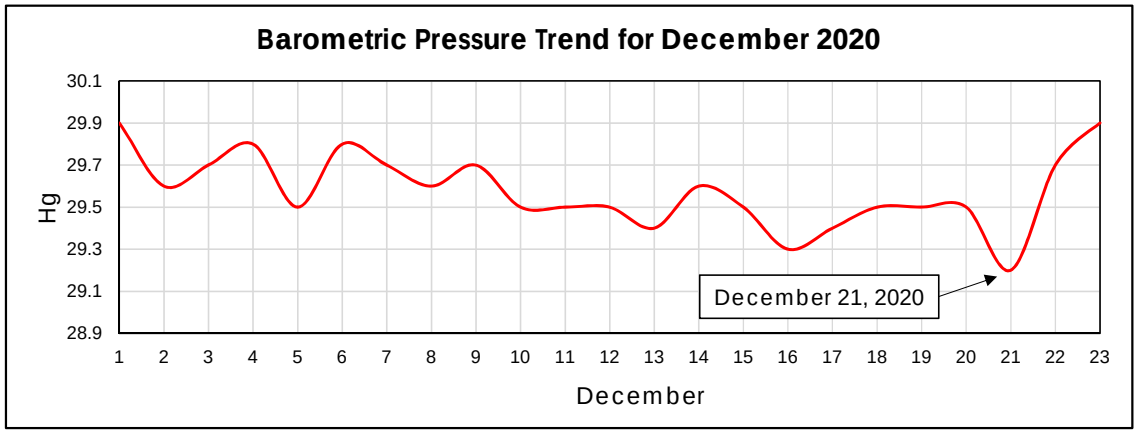
		Weather Conditions	
Monitored by:	A. Lopez	Sky Cover:	Cloudy
Instruments:	GEM 2000	Wind / Rain / Snow:	Wind/Rain
Calibration Date:	21-Dec-20	Temperature (^{o}F):	54

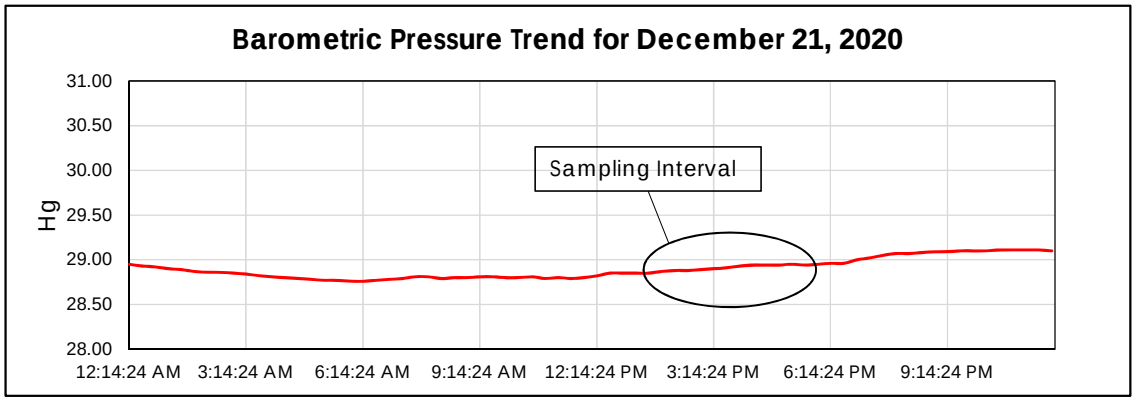
Notes

1. Measurement for spike concentrations of CH_4 and CO_2 are recorded if observed during sampling
2. Not monitored. Probe casing rusted shut.

GP = Gas Probe	CH_4 = Methane	S = shallow	A= shallow
NM = Not measured	CO_2 = Carbon Dioxide	M = medium	B = medium
equipment malfunction	O_2 = Oxygen	D = deep	C = deep

Barometric Pressure Trend - December 2020
Hidden Valley Landfill, Pierce County, Washington





Monthly Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-12

Daily Data Source: Wunderground.com (Puyallup)
Lat: 47.11 Long: 122.29 Elev: 591 ft-AMSL

Data Source: https://www.wunderground.com/history/daily/us/wa/puyallup/KPLU/date/2020-12-21

Project Number: ~~04219002.02~~ 04220002.03

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Date: 2/25/20
Weather Conditions: Sunny
Instrument: MicroFID
Measured By: Travis Berndahl

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [X] Main Office - individual office spaces, storage areas and within open crawl-space area. 1.2 ppm
- [X] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [X] Pay/Scale Booth – interior of building. 3.2 ppm
- [X] Recycle Building – throughout facility and water drainage areas. 3.6 ppm
- [X] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas. 8.8 ppm
- [X] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- [X] Transfer Station Building – throughout entire building and lower levels.

Background
Upwind → 2.1
Downwind → 2.4

Signature

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Project Number: ~~04219002.02~~ 0422 ~~0~~002
0422 0002.02

Date: 6-18-20
Weather Conditions: Sunny
Instrument: MicroFID
Measured By: Travis B.

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [X] Main Office - individual office spaces, storage areas and within open crawl-space area. 1.2 ppm Cleaning closet
- [X] Repair Shop – survey atmosphere conditions throughout (lower height levels). 0.0 ppm
- [X] Pay/Scale Booth – interior of building. 16.3 ppm South restroom bathroom
- [X] Recycle Building – throughout facility and water drainage areas. 0.0 ppm
- [X] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas. 10.2 ppm East side
- [X] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets. 0.7ppm
- [X] Transfer Station Building – throughout entire building and lower levels. 10.1 ppm exposed junction box near refrigerator

Background
Upwind → 3.1 ppm
Downwind → 3.9 ppm

Signature

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Project Number: 04220002.02

Date: 9/25/20 and 9/29/20
Weather Conditions: Overcast and sunny
Instrument: Micro FID
Measured By: Travis B / Andres L.

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

Checked boxes indicate that the survey revealed **no detectable methane**.

- [X] Main Office - individual office spaces, storage areas and within open crawl-space area.
- [X] Repair Shop – survey atmosphere conditions throughout (lower height levels).
- [X] Pay/Scale Booth – interior of building.
- [X] Recycle Building – throughout facility and water drainage areas.
- [X] Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas. 0.4 ppm – INDOOR, SE CORNER
- [X] Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- [X] Transfer Station Building – throughout entire building and lower levels.

Background
upwind → 0.0 ppm
Downwind
0.2 ppm

Signature

Hidden Valley Landfill
Landfill Gas Monitoring of On-site Buildings

Project Number: 04220002.02

Date: 12/21/20
Weather Conditions:
Instrument: FID
Measured By: Andres Lopez

The atmosphere inside buildings at the landfill were monitored for possible intrusion of methane gas. Per WAC 173-351, concentrations of methane in on-site structures must not exceed 25% of the lower explosive limit (LEL). If off-site gas migration is suspected, concentrations of methane in off-site structures must not exceed 100 ppm methane.

The areas monitored included:
- The general overall work area
- Floor drains
- Underground conduit protrusions
- Closed areas where landfill gas could collect, such as under cupboards and inside closets

The gas detection instrument must be calibrated using calibration gas containing methane equal to 50 % LEL. Calibration must be performed before and after the survey is completed.

0.3 ppm outside

Checked boxes indicate that the survey revealed **no detectable methane**.

- ☐ Main Office - individual office spaces, storage areas and within open crawl-space area. 0.2ppm - inside offices
- ☑ Repair Shop – survey atmosphere conditions throughout (lower height levels).
- ☑ Pay/Scale Booth – interior of building.
- ☑ Recycle Building – throughout facility and water drainage areas.
- ☐ Leachate Treatment Building – all lower level office spaces, restrooms, water drainage system and storage/equipment areas. 1.1ppm - inside leachate building entrance
- ☑ Gas to Energy Building – central monitoring/control room, engine room and storage cabinets.
- ☑ Transfer Station Building – throughout entire building and lower levels.

Signature

Appendix B

LEACHATE TREATMENT &

SIDE-SLOPE LINER SYSTEM DATA

Table 1. 2020 Main Sump and Side-Slope Liner Area Performance Data
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Month	Main Sump Monthly Leachate Volume - Cell 1 (gallons)	Side-Slope Sump Monthly Leachate Volume - Cell 2 (gallons)	Side-Slope Sump Monthly Leakage Flow[a] - Cell 2 (gallons/month)	Monthly Rainfall (inches)
January	1,331	0	1,052	12.60
February	12,710	0	0	4.17
March	8,293	0	0	5.35
April	13,979	0	0	3.78
May	20,500	0	0	3.25
June	10,260	0	0	3.16
July	7,829	0	0	0.25
August	8,246	0	0	0.65
September	0	0	0	4.20
October	28,552	4,759	6,006	4.40
November	4,181	636	0	11.35
December	21,460	0	0	9.46
Year to date:	137,341	5,395	7,058	62.62

Notes:

a = Leakage is fluid pumped from the leak detection sump as recorded by LRI staff.

LEACHATE DAILY LOG #2

CELL 2
LEAK DET – 1,052 GAL 1/23/20

Month: January
Year: 2020

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	9928896	146511	62546	64.4	.5		3729	131339	790243	266788		31993	7.20	32584
2	12	9962020	179095	62570	65	.2	2103	3730	"	"	"	1541	32022	710	32584
3	12	9994478	211681	62594	65	.45	2124	3732	"	"	"	1592	32047	718	32584
4	12	26809	244264	62618	64	.5	2175	3738	"	"	"	1534	32072	712	32584
5	12	58168	276849	62642	64	.35	2376	3743	"	"	"	1619	32098	724	32584
6	12	92585	309432	62666	65	.45	2287	3757	"	"	"	1629	32123	723	32584
7	12	1258 14	342016	62690	64.4	.4	2329	3764	131339	790243	267016	1617	32148	739	32584
8	12 12	160113	374599	62714	64.3	.2	2584	3769	131339	790243	267165	1571	32155	7.33	32584
9		194513	4107185	62746	63.9	.25	2277	3777	131339	790243	267316	1561	32174	743	32584
10	12	227294	439767	62765	64	.5	2208	3779	"	"	268472	1602	32225	749	32584
11	12	262279	472351	62786	64	.35	2303	3781	"	"	"	1503	32250	851	32584
12	12	296490	504937	62810	64	.4	2183	3783	"	"	"	1628	32275	838	30716
13	12	327091	535655	62834	off	.5	2135	3793	"	"	"	1541	32300	821	32584
14	12	362486	568233	62860	63.9	.0	2135	3793	131339	790243	268477	1575	32325	8.54	32584
15	12	395178	600820	62888	64.1	.2	2125	3795	131339	790243	268772	1622	32351	8.25	32584
16	12	429435	633403	62912	64.2	.2	2154	3800	131339	790243	268556	1547	32380	8.74	32584
17	12	462999	665982	62929	65	0	2126	3807	"	"	"	1542	32401	847	32584
18	12	496346	698566	62953	64	.1	2202	3808	"	"	"	1605	32426	843	32584
19	12	530853	731152	62977	64	0	2201	3809	"	"	"	1578	32452	836	32584
20	12	564906	763735	63001	off	.2	2198	3815	"	"	"	1602	32477	826	32584
21	12	599124	796319	63025	64.3	.8	2223	3816	131339	790243	268826	1543	32502	8.41	32584
22		633257	828905	63049	64.4	.75		32508	131339	790495	268516		32529	8.31	32584
23	12	667552	861488	63073	64	.75	2233	3825	"	"	"	1589	32553	815	32584
24	12	700271	894071	63097	64	.25	2228	3832	132391	790650	269607	1596	32578	802	32584
25	12	734210	926655	63121	64	.35	2197	3833	"	"	"	1610	32584	803	32584
26	12	769635	959240	63145	64	.45	2205	3834	"	"	"	1620	32629	812	32584
27	12	802501	991824	63169	off	.80	2210	3836	"	"	"	1553	32654	802	32584
28	12	836291	1024408	63193	64.7	.40	2209	3842	132391	790650	269607	1558	32686	8.32	32584
29	12	871512	1057446	63223	65.1	.35		3843	132391	791574	269665		32705	835	32584
30	12	905777	1089576	63241	65.7	.45	2226	3849	"	"	269665	1566	32730	817	32584
31	12	939707	1122161	63265	65	0.5	2235	3864	132391	791574	269665	1548	32755	821	32584
			Monthly Totals			12.6		3883	1,052	1,331					

S/S leak detec = – 1,052

0

LEACHATE DAILY LOG #2

Month: FEB. 2020
Year:

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P.	BLW A/B	E-PH	DAILY EFFLUENT
1	12	9727 19	1154745	63289	65	.82	2249	3883	132391	791574	269665	16,02	32779	798	32584
2	12	1008285	11873258	63313	65	.0	2267	3885	"	"	"	1582	32802	814	32584
3	12	1041348	1219913	63337	off	.0	2272	3887	"	"	"	1570	32824	803	32584
4	12	1075905	1252496	63361	64.4	.4	22.80	3892	132391	791574	269665	1575	32830	0.46	32584
5	12	1110985	1285083	63391	64.3	.8	2298	3893	132391	791574	269665	15.78	32865	8.32	32584
6	12	1144995	1317662	63415	OFF	.625	2213	3899	132391	791574	269680	15.74	32875	8.51	32584
7	12	1180190	1350249	63439	65	.325	2327	3905	"	"	273606	1571	32914	814	32584
8	12	1216372	1382833	63463	65	.2	2336	3906	"	"	"	1597	32937	826	32584
9	12	1251042	1415417	63481	65	0	2347	3907	"	"	"	1547	32959	818	32584
10	12	1286997	1448001	63505	65	.0	2354	3918	"	"	"	1589	32982	834	32584
11	12	1320666	1480584	63535	64.9	.0	2363	3923	132391	791574	269665	1619	3300	855	32584
12	12	1357670	1513170	63558	64.9	.0	2360	3924	132391	791574	269665	15.20	33027	8.45	32584
13	12	1391432	1545755	63591	65	.0	2386	3931	132391	791574	269665	15.84	33032	8.21	32584
14	12	1424993	1578338	63601	65	.2	2395	3932	"	"	"	1570	33072	803	32584
15	12	1460341	1610922	63625	65	.1	2400	3939	"	"	"	1595	33094	813	32584
16	12	1494076	1643505	63649	67	0	2408	3940	"	"	"	1556	33117	799	32584
17	12	1530175	1676090	63673	67	.0	2426	3941	"	"	"	1565	33139	821	32584
18	12	1562893	1708673	63703	64.9	.0	2427	3947	132391	791574	269665	1510	33162	8.00	32584
19	12	1598446	1741257	63726	65.6	0	2428	3948	132391	791574	269665	1575	33181	8.47	32584
20	12	1634277	1773843	63745	67	0	2432	3954	"	"	"	1574	33207	820	32584
21	12	1667816	1806426	63769	67	0	2457	3960	"	"	"	1594	33229	795	32584
22	12	1702695	1839010	63793	67	0	2365	3961	"	796000	"	1582	33252	799	32584
23	12	1738011	1871593	63817	67	.5	2380	3963	"	"	"	1626	33274	813	32584
24	12	1773151	1904178	63841	67	.0	2274	3969	"	799431	274575	1521	33297	803	32584
25	12	1808409	1936792	63871	66.3	.0	23.00	3970	132391	799431	274575	1555	33322	8.19	32584
26		1843063	1969396	63894	66.1	.0	23.06	3976	132391	804284	274575	1573	33342	8.07	32584
27	12	1876508	2001930	63913	67	0	2314	3984	"	"	"	1590	33364	791	32584
28	12	1912855	2034514	63937	67	.1	2313	3985	"	"	"	1621	33387	8	32584
29	12	1946173	2067098	63961	67	.05	2306	3991	132391	804284	274575	1596	33409	793	32584
30															
31								3992							

Monthly Totals 4.17 0 12,710

LEACHATE DAILY LOG #2

Month: March 2020
Year:

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	1981680	2099682	63985	67	0	2304	3992	132391	804284	274575	1562	33437	821	32584
2	12	2016709	2132266	64009	67	.0	2311	3993	"	"	"	1587	33454	796	32584
3	12	2052062	2164051	64039	65.9	.0	2316	4001	132391	804284	274575	1567	33477	811	32584
4	12	2085202	2197433	64063	OFF	0	2320	4003	132391	804284	274575	1555	33499	0.03	32584
5	12	2121425	2230422	64086	65.7	.375	2332	4010	132391	804284	274575	1582	33526	8.03	32580
6	12	2154704	2262600	64105	66	.675	2330	4016	"	"	"	1587	33544	795	32588
7	12	2191411	2295201	64129	66	.1	2349	4017	"	"	"	1597	33567	8	32588
8	12	2223967	2327776	64153	66	0	2344	4019	"	"	"	1561	33589	795	32588
9	12	2259866	2360358	64177	66	.0	2283	4020	"	808233	"	1565	33611	797	32584
10	12	2295457	2392943	64196	66.3	0	2219	4021	132391	812577	274575	1594	33611	0.06	32584
11	12	2328297	2425525	64230	66.1	.0	2231	4023	132391	812577	274575	1580	33655	7.89	32584
12	12	2458111	2363668	64248	66.3	0	2235	4024	132391	812577	274575	1571	33678	7.91	32584
13	12	2398820	2490695	64272	66	.7	2251	4026	"	"	"	1618	33700	796	32584
14	12	2433479	2523277	64296	66	0	2250	4027	"	"	"	1584	33723	809	32584
15	12	2469284	2555863	64320	66	0	2264	4029	"	"	"	1570	33745	823	32584
16	12	2503477	2588446	64344	66	.0	2264	4030	"	"	"	1574	33768	813	32584
17	12	2538696	2621032	64374	65.9	.0	2275	4031	132391	812577	274575	1570	33784	8.19	32584
18	12	2572977	2653615	64398	65.5	0	2283	4031	132391	812577	274575	1568	33813	8.12	32584
19	12	2607726	2686199	64416	66	0	2288	4034	"	"	"	1568	33835	809	32584
20	12	2643449	2718783	64440	66	0	2292	4035	"	"	"	1547	33858	801	32584
21	12	2678407	2751368	64464	66	0	2298	4036	"	"	"	1561	33880	788	32584
22	12	2713385	2783950	64488	66	0	2301	4037	"	"	"	1588	33903	783	32584
23	12	2747276	2816534	64512	66	.4	2315	4038	"	"	"	1616	33925	784	32584
24	12	2782591	2849118	64542	65.2	.6	2310	4039	132391	812577	274575	1570	33948	8.01	32584
25	12	2818925	2881703	64566	65.1	.375	2321	4040	132391	812577	274575	1573	33970	8.01	32584
26	12	2853660	2914287	64584	66	.1	2323	4042	"	"	"	1581	33993	8.03	32584
27	12	2886568	2946872	64608	66	.1	2328	4043	"	"	"	1593	34015	785	32584
28	12	2922328	2979455	64632	66	.1	2335	4045	"	"	"	1588	34038	793	32584
29	12	2956920	3012039	64656	66	.625	2342	4046	"	"	"	1596	34060	789	32584
30	12	2990902	3044623	64680	66	.0	2357	4047	"	"	"	1585	34083	786	32584
31	12	3027411	3077170	64710	64.9	.4	2351	4048	132391	812577	274575	1576	34099	7.98	32584
		Monthly Totals				5.35		4049	0	8,293					

LEACHATE DAILY LOG #2

Month: April April
Year: 2020

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	3061616	3109790	64734	64.6	.4	2358	4049	132391	812577	274575	1575	34128	8.01	32584
2	12	3096585	3142375	64758	64.5	1.0	2360	4049	132391	812577	274558	1580	34137	8.16	32584
3	12	3130121	3174960	64776	65	0	2375	4051	"	"	"	1584	34173	790	32584
4	12	3164848	3207543	64800	65	0	2378	4052	"	"	"	1590	34195	799	32584
5	12	3199806	3240128	64824	65	0	2391	4053	"	"	"	1591	34218	792	32584
6	12	3233201	3272711	64848	65	.2	2391	4054	"	"	"	1550	34240	789	32584
7	12	3268307	3305295	64878	64.4	.10	2407	4056	132391	812577	274535	1563	34282	7.98	32584
8	12	3303586	3337879	64902	64.4	.0	2435	4056	132391	812577	274558	1585	34285	7.92	32584
9	12	3337264	3370478	64926	64.6	0	2430	4058	132391	812577	274575	1588	34308	7.81	32584
10	12	3372893	3403049	64944	65	0	2430	4059	"	"	275361	1584	34340	770	32584
11	12	3406683	3435632	64968	65	0	2435	4068	"	"	"	1572	34353	767	32584
12	12	3441347	3468216	64992	65	0	2443	4061	"	"	"	1569	34375	769	32584
13	12	3476972	3500801	65016	65	.10	2451	4063	"	"	"	1575	34398	781	32584
14	12	3510259	3533383	65046	67.1	.0	2340	4064	132391	812577	275361	1578	34420	8.11	32584
15	12	3546800	3565968	65070	65.3	0	2242	4065	132391	826556	275311	1570	34448	7.73	32584
16	12	3580488	3598551	65088	65	0	2248	4066	"	"	"	1577	34465	765	32584
17	12	3615633	3631137	65112	off	0	2256	4068	"	"	275878	1608	34488	774	32584
18	12	3649305	3663720	65136	65	.2	2262	4069	"	"	"	1590	34510	754	32584
19	12	3683608	3696304	65160	65	0	2271	4070	"	"	"	1570	34532	776	32584
20	12	3719019	3728888	65184	65	.0	2279	4072	"	"	"	1583	34555	776	32584
21	12	3754574	3761472	65213	64.4	.0		4073	132391	826556	275341		35407	7.95	32584
22	12	3789120	3794054	65237	64.1	.45	2296	4076	132391	826556	275341	1630	35415	7.60	32584
23	12	3822430	3826639	65255	67	0	2297	4077	"	"	275878	1546	34567	755	32584
24	12	3858137	3859224	65279	off	0	2307	4078	"	"	"	1560	34183	754	32584
25	12	3890916	3891809	65303	66	.5	2311	4079	"	"	"	1615	34206	756	32584
26	12	3926555	3924393	65327	66	.25	2317	4081	"	"	"	1570	34228	768	32584
27	12	3960672	3956977	65351	66	.0	2320	4083	"	"	"	1670	34251	768	32584
28	12	3996521	3989561	65381	64.6	.0	2329	4084	132391	826556	275879	1581	34567	7.69	32584
29	12	4030927	4022146	65403	66.4	.11	2330	4085	132391	826556	275378	15.87	34273	7.51	32584
30		4066564	4054730	65428	64.6	.375	2355	4086	132391	826556	275338	15.90	34323	7.55	32584
31								4087							

Monthly Totals 3.775 0 13,979

LEACHATE DAILY LOG #2

Month: MAY 2020
Year:

Date	Time	INFLUENT FM 212	EFFLUENT FM S11	AC-HRS	D-AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	4101106	4087314	65447	off	.1	2345	4087	132391	826556	275878	1600	34341	774	32584
2	12	4136478	4119898	65471	66	.6	2349	4088	"	"	"	1607	34363	764	32584
3	12	4170597	4152480	65495	66	.45	2354	4089	"	"	"	1552	34386	780	32584
4	12	4204950	4185064	65519	66	.0	2362	4091	"	"	"	1591	34408	790	32584
5	12	4240287	4217650	65549	65.1	.2	2367	4092	132391	826556	275878	1575	34431	7.80	32584
6	12	4275953	4250234	65573	64.8	.2	2372	4093	132391	826556	275878	1555	34453	7.62	32584
7	12	4311507	4282816		off	.0		4094	132391	826556	275878		34476	7.79	32584
8	12	4347279	4315402	65615	66	0	2383	4095	"	"	"	1601	34498	752	32584
9	12	4381253	4347985	65639	67	0	2385	4097	"	"	"	1583	34521	743	32584
10	12	4417052	4380570	65663	67	0	2388	4098	"	"	"	1589	34543	695	32584
11	12	4450364	4413153	65687	64	.0	2391	4099	"	"	"	1591	34566	685	32584
12	12	4484811	4445137	65717	63.8	.4	2395	4101	132391	826556	275878	1593	34589	7.40	32584
13	12	4519957	4478321	65741	64.7	.4	2397	4102	132391	826556	275878	1585	34594	759	32584
14	12	4555747	4510906	65759	65	0	2314	4104	"	831745	"	1583	34633	751	32584
15	12	4590415	4543489	65783	65	0	2170	4107	"	841421	"	1560	34656	759	32584
16	12	4624352	4576075	65807	64	.5	2183	4108	"	"	"	1617	34678	767	32584
17	12	4659776	4608657	65831	off	0	2187	4109	"	"	"	1589	34701	741	32584
18	12	4692659	4641242	65855	off	.0	2194	4111	"	"	"	1575	34723	756	32584
19	12	4727265	4673823	65885	64.1	.0	22.01	4112	132391	841421	275878	1573	34745	7.62	32584
20	12	4763276	4706410	65909	64.2	.4	22.14	4113	132391	841421	275878	1586	34768	7.62	32584
21	12	4799681	4738993	65927	63	0	2231	4114	"	"	"	1585	34790	762	32584
22	12	4834090	4771577	65951	64	0	2222	4115	"	"	"	1590	34813	777	32584
23	12	4870065	4804163	65975	64	0	2231	4117	"	"	"	1580	34835	772	32584
24	12	4905375	4836747	65999	65	0	2253	4118	"	"	"	1582	34858	762	32584
25	12	4938975	4869329	66023	64	.0	2258	4120	"	"	"	1590	34880	728	32584
26	12	4974373	4901915	66053	64.5	.0	2265	4121	132391	841421	275878	1597	34903	7.35	32584
27	12	5010856	4934490	66077	64.6	.0	2274	4122	132391	841421	275878	1585	34925	7.64	32584
28	12	5044976	4967082	66101	64.4	.0	2280	4124	132391	841421	275878	1587	34925	7.40	32584
29	12	5081325	4999742	66125	64.5	0	2167	4125	132391	847056	275878	1565	34970	7.12	32584
30	12	5116479	5032514	66149	64.6	.0	2170	4126	132391	847056	275878	1566	34996	7.30	32584
31	12	5149758	5064833	66173	64.4	0		4129	132391	847056	275878		35015	7.49	32584
			Monthly Totals			3.25		4131	0	20,500					

LEACHATE DAILY LOG #2

Month: June
Year: 2026

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D-AP	RAIN	LB LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	8	5188460	5099187		63.9	.0	22.05	4131	132391	847056	275878	1578	35037	7.74	27692
2	12	5216107	5125370	66221	63.5	.0	22.10	4132	132391	847056	275878	1579	35052	7.56	32584
3	12	5252901	5157691	66245	74.7	.0	2150	4133	132391	850645	275878	1584	35061	7.39	32584
4	12	5286377	5190273	66268	74.4	0		4134	132391	850645	275878		35102	7.34	32584
5	12	5327316	5222860	66287	75.4	0	2033	4135	"	857316	"	1612	35119	733	32584
6	12	5357711	5255444	66311	75	0	2036	4137	"	"	"	1579	35142	729	32584
7	12	5392788	5288028	66335	75	.0	2063	4138	"	"	"	1573	35164	737	32584
8	12	5426468	5320611	66358	75	.6	2069	4139	"	"	"	1554	35187	756	32584
9	12	5462831	5353156	66391	74.1	.4	2075	4140	132391	857316	275878	1565	35201	7.43	32584
10	12	5498951	5385782	66415	74.5	.38	2077	4141	132391	857316	275878	1567	35227	7.29	32584
11	12	5533619	5418363	66431	68	.38	2075	4143	"	"	"	1580	35284	706	32584
12	12	5567494	5450948	66455	69	.4	2087	4144	"	"	"	1592	35277	702	32584
13	12	5603597	5483532	66479	69	.3	2092	4145	"	"	"	1610	35299	716	32584
14	12	5639172	5516114	66503	71	0	2096	4146	"	"	"	1584	35322	732	32584
15	12	5674104	5548699	66527	71	.45	2103	4151	"	"	"	1620	35344	715	32584
16	12	5709586	5581283	66551	71	0	2107	4152	"	"	276653	1587	35367	726	32584
17	12	5745205	5613868	66574	off	0	2093	4152	"	"	"	1569	35389	724	32584
18	12	5780913	5646451	66598	71	0	2100	4153	"	"	"	1585	35411	714	32584
19	12	5816495	5679030	66522	71	0	2102	4154	"	"	"	1572	35433	720	32584
20	12	5851180	5711620	66546	71	0	2124	4155	"	"	"	1567	35456	695	32584
21	12	5887743	5744205	66570	70	0	2129	4156	"	"	"	1580	35478	685	32584
22	12	5921434	5776787	66594	70	.0	2124	4158	"	"	"	1586	35501	695	32584
23	12	5956848	5809372	66724	70.9	.0	2127	4159	132391	857316	276790	1587	35957	6.89	32584
24	12	5994143	5002332	66748	70.4	.0	2135	4166	132391	857316	276790	1588	35551	6.59	32584
25	12	6026477	5874542	66766	70.4	0	2147	4161	132391	857316	276790	1589	35573	6.62	32584
26	12	6063427	5907124	66790	70	0	2151	4162	"	"	"	1574	35591	633	32584
27	12	6098925	5939708	66814	71	0	2158	4164	"	"	"	1581	35613	785	32584
28	12	6134878	5972291	66838	72	.25	2167	4165	"	"	"	1614	35636	793	32584
29	12	6169119	6004875	66862	72	.0	2160	4168	"	"	"	1569	35658	789	32584
30	12	6204177	6037483	66892	725	.0	2165	4169	"	"	"	1578	35686	7.86	32584
31								4170							

Monthly Totals 3.16 0 10,260

LEACHATE DAILY LOG #2

Month: July
Year: 2020

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D AP	RAIN	L8 LVL	GP HRS	S SL	CELL1	TS/GL	TRAN P	BLW A/B	E PH	DAILY EFFLUENT
1	12	6240630	6070045	66916	72.3	.0	2165	4170	132391	857316	276790	1575	35705	7.87	32584
2	12	6276202	6162640	66943	72.5	.0	2166	4171	132391	857316	276900	1577	35731	7.85	32584
3	12	6309425	6135212	66967	72	.0	2171	4172	"	"	"	1590	35748	7.88	32584
4	12	6344030	6167797	66982	73	.0	2182	4174	"	"	"	1577	35771	7.91	32584
5	12	6379325	6200380	67006	73	.0	2187	4176	"	"	"	1582	35793	7.89	32584
6	12	6415071	6232965	67030	73	.0	2195	4178	"	"	"	1583	35816	7.86	32584
7	12	6450924	6265550	67054	73	.25	2198	4179	"	"	"	1583	35838	7.84	32584
8	12	6484989	6298133	67078	73	.0	2206	4180	"	"	"	1581	35861	7.81	32584
9	12	6520803	6330716	67102	OFF	.0	2203	4181	"	"	"	1590	35883	7.85	32584
10	12	6554359	6363299	67126	73	.0	2211	4183	"	"	"	1564	35906	7.70	32584
11	12	6590691	6395886	67150	73	.0	2276	4185	"	"	"	1594	35928	7.68	32584
12	12	6624477	6428467	67175	72	.0	2265	4186	"	"	"	1587	35951	7.71	32584
13	12	6659336	6461053	67199	73.2	.0	2260	4188	"	"	"	1582	35973	7.64	32584
14	12	6693145	6493636	67231	73.5	.0	21.00	4190	132391	861954	276797	1573	35982	7.63	32584
15	12	6730258	6526222	67247	73.7	0	21.35	4192	132391	865145	276801	1584	36011	7.56	32584
16	12	6763862	6558803	67270	73	0	2132	4194	"	"	"	1590	36041	763	32584
17	12	6797789	6591389	67294	75	0	2114	4196	"	"	"	1581	36063	759	32584
18	12	6834264	6623974	67318	74	0	2132	4198	"	"	"	1573	36086	757	32584
19	12	6867633	6656557	67342	74	0	2134	4199	"	"	"	1578	36108	751	32584
20	12	6903376	6689141	67367	74	.0	2149	4200	"	"	"	1580	36131	750	32584
21	12	6938946	6683385	67396	73.3	.0	2152	4202	"	"	276802	1585	36145	7.61	32584
22	12	6973571	6754312	67423	73.4	.0	2153	4204	"	"	"	1587	36161	753	32584
23	12	7009154	6786882	67446	73.5	0	2172	4207	"	"	"	1559	36181	748	32584
24	12	7043298	6819477	67462	73	0	2182	"	"	"	"	1581	36220	755	32584
25	12	7079417	6852062	67486	73	0	2186	4211	"	"	"	1570	36243	744	32584
26	12	7114547	6884646	67510	73	0	2174	4213	"	"	"	1579	36248	748	32584
27	12	7149533	6917230	67534	73	.0	2195	4215	"	"	"	1584	36288	741	32584
28	12	7184562	6949812	67558	73	.0	2197	4217	"	"	"	1585	36298	749	32584
29	12	7219756	6982388	67582	73.9	.0	2199	4218	"	"	"	1589	36316	748	32584
30	12	7255477	7014984	67606	73.7	0		4219	"	"	"		36348	749	31820
31		7289374	7046491	67630	73	0	2230	4221	132391	865145	276803	1572	36378	748	32584
Monthly Totals						0.25		4223	0	7829					

LEACHATE DAILY LOG #2

Month: AUG. 2020
Year:

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	181VL	GP HRS	S-SL	CELL	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	7325319	7079386	67654	73	0	2237	4223	132391	865145	276803	1587	36400	746	32584
2	12	7358621	7111969	67678	73	0	2222	4225	11	11	276811	1581	36423	749	32584
3	12	7394437	7144553	67701	74	0	2204	4227	11	11	11	1584	36445	742	32584
4	12	7429590	7177136	67725	74	0	2252	4229	11	11	11	1587	36468	736	32584
5	12	7465019	7209722	67749	74	0	2257	4229	11	11	11	1588	36490	743	32584
6	12	7500438	7242304	67773	74	.05	2279	4233	11	11	11	1589	36513	739	32584
7	12	7534436	7274890	67797	73	0	2271	4235	11	11	11	1569	36535	742	32584
8	12	7569648	7307473	67821	74	0	2267	4237	11	866355	276818	1586	36558	738	32584
9	12	7604547	7340058	67845	74	0	2232	4241	11	11	11	1583	36580	741	32584
10	12	7639990	7372641	67869	74	.0	2297	4243	11	11	11	1602	36603	738	32584
11	12	7676032	7405239	67895	73.1	.0	2296	4245	11	11	11	1602	36631	7.37	32584
12	12	7714950	7437811	67922	73.5	0	2296	4247	11	11	11	15.77	36653	7.36	5648
13	12	7719168	7443454	67941	off	0	2283	4251	11	11	276839	1577	36670	733	0
14	12	11	11	67964	off	0	2266	4253	11	11	11	1580	36693	729	19572
15	12	7740202	7462986	67988	70	0	2291	4255	11	11	11	1596	36712	768	32584
16	12	7773948	7495568	68012	71	0	2302	4257	11	11	276844	1593	36738	753	32584
17	12	7810777	7528152	68036	71	.0	2285	42591	11	11	11	1562	36760	754	32584
18	12	7845536	7560735	68060	74.2	.0	2310	4261	132391	866355	276844	1550	36782	7.46	32584
19	12	7881779	7593320	68090	71.1	.0	2203	4263	132391	866355	276844	1587	36805	7.55	32584
20	12	7916046	7625904	68108	71.1	.0	2304	4265	132391	866355	276857	1595	36816	7.49	32584
21	12	7952513	7658487	68138	71.1	.6	2321	4267	132391	866355	276857	15.98	36850	7.49	32584
22	12	7988316	7691086	68162	71.1	.0	2201	4269	132391	869779	276911	15.72	36856	7.55	32584
23	12	8022905	7723656	68186	71.9	.0	2210	4270	132391	869779	276911	15.75	36891	7.48	32584
24	12	8059681	7756252	68210	71.5	.0	2250	4272	132391	873145	276911	15.76	36904	7.48	32584
25	12	8094540	7788838	68234	71.3	.0	2273	4276	132391	873391	276911	1576	36944	7.53	32584
26	12	8127138	7821424	68258	68.9	0	2219	4278	132391	873391	276911	1576	36968	7.48	24952
27	0615	8155104	7846720	68376	70	0	2271	4280	11	11	11	15.78	36991	7.4	29060
28	12	8184257	7875422	68300	69	0	2180	4282	11	11	11	1581	37008	7.4	32584
29	12	8218421	7908006	68324	69	0	2194	4284	11	11	11	1589	37030	7.4	32584
30	12	8253632	7940590	68348	69	0	2239	4286	11	11	276936	1568	37053	7.4	32584
31	12	8287452	7973173	68372	70	0	2235	4288	132391	873391	276936	1592	37075	7.4	32584

Monthly Totals 0.65 4292 0 8,246

LEACHATE DAILY LOG #2

Month: September 2020

Year:

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D AP	RAIN	LS LVL	GP HRS	S SL	CELL	TS/GL	TRAN P	BLW A/B	E PH	DAILY EFFLUENT
1	12	8320849	8005758		69.5	.0	2241	4292	132391	873391	276958	1599	37097	7.43	32584
2	12	8356139	8058342	68426	69.6	0	2233	4294	132391	873391	276958	1577	37113	7.40	32584
3	12	8390150	8070927	68443	69	0	2228	4298	"	"	"	1582	37142	7.41	32584
4	12	8424596	8103511	68467	70	0	2226	4307	"	"	"	1602	37165	739	32584
5	12	8457784	8136093	68491	70	0	2226	4310	"	"	276976	1561	37187	744	32584
6	12	8492746	8168627	68515	69	0	2209	4312	"	"	276993	1580	37210	737	32584
7	12	8525582	8201263	68539	69	0	2242	4315	"	"	"	1591	37232	736	32584
8	12	8560372	8233847	68562	69	0	2211	4319	"	"	"	1562	37254	732	32584
9	12	8594270	8266430	68586	69	0	2223	4323	"	"	"	1571	37277	738	32584
10	12	8629801	8299014	68610	69	0	2238	4352	"	"	"	1577	37299	731	32584
11	12	8662444	8331596	68634	70	0	2292	4355	"	"	"	1555	37322	741	32584
12	12	8697552	8364182	68658	69	0	2263	4392	"	"	"	1586	37344	740	32584
13	12	8731824	8396768	68682	69	0	2272	4331	"	"	"	1591	37367	743	32584
14	12	8765936	8429350	68706	69	.4	2241	4334	"	"	"	1578	37389	739	32584
15	12	8799574	8461934	68730	69.9	.0	2272	4438	132391	873391	277005	1576	37411	7.42	32584
16	12	8834448	8494513	68754	69.2	.0	2266	4442	132391	873391	277005	1581	37419	7.40	32584
17	12	8868174	8527102	68784	69.4	0	2284	4446	132391	873391	277008	1590	37440	7.41	32580
18	12	8901646	8559684	68802	69	.4	2290	4452	"	"	277055	1587	37479	739	32584
19	12	8937776	8592268	68826	69	.2	2280	4458	"	"	"	1578	37502	735	32584
20	12	8971574	8624850	68850	69	.1	2281	4460	"	"	"	1591	37524	740	32584
21	12	9005732	8657434	68874	69	0.1	2303	4464	"	"	"	1605	37547	737	32584
22	12	9039468	8690020	68903	70.1	0.4	2284	4470	132391	873391	277057	1572	37569	7.38	32584
23	12	9073796	8722604	68927	70.3	0.8	2291	4472	132391	873391	277057	1605	37596	7.47	32584
24	12	9106496	8755188	68951	70.3	1.0	2294	4479	132391	873391	277057	1601	37596	7.38	32584
25	12	9140470	8787770	68970	70	.80	2297	4484	"	"	278593	1619	37636	736	32580
26	12	9175130	8820352	68994	70	.3	2315	4487	"	"	"	1562	37659	737	32584
27	12	9209836	8852934	69018	70	.0	2309	4489	"	"	"	1551	37682	735	32584
28	12	9242282	8885518	69041	71	.0	2325	4495	"	"	"	1600	37704	732	32584
29	12	9277972	8918114	69071	70.4	.0	2354	4499	132391	873391	278593	1589	37731	7.27	32584
30		9310196	8950688	69095	70.4	0	2357	4502	132391	873391	278593	1590	37754	7.27	32584
31								4507							

Monthly Totals 4.2 0 0

LEAK DET. 1,247 GAL 10/14
" 4,759 GAL 10/22

LEACHATE DAILY LOG #2

Month: OCT 2020
Year:

reading from 9/30/21 = 873,391

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D AP	RAIN	L8 LVL	GP HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	9345374	8983270	69113	70	0	2246	4507	132391	877582	278607	1583	37771	729	32584
2	12	9379282	9015856	69137	70	0	2204	4511	"	881181	"	1582	37794	728	32584
3	12	9412712	9048440	69161	70	0	2228	4516	"	"	"	1579	37816	726	32584
4	12	9445620	9081024	69185	70	0	2246	4518	"	"	"	1593	37839	729	32580
5	12	9478946	9113606	69209	70	.0	2221	4522	"	"	"	1570	37861	729	32584
6	12	9514162	9146188	69239	OFF	.0	2222	4527	132391	877582	278607	1575	37877	727	32584
7	12	9548128	9178770	69263	71.0	.0	2220	4530	132391	877582	[illegible]	1576	37900	7.25	32584
8	12	9581372	9211368	69286	71.1	.2	2215	4535	132391	877582	278607	1572	37934	7.28	32584
9	12	9616514	9243938	69311	71.0	1.0	2213	4539	132391	883703	278607	1570	37957	7.28	32584
10	12	9649170	9276522	69334	OFF	0.6	2207	4542	132391	883703	278607	1567	37967	7.30	32584
11	12	9681894	9308894	69358	71.2	0.4	2218	4544	132391	883703	278607	1577	37990	7.31	32584
12	12	9716820	9341680	69383	71.5	0.8	2230	4548	132391	883703	278607	1576	38012	7.31	32588
13	12	9749404	9374274	69401	71.5	0.2	2244	4552	132391	883703	278607	1575	38041	7.29	32584
14	12	9784432	9406858	69425	71.2	0.2	2259	4556	132391	883703	278607	1566	38069	7.22	32584
15	12	9817604	9439442	69454	71.6	.1	2262	4560	133638	883705	278607	1581	38072	7.25	32584
16	12	9851784	9472026	69473	72	0	2192	4563	"	887978	278644	1605	38109	724	32584
17	12	9885358	9504610	69497	72	0	2208	4568	"	"	"	1573	38131	723	32584
18	12	9919858	9537194	69521	72	.3	2217	4570	"	"	"	1601	38154	724	32588
19	12	9952466	9569778	69545	71	.0	2222	4574	"	"	"	1574	38176	724	32584
20	12	9987200	9602384	69574	72.9	.0	2237	4581	133638	887978	278644	1594	38204	7.27	32584
21	12	21712	9634948	69598	72.9	.0	2237	4585	133638	887978	278644	1581	38204	7.30	32584
22	12	55147	9667552	69574	73.4	0	2250	4590	133638	887978	278644	1585	38327	7.30	32584
23	12	90395	9700116	69640	73	.5	2257	4612	138397	"	"	1613	38266	729	32584
24	12	123578	9732698	69664	73	.1	2255	4640	"	"	"	1547	38289	728	32584
25	12	158227	9765286	69688	73	0	2253	4643	"	"	"	1569	38311	730	32584
26	12	190999	9797868	69712	73	.0	2265	4647	"	"	"	1599	38330	724	32584
27	12	224954	9830454	69742	73.1	.0	2274	4651	138397	887978	278644	1595	38351	7.29	32584
28	12	258460	9862962	69760	72.6	0	2167	4655	143156	887978	278681	1607	34577	7.35	32584
29	12	292571	9895620	69784	73	0	2143	4662	143156	895447	278699	1588	34600	735	32584
30	12	327090	9928204	69808	73	0	2038	4669	"	901943	"	1625	34622	735	32584
31	12	360914	9960786	69832	72	0	2053	4671	143156	901943	278699	1560	34645	735	32580

Monthly Totals

4.4 4673 10,765 28,552

S/S leak detec. volume — 6,006

4,759

LEACHATE DAILY LOG #2

Month: NOV. 2020
Year:

Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC-HRS	D-AP	RAIN	L8 LVL	GP-HRS	S-SL	CELL1	TS/GL	TRAN P	BLW A/B	E-PH	DAILY EFFLUENT
1	12	395638	9993370	69856	73	0	2070	4673	143156	901943	278699	1608	34667	737	32584
2	12	430019	25947	69881	73	0	2081	4675	"	"	"	1595	34690	737	32584
3	12	463530	58531	69905	73	1.5	1992	4680	"	906124	278702	1612	34713	736	32584
4	12	497507	91116	69929	73	.25	2024	4685	143792	"	278785	1573	34735	737	32586
5	12	532074	123700	69953	73	1.5	2025	4689	"	"	278858	1577	34758	738	32590
6	12	566491	156293	69977	74	.5	2045	4694	"	"	278927	1601	34779	736	32584
7	12	599725	188877	70001	73	.25	2044	4696	"	"	279516	1608	34802	737	32584
8	12	632896	221460	70025	73	0	2064	4699	"	"	"	1574	34822	735	32584
9	12	668457	254044	70048	73	.0	2079	4704	"	"	"	1592	34847	730	32584
10	12	701439	286631	70086	73.3	.4	2075	4708	143792	906124	279516	1595	34869	7.24	32584
11	12	747581	336801	70104	73.5	.2	2078	4710	143792	906124	279516	1597	34885	7.27	32589
12	12	770165	351803	70128	73.5	0.8	2120	4716	143792	906124	279516	1588	34920	7.40	32584
13	12	804484	384341	70152	73.5	0.6	2122	4723	143792	906124	279852	1575	34942	7.31	32584
14	12	838030	416965	70192	74.0	0.6	2102	4725	143792	906124	280314	1550	34952	7.29	28372
15	12	867771	445346	70200	74.7	0.6	2138	4727	143792	906124	280314	1547	34975	7.29	32584
16	12	898083	477912	70224	74.6	0.8	2139	4731	143792	906124	282145	1548	35009	7.25	32584
17	12	930054	510517	70248	74.5	0.6	2132	4735	143792	906124	282143	1583	35032	7.30	32584
18	12	970669	543099	70272	75.0	0.8	2149	4739	143792	906124	282143	1589	35055	7.29	32584
19	12	1005858	575672	70293	74.9	.3	2155	4744	143792	906124	282143	1515	35077	7.29	32584
20	12	1038778	608258	70312	69	0	2165	4749	"	"	286079	1577	35094	730	32584
21	12	1071412	640842	70336	69	0	2180	4754	"	"	286189	1585	35117	725	32580
22	12	1104018	673424	70360	69	.3	2194	4756	"	"	286224	1629	35139	724	32584
23	12	1137527	706006	70384	69	.4	2295	4761	"	"	286637	1581	35162	728	32584
24	12	1172512	738591	70408	69.1	.4	2250	4766	143792	906124	286957	11,31	35183	7.27	32584
25	12	12051108	771173	70432	69.1	.55	2258	4771	143792	906124	286957	1	35207	7.27	32584
26		1239999	803758	70456	69	0	2264	4776	"	"	288420	1578	35229	731	32584
27		1273335	836341	70480	69	0	2295	4784	"	"	288420	1598	35252	725	32584
28		1306977	868927	70504	69	0	2297	4785	"	"	"	1568	35274	728	32584
29		1341436	901510	70528	69	0	2305	4786	"	"	288867	1602	35297	724	32584
30		1375974	934095	70552	70	.0	2317	4792	143792	906124	288867	1644	25319	732	32584
31								4795							

Monthly Totals: 11,35 636 4,181

LEACHATE DAILY LOG #2

Month: December 2020
Year:

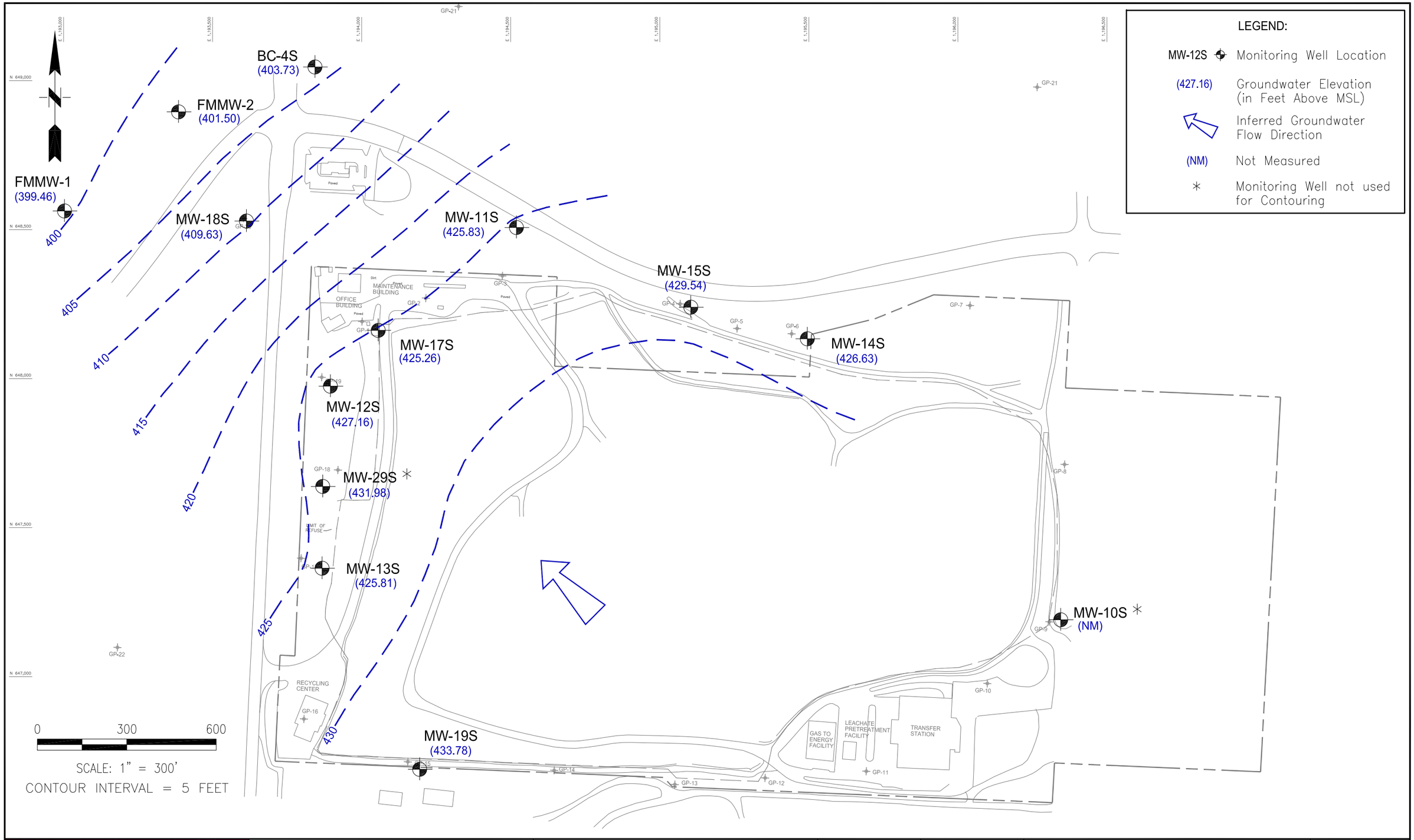
Date	Time	INFLUENT FM 212	EFFLUENT FM 511	AC HRS	D AP	RAIN	L8 LVL	GP HRS	S SL	CELL3	TS/GL	TRAN P	BLW A/B	E PH2	DAILY EFFLUENT
1	12:00	1409189	966674		69.6	.6	27.80	4795	143792	906124	289959	16.02	35391	7.29	32584
2	12:00	1444507	999258	70599	70.0	0	27.90	4799	143792	911535	290349	16.09	35361	7.30	32584
3	12	1479370	1031842	70624	73	0	2093	4805	"	917822	"	1585	35387	730	32584
4	12	1514930	1064426	70648	73	0	2106	4810	"	"	290486	1568	35409	729	32584
5	12	1547296	1097010	70672	73	0	2099	4814	"	"	"	1624	35432	731	32584
6	12	1580555	1129595	70696	73	.55	2083	4816	"	"	290524	1541	35454	730	32584
7	12	1612835	1162180	70720	73	.06	2100	4820	"	"	290706	1636	35477	733	32584
8	12	1646417	1194764	70749	73.6	1.0	19.47	4824	143792	917822	290746	16.01	35499	7.33	32584
9	12	1678630	1227358	70773	72.5	.4	19.89	4829	143792	924273	297833	1512	35527	7.39	32584
10		1712907	1259944	70797	73.8	.25	20.10	4831	143792	924273	297853	16.14	35549	7.31	32584
11	12	1745972	1292514	70815	73	0	1965	4839	"	927584	298296	1578	35566	732	32584
12	12	1778331	1325098	70839	74	.05	1979	4841	"	"	"	1585	35589	729	32584
13	12	1811970	1357684	70863	73	.25	1993	4846	"	"	298387	1574	35612	725	32588
14	12	1844216	1390267	70887	73	0.4	2004	4850	"	"	298843	1566	35634	724	32876
15	12	1878325	1423142	70916	71.5	0.6	2019	4854	143792	927584	299624	16.26	35644	7.23	32564
16	12	1911032	1455726	70943	71.5	0	2021	4858	143792	927584	300475	16.48	35662	723	32588
17	12	1944889	1488327	70967	71.7	.2	20.34	4862	143792	927584	300563	15.48	35707	7.34	32584
18	12	1977981	1520899	70983	72	.3	2041	4864	"	"	301815	1574	35724	729	32584
19	12	2009328	1553483	71007	72	.65	2047	4870	"	"	302503	1510	35747	728	32584
20	12	2043982	1586067	71031	72	.25	2060	4872	"	"	304172	1546	35769	727	32584
21	12	2076687	1618651	71055	72	0.2	2073	4876	"	"	304515	1612	35791	726	32584
22	12	2110862	1651252	71079	69.1	0.2	2123	4882	143792	927584	304543	1524	35819	7.32	32584
23	12	2143466	1683817	71109	72.4	1.0	21.11	4887	143792	927584	304543	15.91	35842	7.34	32584
24	12	2176351	1716403	71128	72	0	2156	4891	"	"	307664	1640	35859	724	32584
25	12	2211056	1748988	71152	70	.5	2191	4893	"	"	"	1608	35881	725	32584
26	12	2242997	1781572	71176	71	.2	2135	4895	"	"	308626	1576	35904	724	32584
27	12	2275614	1814155	71199	71	.35	2193	4897	"	"	308935	1593	35926	723	32584
28	12	2308673	1846739	71223	71	.4	2172	4903	"	"	309590	1590	35949	724	32584
29	12	2342008	1879337	71247	70.6	.8	2207	4907	143792	927584	309590	1573	35971	7.36	32584
30	12	2375453	1911907	71279	70.5	1.0	2221	4912	143792	927584	309590	1649	35988	7.33	32584
31	12	2408482	1944493	71295	71	.25	2195	4916	143792	927584	312714	1598	36016	730	32584

4920

Monthly Totals 9.46 0 21,460

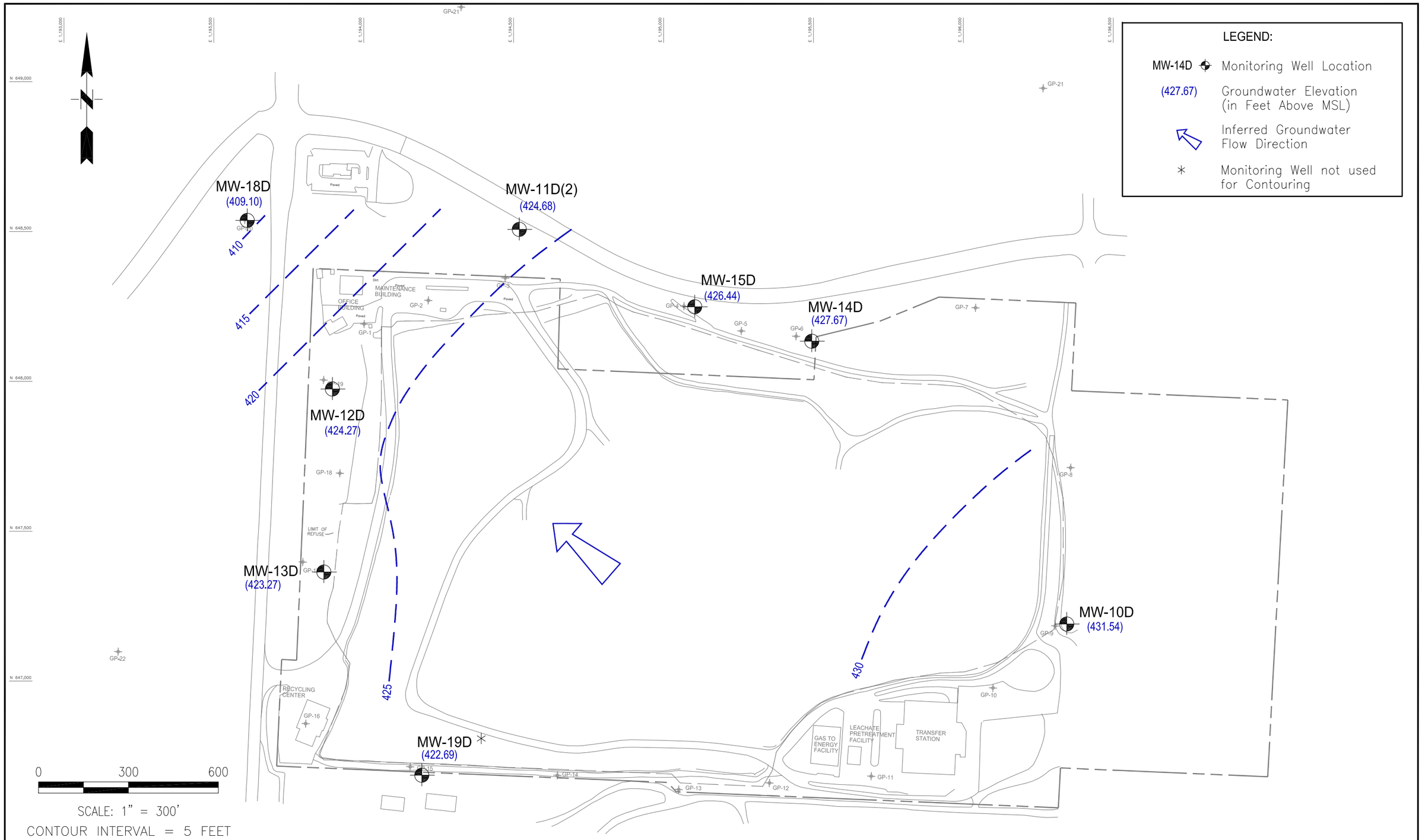
Appendix C

WATER LEVEL DATABASE



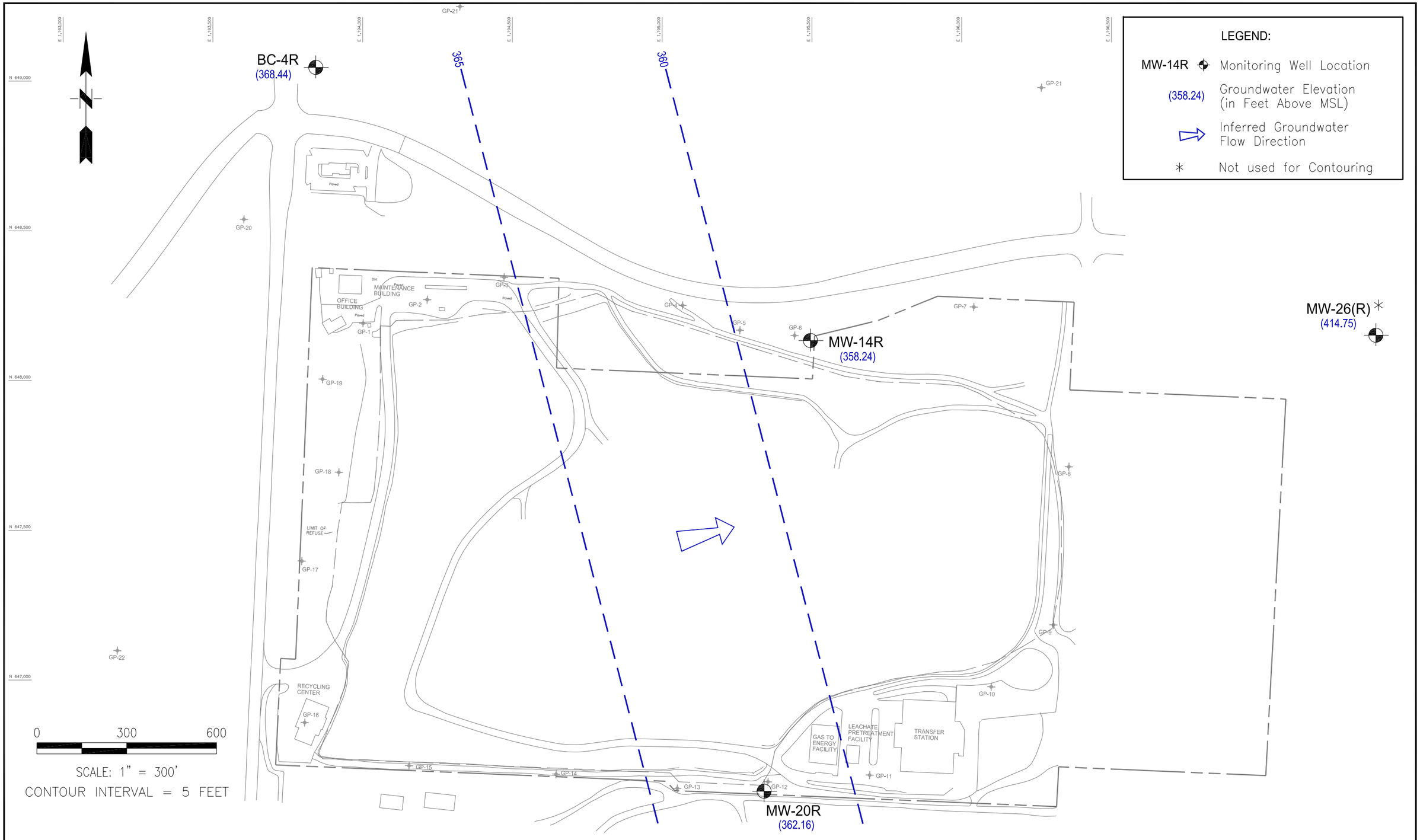
SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04220002.03	DES BY SG	SHALLOW PERCHED AQUIFER WATER LEVEL MAP JANUARY 22, 2020	DATE APRIL 2020
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 1
CAD FILE FIGURE 1	APP BY KGL		



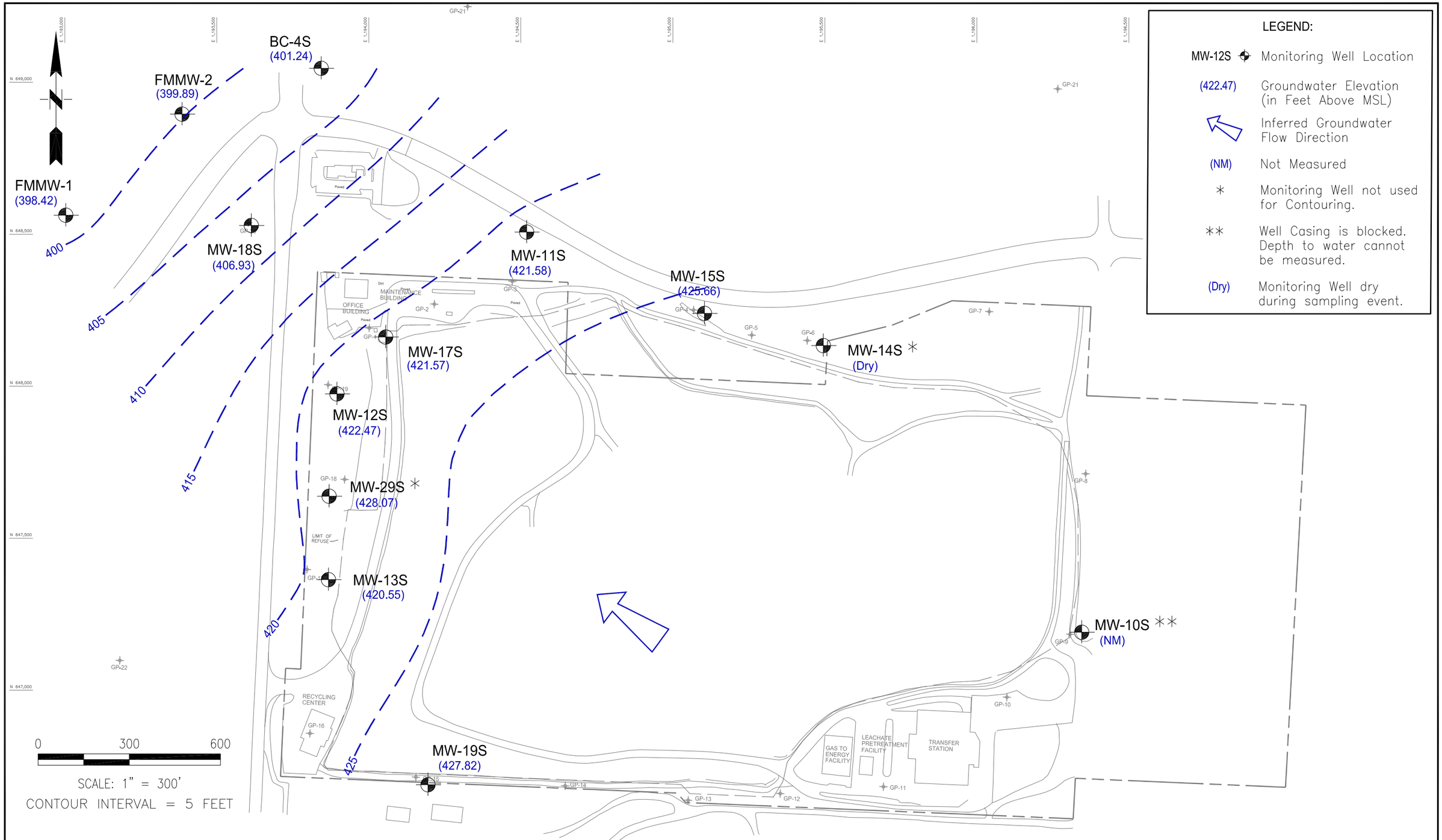
SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04220002.03	DES BY SG	UPPER REGIONAL AQUIFER WATER LEVEL MAP JANUARY 22, 2020	DATE APRIL 2020
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 2
CAD FILE FIGURE 2	APP BY KGL		

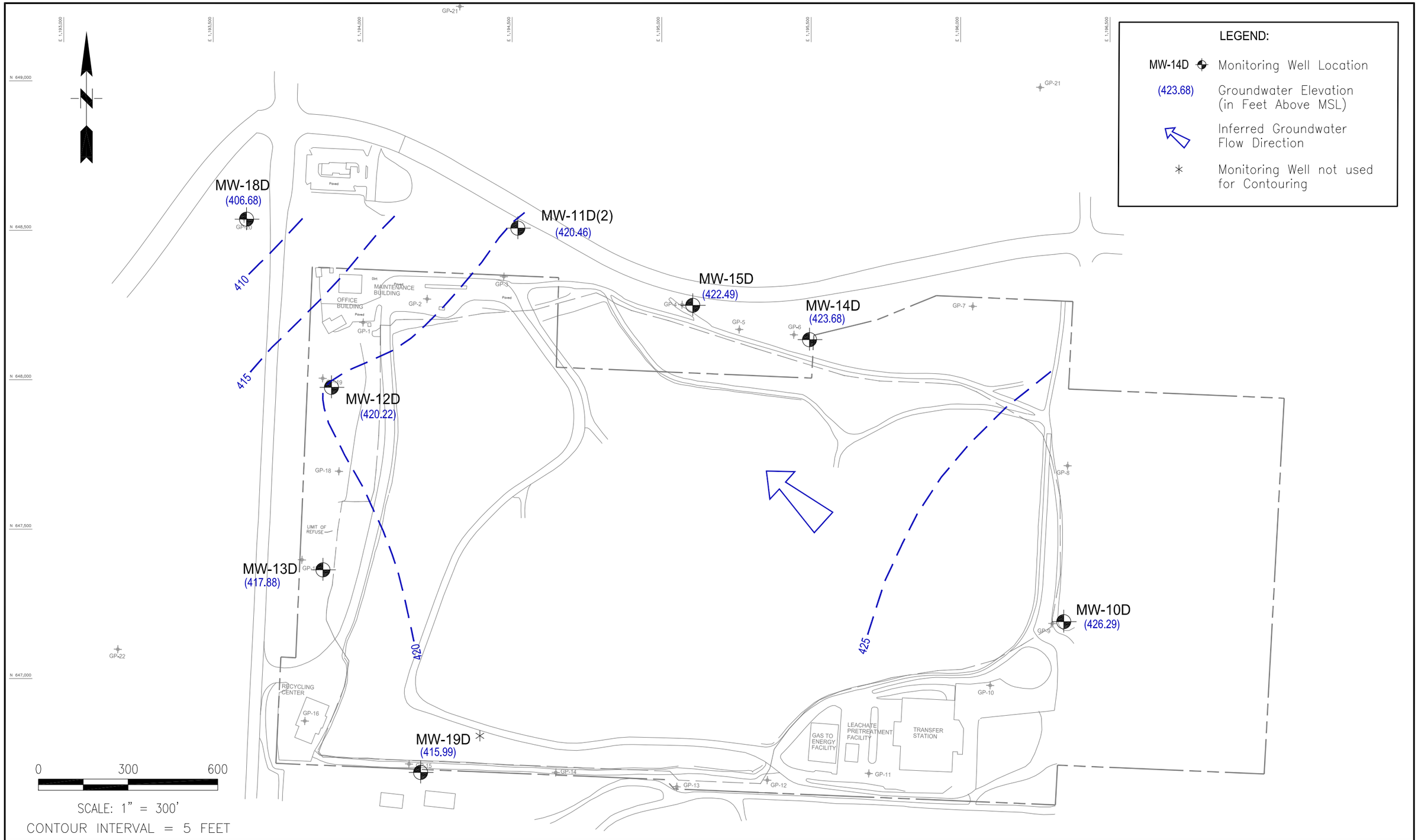


SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04220002.03	DES BY SG	LOWER REGIONAL AQUIFER WATER LEVEL MAP JANUARY 22, 2020	DATE APRIL 2020
SCALE AS SHOWN	CHK BY KGL		FIGURE 3
CAD FILE FIGURE 3	APP BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	

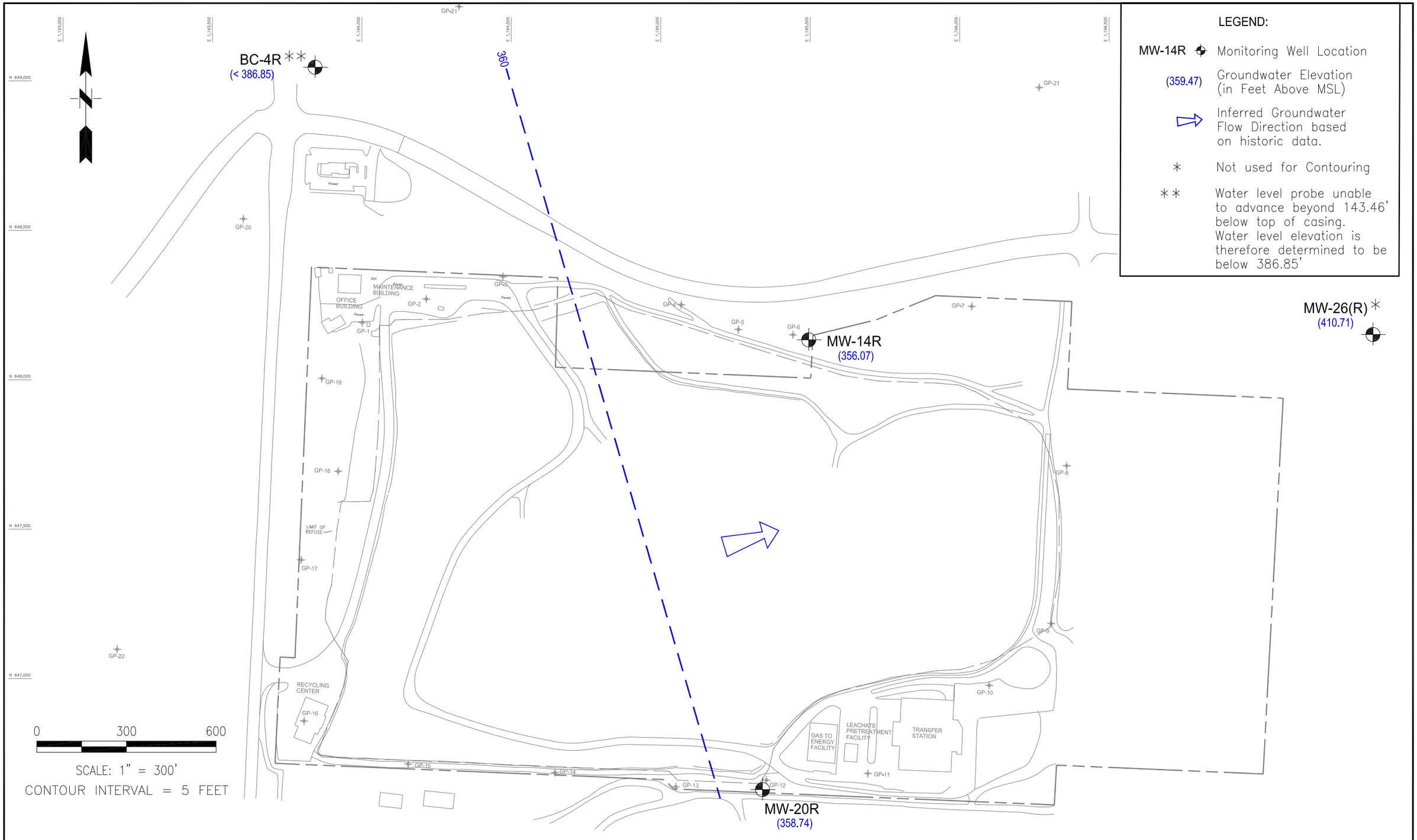


SCS ENGINEERS Environmental Consultants and Contractors 2405 140th Avenue NE, Suite 107 Bellevue, Washington 98005 (425) 746-4600 FAX: (425) 746-6747		PROJECT NO. 04220002.03	DES BY SG	SHALLOW PERCHED AQUIFER WATER LEVEL MAP AUGUST 25, 2020 HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON
		SCALE AS SHOWN	CHK BY KGL	DATE MARCH 2021
		CAD FILE FIGURE 1	APP BY KGL	FIGURE 1



SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04220002.03	DES BY SG	UPPER REGIONAL AQUIFER WATER LEVEL MAP AUGUST 25, 2020	DATE MARCH 2021
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 2
CAD FILE FIGURE 2	APP BY KGL		



SCS ENGINEERS
Environmental Consultants and Contractors
2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005
(425) 746-4600 FAX: (425) 746-6747

PROJECT NO. 04220002.03	DES BY SG	LOWER REGIONAL AQUIFER WATER LEVEL MAP AUGUST 25, 2020	DATE FEBRUARY 2021
SCALE AS SHOWN	CHK BY KGL	HIDDEN VALLEY LANDFILL PIERCE COUNTY, WASHINGTON	FIGURE 3
CAD FILE FIGURE 3	APP BY KGL		

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	TOC ELEV	01/15/88	02/23/88	02/24/88	04/26/88	05/24/88	06/24/88	07/18/88	07/19/88	07/20/88	07/21/88	08/30/88	08/31/88	09/15/88	09/16/88	10/25/88	12/01/88	12/02/88
MW-10S	463.65	427.99	427.49		435.51	436.45	436.11		435.06			432.25		430.78		428.08	433.69	
MW-10D	464.09		425.36		431.46	431.95	392.59		367.17			376.81		426.94		402.14	355.13	
MW-11S	520.03			DRY	425.79	426.18	425.77				424.54					DRY		424.29
MW-11D	520.10			421.19	425.61	425.97					424.33		421.72	420.74		419.81		
MW-11D(2)	519.53																	
MW-12S	493.41		DRY		430.70	DRY				426.74						DRY		
MW-12D	493.49	419.44	420.09		423.68	424.91	425.17			423.32			421.11	420.34		419.18		422.21
MW-13S	452.26			425.74	428.20	428.68	428.16			426.35			424.31		423.78	422.97	425.86	
MW-13D	450.19	420.14		419.37	423.79	424.16				422.53						418.84		
MW-14S	481.30		DRY		430.41	430.68	430.30	428.90					426.40	425.74		DRY	428.70	
MW-14D	481.39	421.74	422.74		427.75	427.06	427.31	426.19					423.86	423.24		421.71	424.80	
MW-14R	480.26				366.46	366.73		365.84								363.73		
MW-15S	506.78				434.88			433.45								429.85		
MW-15D	509.09				433.89			432.30								427.97		
MW-16S	480.27				427.52				425.92							421.67		
MW-16D	480.73				425.67				423.45							419.52		
MW-17S	555.97				425.63					424.67						419.84		
MW-18S	541.43				408.30						407.39	405.64			405.06	404.71		406.31
MW-18D	541.79				409.22						408.40					405.70		
MW-19S	489.23				433.87				432.93							430.71		
MW-19D	489.35				426.18				423.41							419.75		
MW-20R	472.90				364.52				375.01							372.19		
MW-22U	549.17																	
MW-22L	548.95																	
MW-23S	448.34																	
MW-23D	448.25																	
MW-25S	527.80																	
MW-25D	527.52																	
MW-26R	485.40																	
MW-27S	531.81																	
MW-27D	531.92																	
MW-28S	466.87																	
MW-29S	450.65																	
BC-4S	530.25			402.57	404.81								402.65			401.39		
BC-4R	530.31			369.76	372.49							370.56				369.53		
FMMW-1	546.03																	
FMMW-2	539.96																	

Notes: Water level elevations have been recalculated based on the most recent TOC survey data from 5/23/2018
Before June 1996 well elevations were: MW-11s 501.48; MW-11d 501.45; MW-15s 490.53; MW-15d 490.61
Between June 1996 and March 2001 well elevations were: MW-11s 512.13; MW-11d 512.06
Before October 30, 1999 well elevations were: MW-27s 531.81; MW-27d 531.92
Before January 21, 2000 well elevations were: MW-10s 455.45; MW-10d 456.19
Before May 18, 2001 well elevations were: MW-23s 449.92; MW-23d 449.96
Before September 2000, well elevations were: BC-4S 524.35; BC-4R 524.46
Before November 19, 2004 well elevations were: MW-25S 526.54; MW-25D 526.66
Before August 2005 well elevations were: MW-18S 546.88; MW-18D 546.01, new elevations are field measurements, not survey results
MW-23S, MW-23D, MW-25S, MW-25D, MW-27S, MW-27D and MW-28S were abandoned in 2017. Subsequent data cells marked with "N/A".
* = The well casing was blocked and SCS was unable to measure DTW at this location.
-- = Water level measurements are no longer taken at MW-16S and MW-16D
Dry = Well dry and therefore no WLE was calculated

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	12/22/88	01/24/89	03/02/89	03/04/89	03/15/89	03/16/89	04/25/89	05/25/89	06/29/89	06/30/89	07/17/89	07/18/89	07/19/89	09/05/89	10/04/89	10/25/89	10/26/89	10/27/89
MW-10S	433.08	436.08	437.65			439.78	444.69	442.91	439.43		437.98			434.41	431.97	430.18		
MW-10D	402.27	411.63	433.30			435.47	439.85	437.76	378.37		433.58			429.64	427.73	426.55		
MW-11S		426.22		427.72	429.47		433.99	432.61	429.97			428.69		424.26	DRY		DRY	
MW-11D	423.94	426.01					432.89					428.44			422.09		420.66	
MW-11D(2)																		
MW-12S		429.12			432.40		435.70			426.49			430.70	DRY	DRY		DRY	
MW-12D	422.64	424.81	426.19		428.15		432.31	430.73					426.59	422.79	421.18		420.19	
MW-13S	425.31	426.79	427.60		429.80		433.86	432.25		429.86		428.93		425.85	424.80		423.97	
MW-13D		424.01					431.35					425.74						419.47
MW-14S	428.52	430.77		432.55		435.12	440.67	438.50	427.68		433.31			428.31	426.46	DRY		
MW-14D	425.37	427.88		428.99		431.50	435.81	434.01			429.72					422.88		
MW-14R		366.28					372.16					364.64				364.72		
MW-15S		435.45			439.55		444.45			438.70	433.20			432.70	430.99		429.87	
MW-15D		434.02					442.04				440.28						429.04	
MW-16S		427.90					439.37					431.22				422.35		
MW-16D		425.63					433.43					427.26				420.66		
MW-17S		426.57			430.41		434.25			430.41		428.32		424.52	422.55		421.10	
MW-18S	407.54	409.61	410.66		411.67		415.44	414.91		412.76			411.65	409.71	407.44			406.72
MW-18D		409.45					415.40						411.27					406.52
MW-19S		436.49					440.89					435.90						430.30
MW-19D		425.40					432.12					427.43						421.47
MW-20R		374.97					381.08						368.86				372.97	
MW-22U																		
MW-22L																		
MW-23S																		
MW-23D																		
MW-25S																		
MW-25D																		
MW-26R																		
MW-27S																		
MW-27D																		
MW-28S																		
MW-29S																		
BC-4S		405.40					410.52						406.99					402.69
BC-4R		372.43					378.09						373.42					370.77
FMMW-1																		
FMMW-2																		

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	11/15/89	12/18/89	01/03/90	01/15/90	01/24/90	01/29/90	02/12/90	02/27/90	03/12/90	03/26/90	04/09/90	04/25/90	05/07/90	05/21/90	06/04/90	06/18/90	07/02/90	07/24/90
MW-10S	431.26	433.16	432.26	438.75		441.97	445.00	446.08	446.31	445.70	444.75	443.92	443.16	441.82	441.60	428.93	440.13	438.59
MW-10D						437.98				440.70		438.94		437.09		436.54		434.42
MW-11S	DRY	424.47	423.74	429.85		431.41	434.50	435.19	434.84	434.48	433.69	432.93	432.37	431.41	430.86	431.12	430.41	429.03
MW-11D						431.12						432.74						428.71
MW-11D(2)																		
MW-12S	DRY	DRY	DRY	432.03	432.47	434.06	436.63	436.56	436.49	436.21	435.43	434.69	434.37	433.42	433.16	433.26	432.36	429.79
MW-12D						430.27						431.76						427.49
MW-13S	424.84	425.82	425.20	431.30	431.35	432.74	435.61	436.05	435.88	435.26	434.52	433.96	433.13	432.79	432.66	432.52	431.72	430.31
MW-13D						429.55						431.67						426.69
MW-14S	426.60	428.64	428.30	435.36	437.46	438.16	441.65	442.87	442.85	442.05	440.82	439.77	438.86	437.36	436.35	436.89	435.77	434.06
MW-14D						434.36						435.09						430.58
MW-14R						369.69						370.84						359.37
MW-15S	430.87	433.52	432.92	439.33		441.55	444.99	446.09	445.75	445.29	444.27	443.34	440.67	441.40	440.78	441.07	440.06	438.31
MW-15D						439.68						441.13						436.56
MW-16S						436.38						433.05						427.06
MW-16D						431.37						432.43						428.09
MW-17S	420.88	423.72	424.11	435.97	430.63	431.91	434.87	435.24	435.00	434.62	433.92	433.20	432.87	431.99	431.43	431.68	430.95	429.57
MW-18S	406.20	408.28	408.21	410.13	411.08	413.05	415.35		417.08	415.99	415.40	414.93	414.76	415.23	413.51	DRY	412.89	411.58
MW-18D	406.58	408.06	407.80	411.82		413.51	415.87	417.18	416.45	416.64	416.10	415.27	414.92	414.15	413.38	413.49	413.00	411.60
MW-19S						440.26						440.23						436.63
MW-19D						431.91						432.10						428.23
MW-20R						378.07						378.69						363.88
MW-22U	DRY	DRY	DRY	DRY		DRY	412.95	413.80	413.48	413.64	413.29	412.72	412.22	412.00	411.97	DRY	411.97	411.72
MW-22L	403.71	405.26	415.09	408.07	408.95	410.00	412.41	413.72	413.53	413.48	412.86	412.13	411.63	410.89	410.09		409.83	408.31
MW-23S						432.63						432.47						429.61
MW-23D						427.92						428.61						424.96
MW-25S						404.32						407.69						402.12
MW-25D						407.37						410.27						405.81
MW-26R																		
MW-27S																		
MW-27D																		
MW-28S																		
MW-29S																		
BC-4S						408.09						410.27						407.19
BC-4R						375.40						378.36						372.06
FMMW-1																		
FMMW-2																		

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	09/04/90	10/01/90	10/22/90	11/26/90	12/17/90	01/29/91	02/25/91	03/26/91	04/29/91	06/28/91	07/29/91	01/20/92	04/14/92	07/14/92	10/19/92	03/22/93	06/02/93	09/07/93
MW-10S	436.17	428.80	433.53		439.17	440.15	444.80	436.70	447.78	446.84	438.68	432.83	436.97	433.79	DRY	430.85	436.53	433.09
MW-10D	431.39	435.02				437.29			442.81	437.36	434.56	427.69	432.27	428.65	424.38	427.04	432.03	429.14
MW-11S	426.00	424.17	422.26	431.14	430.37	430.17	433.68	434.81	435.71	431.78	429.42	422.87	426.32	423.19	DRY	423.72	420.86	416.65
MW-11D		423.92				431.15			435.59		429.14	422.51	426.17	423.14	418.40	423.64	420.67	416.54
MW-11D(2)																		
MW-12S				429.56	432.71	432.50	434.23	436.28	433.82	433.55	431.51	DRY	428.20	DRY	420.20	DRY	428.81	
MW-12D	424.53		421.83			430.54			435.37		427.75	420.98	424.69	421.69	417.89	420.99	424.36	421.85
MW-13S	428.13	427.11	426.90	432.48	431.58	433.78	435.88	427.04	437.99	434.28	432.08	422.68	425.92	422.65	419.36	421.21	425.53	423.10
MW-13D		422.38				427.89			434.54		427.32	420.04	423.65	420.40	417.03	418.81	423.27	420.83
MW-14S	430.42	428.38	427.82		435.80	423.70	450.65	442.30	443.74	437.77	434.36	427.40	431.92	427.62	DRY	426.78	431.72	427.51
MW-14D		425.55				436.69			439.25	433.66	430.74	423.86	428.14	424.30	420.96	423.18	427.96	425.05
MW-14R		363.08				370.91			373.66		361.62	364.60	364.86	358.84	360.16	362.71	362.30	358.60
MW-15S	434.98					441.09			446.38		438.90	431.90	435.92	432.28	428.17	431.18	435.83	
MW-15D						439.86			445.39		436.94	429.68	434.16	430.27	427.00	429.23	433.97	431.16
MW-16S						434.89												
MW-16D				405.49		431.36												
MW-17S	426.39	424.45				431.78			435.41		430.09	422.87	426.60	414.25	418.39	422.29	426.97	423.71
MW-18S	409.74	408.54	407.49		412.41		414.91	406.79	416.45	414.35	412.49	DRY	DRY	DRY	405.65	407.73	410.17	407.86
MW-18D	409.50	408.20							418.17	414.57	412.38	407.40	409.40		405.10	406.55	409.25	407.36
MW-19S									441.19		439.72	430.81	433.21	429.48	426.94	430.33	433.11	429.57
MW-19D									435.06		427.93	419.81	424.24	420.27	417.06	419.08	422.80	424.91
MW-20R		369.09				379.40			380.21		365.60	375.48	370.85	362.62	366.69	368.84	369.37	365.39
MW-22U	406.57								405.03		412.08	411.93	411.91	411.93	411.88	411.84	411.83	412.14
MW-22L	406.35					DRY			414.00		409.21	404.77	406.38	404.59	402.60	403.90	406.22	404.37
MW-23S		426.73				431.73			429.94		430.28	426.11	427.38	425.59	422.09	426.54	427.46	425.22
MW-23D						428.00			431.86		425.43	419.36	422.39	419.50	416.24	419.16	422.21	419.55
MW-25S		399.24				404.54			412.34		403.25	399.17	399.99	398.66	397.72	398.29	400.04	398.53
MW-25D						406.91			414.08		406.76	401.69	403.37	401.33	399.65	400.76	403.36	401.38
MW-26R												422.00	425.83	422.23	418.86	420.86	422.78	421.87
MW-27S												418.61	423.23	418.89	416.24	417.80	423.19	418.84
MW-27D												419.12	423.47	419.53	416.07	418.44	423.34	419.84
MW-28S																		
MW-29S																		
BC-4S									412.92			404.26	405.62		401.42	403.22	405.48	403.55
BC-4R									369.92			371.19	372.58		367.63	369.43	370.85	367.88
FMMW-1																		
FMMW-2																		

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	12/07/93	03/14/94	06/07/94	09/19/94	12/05/94	03/18/95	06/19/95	09/19/95	12/13/95	03/19/96	06/12/96	09/03/96	12/10/96	12/11/96	03/25/97	06/09/97	09/08/97	12/15/97
MW-10S	428.36	431.34	431.20	DRY	429.46	441.64	438.30	431.80	436.63	447.59	444.28	437.45		439.64	449.09	442.97	436.79	435.67
MW-10D	425.87	428.13	427.47	423.19	425.96	439.10	434.93	427.99	434.00	443.71	440.91	433.94		437.40	445.78	439.58	433.06	430.81
MW-11S	413.86	418.23	415.97	410.81	418.15	425.46	422.10	416.95	423.30	425.09	433.07	418.00	421.34		426.98	422.22	415.98	416.46
MW-11D	413.73	418.04	415.82	410.72	417.88	425.31	421.97	416.80	423.04	424.99	432.96	417.86	420.13		426.88	422.05	416.82	416.32
MW-11D(2)																		
MW-12S						433.68					434.71	429.84			437.34			
MW-12D	419.07	421.66	420.32	416.75	420.01	431.55					433.34	426.50			437.39			
MW-13S		422.94	421.57	417.93	421.36	432.58	428.50	422.16	428.51	436.95	434.49	427.68	431.04		438.43	432.99	427.01	425.97
MW-13D	418.06	420.63	419.29	415.67	419.11	430.31	426.23	419.83	426.15	434.60	432.21	425.37	428.74		436.15	430.68	424.67	423.64
MW-14S	426.08	428.35	427.13	DRY	427.58	438.29	434.01	427.21	433.13	443.69	440.55	432.84	436.27		444.90	439.06	431.67	430.40
MW-14D	422.15	424.83	423.61	419.92	422.81	435.55	431.09	424.20	430.69	440.23	437.81	430.29	433.90		442.24	436.05	429.20	427.72
MW-14R	361.51	362.38	361.06	357.66	360.04	369.03				373.23					375.79	372.77		
MW-15S	429.53	432.99	431.53	427.68	431.88	441.83					435.80	437.13			443.20			
MW-15D	428.24	430.93	429.70	425.96	429.06	441.57					435.82	436.07			437.95			
MW-16S																		
MW-16D																		
MW-17S	419.98	424.98	422.77	417.32	423.64	432.07	429.51	424.07	429.79	435.17	433.27	428.57	431.06		435.77	432.27	427.54	443.32
MW-18S	406.42	409.63	408.23	406.13	408.77	414.75					DRY	411.34			417.05		Dry	Dry
MW-18D	405.61	407.57	406.75	404.65	406.57	414.93	411.50	407.06	411.03	418.79	416.81	411.26		413.20	420.04	415.78	410.33	419.67
MW-19S	427.31	430.70	429.14	425.62	430.65	438.17					439.08	433.57			442.25			
MW-19D	421.33	421.95	427.06	415.64	419.40	433.82					434.31	425.87			438.09			
MW-20R	368.45	368.69	367.69	362.64	367.32	377.03				380.52					378.13			
MW-22U	411.88	411.89	411.88	411.82	411.79	412.33					413.54	408.28			414.90			
MW-22L	402.97	404.85	404.08	402.33	403.97	411.50					412.76	411.66			416.49		407.10	
MW-23S	423.01	426.11	424.79	420.91	426.02	430.94	427.78	424.75	429.37	433.76	431.80	427.50		427.10	434.60	431.35	427.15	427.01
MW-23D	417.14	419.74	418.50	414.73	418.86	427.76					429.71	423.78			433.41		423.11	422.29
MW-25S	397.87	399.47	397.06	397.58	399.71	407.39			401.96		410.74	402.43			415.13		401.39	
MW-25D	399.88	401.89	400.91	399.23	401.32	409.70	405.91	401.29	405.30		412.72	404.96			416.69	411.61	404.92	403.70
MW-26R	419.26	422.32	420.88	417.12	420.20	432.36				437.94					440.28			
MW-27S	416.44	419.39	417.93	415.62	417.69	430.84					433.34	426.05			436.35			
MW-27D	416.84	419.92	418.69	415.20	417.89	430.78					433.07	425.86			437.98			
MW-28S																		
MW-29S																		
BC-4S	401.78	404.02	403.19	401.20	403.03	409.91					411.41	406.50			414.11			
BC-4R	363.21	369.45	368.53	366.36	367.47	376.58					379.59	371.70			383.77			
FMMW-1																		
FMMW-2																		

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	03/16/98	06/24/98	09/16/98	12/21/98	04/09/99	06/07/99	09/13/99	12/13/99	03/15/00	06/09/00	09/12/00	01/18/01	03/22/01	04/19/01	07/12/01	10/23/01	01/18/02	04/25/02
MW-10S	440.78	437.25	431.48	437.27	445.95	440.31	435.19	434.31		440.42	435.67	432.45	431.01	425.45	431.63	423.52	439.17	442.23
MW-10D	437.93	433.36	427.15	435.30	442.33	437.10	430.29	434.84	440.17	436.95	430.43	427.59	427.74	428.48	427.12	423.01	436.72	439.20
MW-11S	421.38	417.61	412.58	419.42	424.49	420.04	415.65	419.32	426.93	430.10	425.18	423.31	422.18	423.76	421.93	417.39	430.10	432.17
MW-11D	421.15	417.45	412.44	419.28	424.37	419.89	414.90	418.47	426.93	429.89	425.04		422.04	423.61	421.81	417.27	430.09	431.83
MW-11D(2)										429.56	423.62	420.78	420.74	421.20	419.95	416.88	429.34	431.79
MW-12S		429.29			435.33	431.44		430.79	434.01	431.25	426.60	425.03	422.96	425.45	423.41	420.29	431.59	433.23
MW-12D		425.59			434.42	429.79	422.90	427.02	431.88	429.10	422.96	421.40	420.59	420.86	419.64	416.44	429.00	431.22
MW-13S	431.71	427.02	421.48	429.57	435.58	430.64	424.91	428.75	433.31	430.57	424.79	424.61	422.47	422.62	421.31	418.10	430.75	433.31
MW-13D	429.34	424.95	419.15	427.22	433.26	428.29	422.33	426.31	431.85	428.27	422.28	420.49	419.90	420.14	418.87	415.61	428.24	430.53
MW-14S	437.04	432.10	426.30	433.69	441.91	435.91	429.07	434.18	439.91	435.75	429.25	427.50	426.42	427.71	426.08	421.59	434.95	438.12
MW-14D	434.40	429.59	423.29	432.17	438.94	434.07	425.40	431.11	436.38	433.32	426.41	423.89	423.79	424.29	422.99	419.77	432.94	435.47
MW-14R	372.26	369.06		367.76	377.41	370.78	360.18	366.72	373.26	369.79	363.33	363.66	355.02	354.67	347.91	349.36	356.05	360.45
MW-15S		432.05			440.66		429.24		438.60	435.06	429.30	427.51	426.67	427.73	426.51	422.67	434.67	437.38
MW-15D		525.26			434.75		422.30		432.11									
MW-16S																		
MW-16D																		
MW-17S	431.32	428.09	422.98	429.24	433.80	430.05	425.35	429.33	431.15	429.69	425.37	423.40	422.04	423.42	422.02	416.65	430.07	431.67
MW-18S	413.60	410.54		411.66	415.75	Dry	Dry	411.57	414.46	412.01	408.68	407.31	406.81	407.32	406.76	405.96	412.66	415.75
MW-18D	413.87	410.23	406.46	411.19	417.79	413.48	408.16	410.66	414.97	412.70	402.50	406.50	406.15	406.54	405.88	404.23	412.10	413.09
MW-19S		433.09			439.81		430.75		438.94	435.83	430.90	430.18	428.56	430.05	429.11	425.58	436.50	437.98
MW-19D		424.16			434.11		422.40		432.29	429.88	422.20		422.66	420.01	421.57	415.96	431.30	430.96
MW-20R	378.75	372.68			381.44				381.10	375.78	370.29	369.65	362.53	361.24	352.45	356.57	364.32	366.91
MW-22U		411.85		411.80	413.46	411.87	411.99	411.77	412.12	411.74	411.90		418.36		411.77	411.76	411.83	411.96
MW-22L		407.00		407.54	414.42	410.03	405.15	407.23	411.50	409.30	405.12		403.23	405.73	403.00	401.82	408.55	411.22
MW-23S	430.92	427.28	424.07	428.77	432.50	427.83	426.17	429.15	431.62	428.74	426.10	425.11	424.28	424.38	424.02	420.01	429.36	430.66
MW-23D	427.46	423.22		425.09		425.35			428.71	426.04	420.98		418.31	418.24	417.24	414.80	425.84	428.05
MW-25S		401.46		403.13	412.72	406.26	399.65	402.07	408.62	405.62	399.66	399.04	398.49	399.12	398.45	397.69	403.93	408.25
MW-25D	408.83	404.80	401.02	405.80	414.14	408.78	402.74	405.09	410.31	408.06	402.82		399.04	401.61	400.66	399.30	406.84	410.29
MW-26R	432.28			429.90	437.08				434.06	431.10	424.12	421.55	421.99	422.69	420.95	417.75	429.98	432.67
MW-27S		425.22			435.18				431.83	429.31	421.77		417.86	418.95	417.81	415.59	427.92	431.41
MW-27D		425.02			434.74				431.95	428.99	422.76		418.61	419.53	418.49	415.18	428.07	431.16
MW-28S										427.07	423.74						427.42	428.56
MW-29S																		
BC-4S		405.49		406.29							403.69		401.45	401.93	401.47	400.20	407.13	409.31
BC-4R		374.77		373.33							371.04		367.95	368.07	364.84	363.38	370.31	374.56
FMMW-1									407.92	405.10	400.56	398.73	398.55	398.58	398.47	397.64	403.73	407.47
FMMW-2									408.76	406.32	402.23	400.31	399.91	400.06	401.36	398.86	404.44	408.36

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	07/25/02	10/24/02	01/30/03	04/24/03	07/24/03	10/30/03	01/22/04	04/15/04	06/29/04	10/21/04	01/27/05	02/23/05	04/21/05	07/22/05	10/17/05	01/18/06	04/14/06	08/08/06
MW-10S	436.36	428.62	434.14	437.02	432.12	430.00	436.15	436.45	427.28	429.79	435.10		436.46	434.32	429.41	444.27	441.85	435.00
MW-10D	432.24	426.28	430.90	434.22	427.80	426.68	432.72	433.60	425.35	426.94	431.09		432.97	429.89	426.03	440.71	439.08	430.14
MW-11S	426.78	420.53	428.84	428.03	422.55	421.79	427.33	427.08	420.71	421.04	425.46		426.52	424.67	420.06	433.68	436.78	424.48
MW-11D	426.64	420.42	428.52	427.87	422.42	421.65	427.21	426.96			425.30		426.39	424.52	419.94	433.49	431.63	424.31
MW-11D(2)	425.18	418.99	424.21	426.49	420.52	419.89	425.73	426.53	418.92	419.64	423.73		425.50	423.03	418.94	432.78	431.98	423.00
MW-12S	428.31	421.60	427.04	429.03	423.70	422.20	428.57	430.59	421.86	422.26				426.10			432.97	425.79
MW-12D	424.74	419.39	423.79	426.11	420.21	419.65	425.21	426.18	418.64	419.23	423.64		425.18	422.61	418.71	432.21	431.33	422.49
MW-13S	427.32	421.47	425.91	427.95	422.13	421.67	427.09	427.90	420.05	421.03	425.31		426.81	424.09	420.26	433.60	432.49	423.56
MW-13D	424.31	418.43	424.83	426.44	419.37	419.06	424.52	425.45	417.54	418.56	422.89		424.45	421.74	417.90	431.29	430.22	421.17
MW-14S	430.93	424.61	430.26	432.49	426.20	426.05	431.21	431.37	424.80	426.11	429.13		430.61	428.35	424.54	440.16	438.40	428.34
MW-14D	428.36	422.06	426.69	429.99	423.64	423.07	429.00	426.58	421.87	423.18	427.02		428.78	426.05	422.06	436.34	435.52	426.06
MW-14R	351.96	353.91	355.58	359.54	350.75	355.08	358.99	361.73	351.70	356.38	359.06		363.06	357.84	357.48	363.43	368.93	354.35
MW-15S	431.04	424.71	429.65	432.01	426.45	426.06	431.16	431.42	424.61	425.36	429.20		430.68	428.55	424.52	438.93	437.03	428.45
MW-15D						421.96	427.82	435.91	427.84	429.30	425.98		427.70	424.99	428.06	435.20	434.37	424.99
MW-16S																		
MW-16D																		
MW-17S	426.99	420.72	425.82	427.66	422.66	421.41	427.12	427.16	420.54	420.09	425.40		426.31	424.73	419.85	433.02	431.26	424.50
MW-18S	409.91	406.09	408.46	410.59	406.96	406.48	410.32	410.37	406.55	406.30		408.71	409.30	408.77		406.65	413.69	408.66
MW-18D	409.59	405.40	407.86	410.22	406.37	405.75	409.47	410.12	405.59	405.65		407.66	408.89	407.74		408.59	415.38	408.36
MW-19S	432.27	426.67	432.01	433.63	428.20	428.66	433.43	433.46	426.37	427.51			433.20	430.65	426.66	440.41	437.51	430.22
MW-19D	424.14	421.14	426.65	426.35	420.05	419.38	425.40	429.24	420.90	420.51	427.08		428.40	423.04	419.84	434.97	432.75	421.86
MW-20R	356.37	359.61	360.63	365.21	354.47	360.08	365.13	367.55	355.13	362.77	364.70		370.57	368.57	363.35	368.45	375.02	356.82
MW-22U	411.88	411.85	411.83	411.83	411.83	411.79	411.80	411.80	411.76	411.78			411.73	411.70	411.67	412.56	411.93	411.91
MW-22L	406.28	402.64	404.48	406.85	403.30	402.91	406.07	401.68	402.77	402.72			405.32	404.56	402.55	411.24	411.55	404.83
MW-23S	426.72	421.88	426.86	427.36	423.52	423.38	427.33	426.98	421.90	423.12	426.42		427.22	426.81		434.54	431.58	426.99
MW-23D	422.13	417.02	421.05	423.50	418.02	417.75	422.92	423.21	416.77	417.47	420.82		422.38	421.50		431.53	429.77	421.75
MW-25S	401.21	397.96	400.43	401.87	398.56	398.62	401.25	401.40			400.23		400.86	398.32	396.69	407.84	407.33	398.24
MW-25D	404.55	400.28	402.89	405.11	401.15	400.71	404.54	404.80			401.62		402.57	400.62	398.08	408.45	408.77	400.76
MW-26R	425.45	419.58	424.06	427.10	420.61	419.98	425.63	426.18	418.09	419.08	423.19		424.52	421.75	417.85	431.23	430.74	421.10
MW-27S	424.01	416.90	421.45	425.44	418.43	417.81	424.31	424.72	416.86	417.50	421.54		423.09	421.01	416.89	431.74	431.41	421.17
MW-27D	424.05	417.41	421.92	425.55	419.02	418.27	424.47	425.08	417.15	418.02	422.11		423.70	421.51	417.15	431.58	431.22	421.57
MW-28S	424.95	422.18		425.82	422.21		424.25	425.50			421.63		423.30			430.34	428.30	423.12
MW-29S																		
BC-4S	404.61	400.65	402.68	405.28	401.47	401.10	404.44	403.99	400.77	400.63	402.62		403.22	403.20	400.60	409.55	409.78	403.19
BC-4R	368.66	366.63	367.72	371.20	365.66	366.17	369.82	372.04	365.20	365.88	368.95		370.99	369.51	366.70	373.71	377.99	368.21
FMMW-1	401.78	398.13	398.73	402.24	398.64	397.93	400.72	402.36	398.28	398.71	402.32		399.21	399.73	397.98	406.40	408.16	399.81
FMMW-2	403.02	399.45	400.31	403.76	400.21	399.26	402.38	403.85	399.63	399.17	400.25		401.03	401.85	399.35	407.58	408.85	401.85

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	10/26/06	01/18/07	04/26/07	07/19/07	10/11/07	01/24/08	04/17/08	07/10/08	10/23/08	01/12/09	04/16/09	07/09/09	10/29/09	01/28/10	04/08/10	07/15/10	10/14/10	01/06/11
MW-10S	430.65	445.84	441.84	436.42	434.09	438.52	439.06	435.30	427.47	439.23	439.29	436.11	431.99	439.51	440.01	438.29		
MW-10D	426.93	442.71	440.22	432.35	429.07	435.33	436.09	430.75	425.34	435.82	436.77	432.37	427.71	436.80	438.48	435.20	435.20	436.53
MW-11S	420.35	434.55	432.19	426.15	422.82	428.96	429.15	424.76	419.60	430.66	429.49	426.04	422.29	425.43	429.99	428.23	423.92	429.58
MW-11D	420.26	434.82	432.17	426.01	422.69	429.12	428.99	424.64	419.47	430.50	429.37	425.91	422.17	429.43	429.83	428.52	423.78	429.11
MW-11D(2)	419.75	435.30	433.01	425.14	421.51	428.15	428.91	423.73	418.67	428.94	429.62	425.34	420.91	429.12	429.91	427.95	422.26	429.12
MW-12S	420.98	435.58	433.23	427.50		429.92	430.25	425.31		431.79	430.56			429.59	431.04	451.41		430.30
MW-12D	419.45	434.39	432.19	424.62	420.97	427.20	428.04	422.89	418.35	428.33	428.91	424.88	420.51	428.57	429.75	427.29	421.86	428.50
MW-13S	420.94	435.56	433.30	425.89	422.45	428.39	429.25	423.95	419.79	429.85	430.20	426.04	422.13	430.37	430.58	428.51	423.45	429.52
MW-13D	418.60	433.27	431.02	423.52	420.18	426.21	426.83	421.64	417.44	427.49	427.83	423.72	419.75	427.98	428.17	426.13	420.98	427.46
MW-14S	424.75	441.87	438.87	430.27	427.83	433.49	434.33	428.61		434.77	434.64	430.10	426.97	434.69	435.61	433.28	427.99	434.64
MW-14D	422.76	438.82	436.67	428.35	424.53	431.30	432.18	426.51	421.62	431.64	432.86	428.37	423.72	432.61	433.26	431.32	425.92	432.11
MW-14R	357.85	369.11	367.45	355.73	359.17	363.20	366.05	359.64	357.00	362.03	367.99	359.40	357.76	363.32	366.15	360.15	361.90	363.18
MW-15S	424.76	440.45	437.94	430.25	426.86	433.22	433.94	428.71	423.98	434.51	434.18	430.13	426.53	434.26	434.93	432.81	428.07	434.10
MW-15D	421.67	437.59	435.47	427.28	423.34	430.20	430.59	425.36	420.50	430.68	431.77	427.37	422.64	431.48	432.07	430.04	424.85	431.28
MW-16S																		
MW-16D																		
MW-17S	418.19	433.88	431.56	425.98	421.39	428.05	428.67	424.72		430.02	428.83	425.86	421.78	428.94	429.17	427.67	423.81	428.68
MW-18S	406.66	407.83	405.69	401.26	398.83	411.62	412.01	408.80	406.19	412.64	412.16	409.66	406.78	412.45	412.56	411.17	408.03	412.11
MW-18D	406.02	410.91	409.21	402.82	400.04	411.68	412.48	408.41	405.56	412.15	412.72	409.78	406.62	412.66	413.29	411.92	407.67	412.41
MW-19S	426.73	440.99	437.84	431.44	429.21	434.92	434.86	430.35	426.01	438.07	435.64	431.65	429.13	435.98	436.05	433.72	430.19	435.62
MW-19D	419.91	435.18	434.36	424.07	422.16	429.12	426.49	422.98	420.36	430.23	431.24	427.82	423.51	434.04	435.20	428.82	417.93	429.56
MW-20R	363.82	375.66	373.17	358.22	363.32	366.81	370.42	363.76	360.73	367.37	375.67	364.27	362.02	367.50	370.52	363.31	368.98	368.50
MW-22U	411.92	414.00	412.37	406.46	411.91	411.88	411.93	411.89	411.90	411.88	411.86	411.88	411.87	411.74	411.71	411.80	411.72	411.77
MW-22L	402.81	414.01	412.41	411.72	403.58	407.72	408.72	404.94	402.54	408.27	408.85	406.15	403.30	408.76	409.44	408.07	404.21	408.59
MW-23S	423.52	434.74	432.07	428.03	426.22	428.13	427.94	425.67	421.36	432.59	430.26	427.99	424.66	430.57	427.64	429.01	426.85	428.60
MW-23D	418.56	432.41	430.17	423.10	420.33	424.12	425.12	419.94	415.95	427.22	427.34	423.39	418.20	427.19	430.65	425.72	421.05	425.28
MW-25S	396.69	410.92	408.72	399.75	397.52	402.59	404.10	399.63	397.85	403.98	402.73	399.34	398.60	402.62	403.99	402.02	398.86	403.64
MW-25D	398.27	411.43	409.96	402.42	399.38	404.63	406.01	401.67	398.85	405.31	405.16	402.10	399.77	404.93	406.04	404.43	399.05	400.66
MW-26R	419.62	435.55	432.87	423.86	423.86	426.24	427.52	421.36	416.46	425.40	427.56	422.47	417.58	426.06	426.79		420.03	424.74
MW-27S	417.03	434.62	432.82	423.82	419.02	426.60	428.13	421.57	416.64	426.62	427.87	423.46	418.19	427.68	428.89	426.90	420.24	427.77
MW-27D	417.67	434.38	432.58	424.02	419.79	426.33	427.98	422.01	416.76	426.75	428.09	423.75	418.77	427.73	428.97	426.83	420.75	427.81
MW-28S		430.59	428.57	423.37	422.21	426.60	426.59	422.20		428.75	426.91	423.73		427.12	427.21	426.05	422.12	426.83
MW-29S																		
BC-4S	400.99	412.43	409.27	404.68	401.77	406.16	407.06	403.08	400.54	406.51	406.51	404.51	401.07	407.25	407.78	406.54	402.76	406.84
BC-4R	367.40	378.61	378.85	369.47	368.79	372.50	374.21	369.50	366.23	370.58	374.48	370.17	367.12			371.53		
FMMW-1	398.21	410.93	410.47	402.08	398.60	402.94	404.47	399.89	398.07	401.39	404.20	402.00	398.45	411.88	404.93	403.71	398.97	403.89
FMMW-2	399.52	411.56	409.80	403.38	400.15	404.58	405.94	401.95	399.41	403.08	405.81	403.27	399.92	398.05	406.45	405.32	400.93	405.54

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	04/21/11	07/07/11	10/27/11	01/26/12	04/27/12	07/19/12	10/11/12	01/17/13	04/23/13	07/25/13	10/10/13	01/06/14	04/09/14	07/07/14	10/29/14	01/15/15	04/20/15	07/28/15
MW-10S																		
MW-10D	441.99	438.29	430.48	433.04	438.69	435.288	428.738	436.36	438.09	432.23	433.33	431.84	441.79	435.56	430.11	435.54	436.08	428.64
MW-11S	443.53	430.58	424.03	427.67	430.80	427.895	422.825	429.61	430.48	426.04	427.12	425.22	433.16	428.73	424.18	428.02	428.93	422.84
MW-11D		430.41	423.90	427.46	430.60	427.702	422.702	429.39	431.15	425.90	426.54	425.00	429.95	424.84	419.19	422.65	428.70	422.74
MW-11D(2)	434.73	431.83	423.03	426.03	431.27	427.771	421.641	429.38	430.58	425.10	426.28	423.92	433.89	428.78	422.93	426.58	428.94	421.78
MW-12S	434.21	431.52		428.74	431.74	429.336	427.856	430.61	431.20		433.19		434.91			428.91	430.18	423.89
MW-12D	434.49	430.32	423.03	425.72	430.71	427.566	420.876	428.54	429.68	424.40	426.15	424.48	434.52	428.31	422.59	426.02	428.22	421.19
MW-13S	434.56	431.36	424.72	427.35	431.83	429.185	422.225	429.65	430.71	425.51	427.26	426.06	434.71	428.74	424.39	429.81	429.99	422.56
MW-13D	432.17	428.90	422.32	424.94	430.04	426.69	419.84	427.23	428.44	423.15	424.94	423.59	432.40	426.59	421.99	427.09	427.46	420.19
MW-14S	440.84	436.68	428.10	432.29	436.60	432.818	426.558	434.75	436.19	430.41	431.40	429.25	440.20	434.01	428.64	433.52	434.06	426.59
MW-14D	438.44	434.77	426.13	429.13	434.84	431.59	424.39	432.76	434.39	428.22	429.09	427.49	437.99	432.14	425.94	431.39	432.57	424.64
MW-14R	366.10	366.13	359.81	360.76	366.15	358.954	354.814	362.35	365.14	353.64	359.94	364.62	369.01	358.48	357.45	363.58	367.26	353.71
MW-15S	439.58	436.01	428.26	431.88	435.90	432.59	426.79	434.35	435.67	430.51	432.28	429.28	439.47	433.68	428.35	433.24	433.73	426.76
MW-15D	437.2	434		427.69	433.74	430.59	423.13	431.65	432.69	427.17	428.09	426.83	436.69	431.09	424.84	430.74	431.22	423.52
MW-16S																	480.27	--
MW-16D																	480.73	--
MW-17S	432.474	429.724	423.924	426.83	429.94	427.524	422.974	428.97	429.62	425.87	426.76	424.97	432.14	428.19	423.27	428.32	428.32	422.89
MW-18S	415.396	412.986	408.116	409.86	413.18	410.896	407.716	412.46	412.44	407.58	411.58	409.12	416.43	411.60	407.83	414.83	411.79	407.61
MW-18D	417.46	414.90	407.94	410.13	414.13	411.755	407.375	412.92	413.47	407.74	411.68	409.08	417.47	413.02	407.87	411.39	412.91	407.55
MW-19S	439.15	436.16	430.48	434.77	437.11	432.652	428.832	435.92	436.36	431.90	434.01	431.93	440.32	436.91	430.03	436.81	435.88	428.73
MW-19D	437.87	427.50	428.50	429.82	436.00	432.35	416.63	430.69	435.35		421.32	426.40	439.32	437.32	417.39	434.97	424.45	417.12
MW-20R	367.73	369.97	363.65	363.94	368.94	363.629	356.649	367.05	368.59	354.75	361.65	371.65	372.63	360.95	362.79	368.15	370.70	357.13
MW-22U		411.84	411.83	411.80	411.78	411.838	413.968	411.92	410.77	405.65	418.81	407.67	414.82	410.16	403.62	411.81	411.84	411.84
MW-22L		411.18	404.57	406.30	410.28	408.076	404.056	409.10	409.45	404.32	408.86	404.73	413.40	408.95	402.35	410.29	409.16	404.13
MW-23S	433.36	430.65	427.04	428.54	429.91	427.39	424.23	448.34		426.52	427.77	426.28	427.29	427.45			428.10	424.24
MW-23D	431.53	431.51	421.34	423.14	426.84	423.84	419.35	426.05	426.45	421.45	423.18	422.05	430.98	424.81	420.99	427.52	425.60	419.15
MW-25S	410.32	406.94	397.98	401.60	406.43	403.1	398.56	404.35	405.68	400.97	401.44	399.76	408.85	405.19	399.10	403.28	404.56	398.59
MW-25D	411.06	408.46	400.34	403.42	407.77	405.22	400.45	406.21	407.27	403.32	403.66	402.27	410.54	408.36	401.15	405.15	406.34	400.50
MW-26R		426.90	417.95	419.88	425.70	422	415.4	425.20		418.82	419.09	418.39	427.32	357.75		360.40	361.98	352.63
MW-27S	434.21	430.81	420.43	424.02	430.11	426.56	418.93	428.23	429.31	423.86	422.84	424.21	433.28	429.46	421.79	429.16	428.21	419.19
MW-27D	433.82	430.84	421.07	424.15	430.02	426.79	419.64	428.23	429.02	423.92	424.08	424.12	433.00	428.92	421.85	428.93	428.07	419.91
MW-28S	429.44	427.4	422.19	424.67	427.77	NM	422.07	421.75			424.77						426.37	422.17
MW-29S																		
BC-4S	411.756	409.246	402.646	404.19	408.30	406.246	402.26	407.28	407.45	404.75	406.19	402.82	411.49	408.37	397.25	409.48	407.25	402.05
BC-4R				370.41	375.16	386.882	385.60	372.66	374.31				377.96	389.91		372.61	375.23	390.99
FMMW-1	410.683	407.633	399.073	408.23	406.28	403.673	399.033	404.37	405.73	402.38	400.13	400.41	409.73	405.28	398.81	403.45	404.67	398.88
FMMW-2	411.75	408.31	401.01	394.17	407.21	405.287	400.867	406.027	406.087	403.59	402.14	402.26	410.36	406.46	400.49	405.11	406.14	400.64

Water Level Measurements
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

WELL	10/15/15	01/14/16	04/21/16	07/07/16	10/13/16	01/19/17	07/14/17	01/12/18	08/29/18	01/16/19	08/22/19	01/22/20	08/25/20
MW-10S						438.60	438.38	439.69	*	*	*	*	*
MW-10D	425.87	440.99	441.21	434.09	428.38	435.82	436.39	437.27	429.63	430.33	425.65	431.54	426.29
MW-11S		432.63	432.38	426.81	421.95	428.59	429.09	430.00	423.74	424.78	421.08	425.83	421.58
MW-11D	419.50	432.49	432.23	426.68	421.85	423.87	424.41	429.74	423.39	424.65	419.95	425.72	421.47
MW-11D(2)	419.43	434.08	434.53	426.99	421.38	428.64	429.71	430.21	422.99	423.28	419.56	424.68	420.46
MW-12S	420.36	433.47	433.09	428.11	422.61	429.88	429.69	430.80	425.06	426.01	420.79	427.16	422.47
MW-12D	419.06	433.27	433.08	426.27	421.18	428.03	429.09	429.47	422.28	423.07	418.90	424.27	420.22
MW-13S	420.69	433.86	434.01	427.72	422.19	429.61	429.87	430.92	423.72	424.47	420.54	425.81	420.55
MW-13D	418.51	431.52	431.67	425.14	419.94	427.24	427.51	428.49	421.02	423.99	417.99	423.27	417.88
MW-14S		439.78	439.07	431.41	428.95	435.92	434.23	436.78	427.61	428.50	Dry	426.63	Dry
MW-14D	422.29	437.49	437.96	429.98	424.56	432.11	433.02	433.71	425.62	426.44	422.27	427.67	423.68
MW-14R	356.41	367.43	370.08	361.66	357.41	363.07	361.57	364.23	356.24	359.47	352.16	358.24	356.07
MW-15S	424.13	438.50	438.08	431.26	425.81	432.17	433.77	435.26	427.85	428.58	424.39	429.54	425.66
MW-15D	421.22	436.22	436.74	429.26	423.32	430.06	431.88	432.47	424.48	425.25	421.06	426.44	422.49
MW-16S	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-16D	--	--	--	--	--	--	--	--	--	--	--	--	--
MW-17S	419.36	431.47	431.13	426.26	421.39	427.17	428.07	428.79	423.68	424.51	419.87	425.26	421.57
MW-18S	406.26	414.98	414.43	410.10	407.05	410.91	411.52	412.35	408.14	408.71	406.40	409.63	406.93
MW-18D	405.85	416.58	417.24	411.20	406.88	411.58	413.46	412.99	408.07	408.39	405.77	409.10	406.68
MW-19S	426.51	439.11	437.80	432.26	428.69	434.19	433.55	435.23	432.43	431.23	426.79	433.78	427.82
MW-19D	423.85	429.35	431.52	430.22	425.80	424.01	430.65	433.13	418.74	421.33	421.43	422.69	415.99
MW-20R	360.70	372.00	375.97	364.95	360.42	367.14	364.08	368.60	358.40	362.56	355.04	362.16	358.74
MW-22U	411.85	412.67	412.59	411.88	411.83	411.81	411.85	411.83	411.89	411.81	411.80	411.83	411.83
MW-22L	402.75	412.50	413.46	407.69	403.53	407.67	409.97	409.47	404.66	404.94	402.76	405.61	403.48
MW-23S		431.34	430.21	426.61	423.47	428.87	427.49	N/A	N/A	N/A	N/A	N/A	N/A
MW-23D	416.35	429.00	433.87	423.03	417.92	426.80	426.79	N/A	N/A	N/A	N/A	N/A	N/A
MW-25S	397.52	409.97	411.10	402.60	397.97	402.46	406.00	N/A	N/A	N/A	N/A	N/A	N/A
MW-25D	398.73	410.44	411.85	404.79	399.68	404.88	407.47	N/A	N/A	N/A	N/A	N/A	N/A
MW-26R	354.20	368.00	372.30	398.40	357.60	364.89	362.69	422.28	414.02	414.51	409.60	414.75	410.71
MW-27S	416.61	433.21	433.70	425.59	418.07	427.13	429.09	N/A	N/A	N/A	N/A	N/A	N/A
MW-27D	416.92	433.20	433.70	425.65	419.19	427.19	428.99	N/A	N/A	N/A	N/A	N/A	N/A
MW-28S	422.17	428.97	428.38	423.79	421.70	426.51	426.21	N/A	N/A	N/A	N/A	N/A	N/A
MW-29S								436.75	430.03	430.85	427.30	431.98	428.07
BC-4S	400.65	410.54	416.06	405.55	401.20	405.84	407.63	407.29	402.56	402.88	400.63	403.73	401.24
BC-4R	389.65	376.57		372.19	368.11		373.76	373.86	367.83	369.35	*	368.44	*
FMMW-1	398.01	409.03	409.90	402.92	398.38	402.88	405.85	403.93	399.19	399.06	398.19	399.46	398.42
FMMW-2	399.30	409.77	410.57	404.42	399.83	404.40	406.67	405.66	401.22	400.92	399.52	401.50	399.89

Appendix D

GROUNDWATER MONITORING DATA

Table 2. Water Level Elevations - August 25, 2020
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Location	Well Casing Elevation	Depth to Water (FT)	Water Level Elevation
Shallow Perched Aquifer			
MW-10S	463.65	*	--
MW-11S	520.03	98.45	421.58
MW-12S	493.41	70.94	422.47
MW-13S	452.26	31.71	420.55
MW-14S	481.30	Dry	--
MW-15S	506.78	81.12	425.66
MW-17S	555.97	134.40	421.57
MW-18S	541.43	134.50	406.93
MW-19S	489.23	61.41	427.82
MW-29S	450.65	22.58	428.07
FMMW-1	546.03	147.61	398.42
FMMW-2	539.96	140.07	399.89
BC-4S	530.25	129.01	401.24
Upper Regional Aquifer			
MW-10D	464.09	37.80	426.29
MW-11D	520.10	98.63	421.47
MW-11D(2)	519.53	99.07	420.46
MW-12D	493.49	73.27	420.22
MW-13D	450.19	32.31	417.88
MW-14D	481.39	57.71	423.68
MW-15D	509.09	86.60	422.49
MW-18D	541.79	135.11	406.68
MW-19D	489.35	73.36	415.99
MW-22U	549.17	137.34	411.83
Lower Regional Aquifer			
MW-14R	480.26	124.19	356.07
MW-20R	472.90	114.16	358.74
MW-22L	548.95	145.47	403.48
MW-26R	485.40	74.69	410.71
BC-4R	530.31	*	--

Updated well casing elevation with survey data from 5/23/2018

* = Depth to water unavailable at this time due to blockage in well

Dry = Monitoring well was dry during the monitoring event

-- = No data available

Table 3. Field Parameters
Semi - Annual Monitoring Event No. 2- August 2020
Hidden Valley Landfill, Pierce County, Washington

Location	Sample Number	Date	Method	pH	Specific Conductivity	Temperature
Units				(SU)	(µS/cm)	(°C)
HVL Cleanup Level				—	700	—
WAC 173-200				6.5-8.5	700[b]	—
Shallow Perched Aquifer						
(BG) MW-10S	HVL-082520-01	8/25/20	DP	**6.40**	298	13.0
MW-11S	HVL-082620-16	8/26/20	DP	**5.97**	422	15.2
MW-12S	HVL-082720-21	8/27/20	DB	**5.90**	272	17.2
MW-13S	HVL-082520-07	8/25/20	DP	**6.01**	270	13.4
MW-14S[1]	—	—	—	—	—	—
MW-15S	HVL-082620-13	8/26/20	DP	**6.22**	333	15.2
MW-17S	HVL-082520-06	8/25/20	DP	**6.20**	499	19.3
MW-18S	HVL-082520-04	8/25/20	DP	**6.01**	389	16.0
MW-29S	HVL-082520-11	8/25/20	DP	**6.33**	308	14.7
FMMW-1	HVL-082620-18	8/26/20	DP	**6.44**	382	17.3
FMMW-2	HVL-082720-19	8/27/20	DP	**5.81**	374	16.9
Upper Regional Aquifer						
(BG) MW-10D	HVL-082520-05	8/25/20	DP	**6.42**	258	13.8
MW-11D(2)	HVL-082620-14	8/26/20	DP	6.82	328	15.5
MW-12D	HVL-082720-20	8/27/20	DP	6.60	321	15.5
MW-13D	HVL-082520-09	8/25/20	DP	**6.23**	302	13.8
MW-14D	HVL-082620-17	8/26/20	DP	**6.26**	262	11.8
MW-15D	HVL-082620-15	8/26/20	DP	6.69	294	14.6
MW-18D	HVL-082520-02	8/25/20	DP	**6.39**	320	15.5
Lower Regional Aquifer						
MW-14R	HVL-082520-08	8/25/20	DP	7.55	196	12.7
MW-20R	HVL-082520-12	8/25/20	DP	7.19	228	11.1
MW-26R	HVL-082520-10	8/25/20	DP	7.25	335	11.5

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**

1 = MW-14S was dry during the monitoring event and therefore no sample was collected

b = Secondary Drinking Water Standard

BG = Background

°C = degrees Celsius

DP = dedicated bladder-pump

DB = disposable bailer

µS/cm = microsiemens per centimeter

— = not analyzed or not applicable

Table 4. Inorganic Parameters
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Location		Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL		10.0	0.1	0.2-1.2	0.2	0.2-1.0	10	1.0	4.0
HVL Cleanup Level		—	—	250	10	250	500	—	—
WAC 173-200 Criteria		—	—	250[b]	10[a]	250[b]	500[b]	—	—
Shallow Perched Aquifer									
(BG)	MW-10S	110	*	7.2	0.87	15	180	1.4	*
	MW-11S	100	*	18	1.3	9.0	200 B	*	*
	MW-12S	110	0.50	12	5.6	5.3	230	1.8	160
	MW-13S	99	*	6.4	*	19	170	*	*
	MW-14S[1]	—	—	—	—	—	—	—	—
	MW-15S	120	3.1	15	0.37	10	210 B	1.7	*
	MW-17S	170	4.2	14	0.88	7.1	250	1.7	*
	MW-18S	120	*	12	1.6	7.9	200	1.1	*
	MW-29S	120	*	10	*	17	200	1.1	*
	FMMW-1	92	*	14	1.2	13	190 B	*	*
	FMMW-2	130	*	15	4.3	8.0	240	1.3	*
Upper Regional Aquifer									
(BG)	MW-10D	120	*	7.1	0.56	15	180	1.2	*
	MW-11D(2)	86	*	5.4	1.8	8.3	150 B	*	6.0
	MW-12D	130	*	8.7	1.2	7.1	210	*	*
	MW-13D	110	*	8.1	*	20	190	*	*
	MW-14D	100	3.4	9.7	*	9.3	180 B	1.6	6.4
	MW-15D	110	*	8.8	0.65	11	210 B	*	*
	MW-18D	92	*	6.7	1.7	7.9	160	*	*
Lower Regional Aquifer									
	MW-14R	50	*	1.6	*	3.8	110	*	*
	MW-20R	48	*	1.6	*	3.2	99	*	*
	MW-26R	87	*	4.7	*	10	130	*	*

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**

Analyses performed by Eurofins TestAmerica in Denver, Colorado

1 = MW-14S was dry during the monitoring event and therefore no sample was collected

B = Compound was found in the blank and the sample

* = not reported at or above the MRL (Method Reporting Limit)

a = Primary Drinking Water Standard

b = Secondary Drinking Water Standard

BG = Background/upgradient wells

mg/L = milligrams per liter

— = not analyzed or not applicable

Table 5. Dissolved Metals
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Location	Iron	Manganese	Calcium	Magnesium	Potassium	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.01	0.001	0.2	0.1	2.0	1.0
HVL Cleanup Level	0.30	0.05	—	—	—	—
WAC 173-200 Criteria	0.30[b]	0.05[b]	—	—	—	—
Shallow Perched Aquifer						
(BG) MW-10S	*	*	34	10	2.0	8.2
MW-11S	*	0.0011	26	7.6	6.4	18
MW-12S	*	**0.45**	27	7.8	12	24
MW-13S	*	0.0017	27	7.6	3.9	15
MW-14S[1]	—	—	—	—	—	—
MW-15S	0.028	**1.2**	27	8.2	10	15
MW-17S	*	**0.84**	33	11	15	25
MW-18S	*	*	28	8.4	9.0	21
MW-29S	0.150	**1.3**	25	7.2	2.8	23
FMMW-1	*	*	21	6.0	3.3	20
FMMW-2	*	0.0029	30	9.8	11	24
Upper Regional Aquifer						
(BG) MW-10D	*	*	35	11	2.1	8.6
MW-11D(2)	*	*	20	8.5	2.3	7.0
MW-12D	*	*	28	11	3.4	20
MW-13D	*	*	29	9.7	3.5	16
MW-14D	**3.59**	**1.4**	19	5.8	7.2	11
MW-15D	*	0.018	25	10	2.9	17
MW-18D	*	*	23	9.1	2.9	11
Lower Regional Aquifer						
MW-14R	0.050	**0.19**	7.8	4.4	*	4.8
MW-20R	*	*	7.8	3.9	2.0	5.3
MW-26R	**0.711**	**0.42**	21	9.1	2.3	6.1

Notes:

Parameter concentrations that are greater than site cleanup levels or WAC 173-200 criteria are shown in **bold**

Analyses performed by Eurofins TestAmerica in Denver, Colorado

1 = MW-14S was dry during the monitoring event and therefore no sample was collected

b = Secondary Drinking Water Standard (concentrations measured as total metals)

BG = Background

mg/L = milligrams per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = not analyzed or not applicable

Table 6. Volatile Organic Compounds
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Location		Tetrachloroethene
Units		µg/L
MRL		0.5
HVL Cleanup Level		—
WAC 173-200 Criteria		0.80
Shallow Perched Aquifer		
(BG)	MW-10S	*
	MW-11S	*
	MW-12S	*
	MW-13S	*
	MW-14S[1]	—
	MW-15S	*
	MW-17S	*
	MW-18S	*
	MW-29S	*
	FMMW-1	*
	FMMW-2	*
Upper Regional Aquifer		
(BG)	MW-10D	*
	MW-11D(2)	**1.2**
	MW-12D	*
	MW-13D	*
	MW-14D	*
	MW-15D	0.51
	MW-18D	*
Lower Regional Aquifer		
	MW-14R	*
	MW-20R	*
	MW-26R	*
Quality Control Samples		
	Field Blank	*
	Trip Blank	*

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**

Analyses performed by Eurofins TestAmerica in Denver, Colorado

Volatile organic compounds not listed were not present at concentrations exeeding the MRL

1 = MW-14S was dry during the monitoring event and therefore no sample was collected

BG = Background

µg/L = micrograms per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = not analyzed or not applicable

Table 7. Duplicate Sample Evaluation
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Parameter	MRL	MW-10S	MW-10S (Duplicate)	RPD (%)
Dissolved Metals (mg/L)				
Calcium	0.2	34	35	2.9
Magnesium	0.1	10	11	9.5
Potassium	2.0	2.0	2.0	0.0
Sodium	1.0	8.2	8.4	2.4
Inorganic Parameters (mg/L)				
Alkalinity	10.0	110	120	8.7
Chloride	0.6	7.2	7.8	8.0
Nitrate	0.2	0.87	0.86	1.2
Sulfate	0.5	15	15	0.0
Total Dissolved Solids	10	180	170	5.7
Total Organic Carbon	1.0	1.4	1.4	0.0

Notes:

Analysis performed by Eurofins TestAmerica in Denver, Colorado

Analytes not listed were not present at concentrations exceeding the MRL

RPD = relative percent difference

µg/L = micrograms per liter

mg/L = milligrams per liter

Table 8. Water Supply Wells
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Parameter	Units	MRL	Corliss	Paul Bunyan
Field Parameters				
pH	SU	—	6.78	6.51
Specific Conductivity	µS/cm	—	261	308
Temperature	°C	—	19.9	13.7
Volatile Organic Compounds				
No Detections	µg/L	0.5	*	*
Metals (total)				
Arsenic	mg/L	0.005	*	*
Iron	mg/L	0.01	*	*
Manganese	mg/L	0.001	0.0011	*
Zinc	mg/L	0.01	*	0.014
Inorganic Parameters				
Ammonia	mg/L	0.1	*	*
Chemical Oxygen Demand	mg/L	10	*	*
Chloride	mg/L	1.2	5.5	6.8
Nitrate	mg/L	0.2	1.4	2.1
Nitrite	mg/L	0.5	*	*
Sulfate	mg/L	0.2	9.8	11
Total Organic Carbon	mg/L	1.0	*	*
Other				
Color	PCU	5.0	*	5.0

Notes:

Analyses performed by Eurofins TestAmerica in Denver, Colorado.

Analytes not listed are VOCs that were not detected above the reporting limit.

Color reported in color units

°C = degrees Celsius

mg/L = milligrams per liter

PCU = platinum-cobalt units

SU = Standard Units

µS/cm = microsiemens per centimeter

µg/L = micrograms per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = Not Applicable

Table 9. Cation-Anion Balance
Semi - Annual Monitoring Event No. 2 - August 2020
Hidden Valley Landfill, Pierce County, Washington

Cations	mg/L					meq/L					% of Total		
	Ca	Mg	K	Na	Total	Ca	Mg	K	Na	Total	Na+K	Ca	Mg
MW-10S	34	10	2.0	8.2	54.20	1.70	0.82	0.05	0.36	2.93	14	58	28
MW-11S	26	7.6	6.4	18	58.00	1.30	0.63	0.16	0.78	2.87	33	45	22
MW-12S	27	7.8	12	24	70.80	1.35	0.64	0.31	1.04	3.34	40	40	19
MW-13S	27	7.6	3.9	15	53.50	1.35	0.63	0.10	0.65	2.73	28	49	23
MW-14S[1]	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-15S	27	8.2	10	15	60.20	1.35	0.67	0.26	0.65	2.93	31	46	23
MW-17S	33	11	15	25	84.00	1.65	0.91	0.38	1.09	4.02	37	41	23
MW-18S	28	8.4	9.0	21	66.40	1.40	0.69	0.23	0.91	3.23	35	43	21
MW-29S	25	7.2	2.8	23	58.00	1.25	0.59	0.07	1.00	2.91	37	43	20
FMMW-1	21	6.0	3.3	20	50.30	1.05	0.49	0.08	0.87	2.50	38	42	20
FMMW-2	30	9.8	11	24	74.80	1.50	0.81	0.28	1.04	3.63	37	41	22
MW-10D	35	11	2.1	8.6	56.70	1.75	0.91	0.05	0.37	3.08	14	57	29
MW-11D(2)	20	8.5	2.3	7.0	37.80	1.00	0.70	0.06	0.30	2.06	18	48	34
MW-12D	28	11	3.4	20	62.40	1.40	0.91	0.09	0.87	3.26	29	43	28
MW-13D	29	9.7	3.5	16	58.20	1.45	0.80	0.09	0.70	3.03	26	48	26
MW-14D	19	5.8	7.2	11	43.00	0.95	0.48	0.18	0.48	2.09	32	45	23
MW-15D	25	10	2.9	17	54.90	1.25	0.82	0.07	0.74	2.88	28	43	29
MW-18D	23	9.1	2.9	11	46.00	1.15	0.75	0.07	0.48	2.45	23	47	31
MW-14R	7.8	4.4	2.0	4.8	19.00	0.39	0.36	0.05	0.21	1.01	26	38	36
MW-20R	7.8	3.9	2.0	5.3	19.00	0.39	0.32	0.05	0.23	0.99	28	39	32
MW-26R	21	9.1	2.3	6.1	38.50	1.05	0.75	0.06	0.27	2.12	15	49	35

Anions	mg/L					meq/L					% of Total			Total Ions (meq/L)	Cation - Anion Balance	Applicable Ratio (%)	Ratio Exceedance
	Alk	Cl	NO_3	SO_4	Total	Alk	Cl	NO_3	SO_4	Total	Cl	Alk	SO_4				
MW-10S	132	7.2	0.87	15	155.07	2.16	0.20	0.01	0.31	2.69	8	80	12	5.62	4.16	5	-
MW-11S	120	18	1.3	9.0	148.30	1.97	0.51	0.02	0.19	2.68	19	73	7	5.55	3.35	5	-
MW-12S	132	12	5.6	5.3	154.90	2.16	0.34	0.09	0.11	2.70	13	80	4	6.04	10.54	5	Exceeds
MW-13S	118.8	6.4	0.2	19	144.40	1.95	0.18	0.00	0.40	2.53	7	77	16	5.25	3.77	5	-
MW-14S[1]	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
MW-15S	144	15	0.37	10	169.37	2.36	0.42	0.01	0.21	3.00	14	79	7	5.93	1.15	5	-
MW-17S	204	14	0.88	7.1	225.98	3.35	0.39	0.01	0.15	3.90	10	86	4	7.93	1.53	5	-
MW-18S	144	12	1.6	7.9	165.50	2.36	0.34	0.03	0.16	2.89	12	82	6	6.12	5.59	5	Exceeds
MW-29S	144	10	0.2	17	171.20	2.36	0.28	0.00	0.35	3.00	9	79	12	5.91	1.49	5	-
FMMW-1	110.4	14	1.2	13	138.60	1.81	0.39	0.02	0.27	2.50	16	73	11	4.99	0.02	10	-
FMMW-2	156	15	4.3	8.0	183.30	2.56	0.42	0.07	0.17	3.22	13	80	5	6.85	6.02	5	Exceeds
MW-10D	144	7.1	0.56	15	166.66	2.36	0.20	0.01	0.31	2.88	7	82	11	5.96	3.30	5	-
MW-11D(2)	103.2	5.4	1.8	8.3	118.70	1.69	0.15	0.03	0.17	2.05	7	83	8	4.11	0.35	10	-
MW-12D	156	8.7	1.2	7.1	173.00	2.56	0.25	0.02	0.15	2.97	8	86	5	6.23	4.64	5	-
MW-13D	132	8.1	0.2	20	160.30	2.16	0.23	0.00	0.42	2.81	8	77	15	5.84	3.74	5	-
MW-14D	120	9.7	0.2	9.3	139.20	1.97	0.27	0.00	0.19	2.44	11	81	8	4.53	7.73	10	-
MW-15D	132	8.8	0.65	11	152.45	2.16	0.25	0.01	0.23	2.65	9	82	9	5.54	4.19	5	-
MW-18D	110.4	6.7	1.7	7.9	126.70	1.81	0.19	0.03	0.16	2.19	9	83	7	4.64	5.56	10	-
MW-14R	60	1.6	0.2	3.8	65.60	0.98	0.05	0.00	0.08	1.11	4	89	7	2.12	4.71	10	-
MW-20R	57.6	1.6	0.2	3.2	62.60	0.94	0.05	0.00	0.07	1.06	4	89	6	2.05	3.30	10	-
MW-26R	104.4	4.7	0.2	10	119.30	1.71	0.13	0.00	0.21	2.06	6	83	10	4.18	1.56	10	-

Notes:
mg/L = milligrams per liter
meq/L = milliequivalents per liter
Total alkalinity concentration, reported as calcium carbonate (CaCO3), is converted to the bicarbonate (HCO3-) ion by multiplying by a factor of 1.2.
Cation / anion balance equation is the equivalent percent difference in cations minus anions divided by the sum of cations and anions [(cations-anions)/(anions+cations)*100].
The MRL was used for analytes that were non-detect
A 10% difference threshold is used if the total cation-anion sums are < 5.0 meq/liter.
A 5% difference threshold is used if the total cation-anion sums are > or = to 5.0 meq/liter.
1 = MW-14S was dry during the monitoring event and therefore no sample was collected
— = Not Applicable

Table 2. Water Level Elevations - January 22, 2020
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Location	Well Casing Elevation	Depth to Water (FT)	Water Level Elevation
Shallow Perched Aquifer			
MW-10S	463.65	*	--
MW-11S	520.03	94.20	425.83
MW-12S	493.41	66.25	427.16
MW-13S	452.26	26.45	425.81
MW-14S	481.30	54.67	426.63
MW-15S	506.78	77.24	429.54
MW-17S	555.97	130.71	425.26
MW-18S	541.43	131.80	409.63
MW-19S	489.23	55.45	433.78
MW-29S	450.65	18.67	431.98
FMMW-1	546.03	146.57	399.46
FMMW-2	539.96	138.46	401.50
BC-4S	530.25	126.52	403.73
Upper Regional Aquifer			
MW-10D	464.09	32.55	431.54
MW-11D	520.10	94.38	425.72
MW-11D(2)	519.53	94.85	424.68
MW-12D	493.49	69.22	424.27
MW-13D	450.19	26.92	423.27
MW-14D	481.39	53.72	427.67
MW-15D	509.09	82.65	426.44
MW-18D	541.79	132.69	409.10
MW-19D	489.35	66.66	422.69
MW-22U	549.17	137.34	411.83
Lower Regional Aquifer			
MW-14R	480.26	122.02	358.24
MW-20R	472.90	110.74	362.16
MW-22L	548.95	143.34	405.61
MW-26R	485.40	70.65	414.75
BC-4R	530.31	161.87	368.44

Updated well casing elevation with survey data from 5/23/2018

* = Depth to water unavailable at this time due to blockage in well

-- = No data available

Table 3. Field Parameters
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Location	Sample Number	Date	Method	pH	Specific Conductivity	Temperature
Units				(SU)	(µS/cm)	(°C)
HVL Cleanup Level				—	700	—
WAC 173-200				6.5-8.5	700[b]	—
Shallow Perched Aquifer						
(BG) MW-10S	HVL-012120-12	1/21/20	DP	**6.38**	269	13.2
MW-11S	HVL-012220-18	1/22/20	DP	**5.94**	244	13.5
MW-12S	HVL-012120-02	1/21/20	DB	**5.59**	296	15.2
MW-13S	HVL-012120-10	1/21/20	DP	**6.12**	210	12.2
MW-14S	HVL-012220-19	1/22/20	DP	**5.90**	113	11.3
MW-15S	HVL-012120-09	1/21/20	DP	**5.73**	362	13.6
MW-17S	HVL-012120-05	1/21/20	DP	**5.89**	478	17.3
MW-18S	HVL-012220-16	1/22/20	DP	**6.28**	383	14.0
MW-29S	HVL-012120-06	1/21/20	DP	**6.41**	283	13.5
FMMW-1	HVL-012120-01	1/21/20	DP	**6.15**	285	13.7
FMMW-2	HVL-012120-03	1/21/20	DP	**5.99**	438	14.7
Upper Regional Aquifer						
(BG) MW-10D	HVL-012220-15	1/22/20	DP	**6.25**	265	12.2
MW-11D(2)	HVL-012220-22	1/22/20	DP	6.86	210	13.2
MW-12D	HVL-012120-04	1/21/20	DP	6.79	330	15.8
MW-13D	HVL-012120-08	1/21/20	DP	**6.49**	280	13.2
MW-14D	HVL-012220-21	1/22/20	DP	**6.24**	219	11.6
MW-15D	HVL-012120-07	1/21/20	DP	**6.47**	309	12.7
MW-18D	HVL-012220-14	1/22/20	DP	6.85	250	14.6
Lower Regional Aquifer						
MW-14R	HVL-012120-11	1/21/20	DP	6.86	104	10.5
MW-20R	HVL-012220-17	1/22/20	DP	6.70	102	9.7
MW-26R	HVL-012320-27	1/23/20	DP	6.77	211	10.6

Notes:

b = Secondary Drinking Water Standard
BG = Background
°C = degrees Celsius
DP = dedicated bladder-pump
DB = disposable bailer
µS/cm = microsiemens per centimeter
— = not analyzed or not applicable

Table 4. Inorganic Parameters
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Location		Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
Units		mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL		5.0	0.1	0.2-0.6	0.2-0.45	0.2-0.5	10	1.0	4.0
HVL Cleanup Level		—	—	250	10	250	500	—	—
WAC 173-200 Criteria		—	—	250[b]	10[a]	250[b]	500[b]	—	—
Shallow Perched Aquifer									
(BG)	MW-10S	100	*	11	1.3	11	160	1.1	*
	MW-11S	62	*	19	3.8	9.1	170	*	*
	MW-12S	22	*	6.5	**22 H**	5.9	240	1.2	*
	MW-13S	64	*	15	1.3	9.5	150	*	*
	MW-14S	41	*	2.7	1.6	5.1	86	1.8	*
	MW-15S	110	3.7	12	9.1	5.6	200	1.4	*
	MW-17S	170	6.0	11	10	5.4	270	1.7	*
	MW-18S	140	*	18	4.9	9.7	230	1.2	*
	MW-29S	110	*	10	0.33	15	180	1.2	*
	FMMW-1	110	*	13	0.90	13	170	*	*
	FMMW-2	120	*	20	**13 H**	8.7	270	1.2	*
Upper Regional Aquifer									
(BG)	MW-10D	110	*	8.9	1.3	11	160	1.0	*
	MW-11D(2)	83	*	5.8	1.8	9.0	140	*	6.4
	MW-12D	160	*	9.4	0.93	6.8	200	*	*
	MW-13D	100	*	13	1.0	12	170	*	*
	MW-14D	89	3.1	6.2	*	7.9	130	2.0	*
	MW-15D	130	*	9.4	0.66	11	180	*	*
	MW-18D	100	*	6.7	1.6	7.8	160	*	*
Lower Regional Aquifer									
	MW-14R	48	*	1.6	*	3.6	100	*	*
	MW-20R	47	*	1.6	*	3.1	93	*	*
	MW-26R	94	0.14	4.6	*	10	130	*	*

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**

Analyses performed by TestAmerica in Denver, Colorado

H = Parameter analyzed outside specified holding time

mg/L = milligrams per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = not analyzed or not applicable

Table 5. Dissolved Metals
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Location	Iron	Manganese	Calcium	Magnesium	Potassium	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.036-0.18	0.001	0.2	0.1	2.0	1.0
HVL Cleanup Level	0.30	0.05	—	—	—	—
WAC 173-200 Criteria	0.30[b]	0.05[b]	—	—	—	—
Shallow Perched Aquifer						
(BG) MW-10S	*	*	31	10	2.3	7.6
MW-11S	*	*	20	6.1	5.2	14
MW-12S	*	0.0089	21	6.2	9.9	16
MW-13S	*	*	19	5.7	3.5	13
MW-14S	*	0.017	9.9	3.2	2.3	5.7
MW-15S	*	**1.2**	27	8.8	11	18
MW-17S	*	**1.2**	33	11	17	26
MW-18S	*	*	32	10	9.9	25
MW-29S	*	**0.61**	24	7.3	3.7	23
FMMW-1	*	*	24	7.1	4.0	23
FMMW-2	*	*	34	11	12	25
Upper Regional Aquifer						
(BG) MW-10D	*	*	30	10	2.1	7.7
MW-11D(2)	*	*	20	9.0	2.4	7.7
MW-12D	*	*	30	12	3.7	19
MW-13D	*	*	27	10	3.5	13
MW-14D	0.24	**1.1**	16	5.1	6.5	10
MW-15D	*	0.028	27	12	3.4	20
MW-18D	*	*	23	9.6	3.1	11
Lower Regional Aquifer						
MW-14R	*	**0.18**	8.3	5.0	2.4	5.1
MW-20R	*	*	7.8	4.2	2.2	5.4
MW-26R	0.14	**0.42**	20	9.1	2.3	6.3

Notes:

Parameter concentrations that are greater than site cleanup levels or WAC 173-200 criteria are shown in **bold**

Analyses performed by TestAmerica in Denver, Colorado

b = Secondary Drinking Water Standard (concentrations measured as total metals)

BG = Background

mg/L = milligrams per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = not analyzed or not applicable

Table 6. Volatile Organic Compounds
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Location		Carbon Disulfide	Tetrachloroethene
Units		µg/L	µg/L
MRL		0.5	0.5
HVL Cleanup Level		—	—
WAC 173-200 Criteria		—	0.80
Shallow Perched Aquifer			
(BG)	MW-10S	*	*
	MW-11S	*	*
	MW-12S	*	*
	MW-13S	*	*
	MW-14S	*	*
	MW-15S	*	*
	MW-17S	*	*
	MW-18S	*	*
	MW-29S	*	*
	FMMW-1	*	*
	FMMW-2	*	*
Upper Regional Aquifer			
(BG)	MW-10D	*	*
	MW-11D(2)	0.57 B	**1.1**
	MW-12D	*	*
	MW-13D	*	*
	MW-14D	0.57 B	*
	MW-15D	*	0.64
	MW-18D	*	*
Lower Regional Aquifer			
	MW-14R	*	*
	MW-20R	*	*
	MW-26R	*	*
Quality Control Samples			
	Field Blank	*	*
	Trip Blank	0.57	*

Notes:

Parameter concentrations that are greater than cleanup levels are shown in **bold**

Analyses performed by TestAmerica in Denver, Colorado

Volatile organic compounds not listed were not present at concentrations exeeding the MRL

B = compound was found in the trip blank and the sample

BG = Background

µg/L = micrograms per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = not analyzed or not applicable

Table 7. Duplicate Sample Evaluation
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Parameter	MRL	MW-11S	MW-11S (Duplicate)	RPD (%)
Dissolved Metals (mg/L)				
Calcium	0.2	20	19	5.1
Magnesium	0.1	6.1	6.1	0.0
Potassium	2.0	5.2	5.2	0.0
Sodium	1.0	14	14	0.0
Inorganic Parameters (mg/L)				
Alkalinity	10.0	62	62	0.0
Chloride	0.6	19	20	5.1
Nitrate	0.2	3.8	3.8	0.0
Sulfate	0.5	9.1	9.1	0.0
Total Dissolved Solids	10	170	160	6.1

Notes:

Analysis performed by TestAmerica, Arvada, Colorado

Analytes not listed were not present at concentrations exceeding the MRL

RPD = relative percent difference

mg/L = milligrams per liter

*= RPD based on result as compared to the Reporting Limit (RL) for a non-detection in the compared sample

Table 8. Water Supply Wells
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Parameter	Units	MRL	Corliss	Paul Bunyan
Field Parameters				
pH	SU	—	6.53	6.38
Specific Conductivity	µS/cm	—	243	285
Temperature	°C	—	8.6	11.0
Volatile Organic Compounds				
Carbon Disulfide	µg/L	0.5	0.57 B	*
Metals (total)				
Arsenic	mg/L	0.005	*	*
Iron	mg/L	0.18	*	*
Manganese	mg/L	0.001	0.0020	0.0011
Zinc	mg/L	0.01	*	0.020
Inorganic Parameters				
Chemical Oxygen Demand	mg/L	8.7	27	*
Chloride	mg/L	0.6	5.7	7.0
Nitrate	mg/L	0.2	1.3	2.3
Sulfate	mg/L	0.5	13	11
Other				
Color	PCU	5.0	5.0	5.0

Notes:

Analyses performed by TestAmerica in Denver, Colorado.

Analytes not listed were not present at concentrations exceeding the MRL.

Color reported in color units

°C = degrees Celsius

B = compound was found in the trip blank and the sample

mg/L = milligrams per liter

PCU = platinum-cobalt units

SU = Standard Units

µS/cm = microsiemens per centimeter

µg/L = micrograms per liter

* = not reported at or above the MRL (Method Reporting Limit)

— = Not Applicable

Table 9. Cation-Anion Balance
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Cations	mg/L					meq/L					% of Total		
	Ca	Mg	K	Na	Total	Ca	Mg	K	Na	Total	Na+K	Ca	Mg
MW-10S	31	10	2.3	7.6	50.90	1.55	0.82	0.06	0.33	2.76	14	56	30
MW-11S	20	6.1	5.2	14	45.30	1.00	0.50	0.13	0.61	2.24	33	45	22
MW-12S	21	6.2	9.9	16	53.10	1.05	0.51	0.25	0.70	2.51	38	42	20
MW-13S	19	5.7	3.5	13	41.20	0.95	0.47	0.09	0.57	2.07	32	46	23
MW-14S	9.9	3.2	2.3	5.7	21.10	0.49	0.26	0.06	0.25	1.06	29	46	25
MW-15S	27	8.8	11	18	64.80	1.35	0.72	0.28	0.78	3.14	34	43	23
MW-17S	33	11	17	26	87.00	1.65	0.91	0.44	1.13	4.12	38	40	22
MW-18S	32	10	9.9	25	76.90	1.60	0.82	0.25	1.09	3.76	36	42	22
MW-29S	24	7.3	3.7	23	58.00	1.20	0.60	0.09	1.00	2.89	38	41	21
FMMW-1	24	7.1	4.0	23	58.10	1.20	0.58	0.10	1.00	2.88	38	42	20
FMMW-2	34	11	12	25	82.00	1.70	0.91	0.31	1.09	4.00	35	42	23
MW-10D	30	10	2.1	7.7	49.80	1.50	0.82	0.05	0.33	2.71	14	55	30
MW-11D(2)	20	9.0	2.4	7.7	39.10	1.00	0.74	0.06	0.33	2.14	19	47	35
MW-12D	30	12	3.7	19	64.70	1.50	0.99	0.09	0.83	3.41	27	44	29
MW-13D	27	10	3.5	13	53.50	1.35	0.82	0.09	0.57	2.83	23	48	29
MW-14D	16	5.1	6.5	10	37.60	0.80	0.42	0.17	0.44	1.82	33	44	23
MW-15D	27	12	3.4	20	62.40	1.35	0.99	0.09	0.87	3.29	29	41	30
MW-18D	23	9.6	3.1	11	46.70	1.15	0.79	0.08	0.48	2.50	22	46	32
MW-14R	8.3	5.0	2.4	5.1	20.80	0.41	0.41	0.06	0.22	1.11	26	37	37
MW-20R	7.8	4.2	2.2	5.4	19.60	0.39	0.35	0.06	0.23	1.03	28	38	34
MW-26R	20	9.1	2.3	6.3	37.70	1.00	0.75	0.06	0.27	2.08	16	48	36

Anions	mg/L					meq/L					% of Total			Total Ions (meq/L)	Cation - Anion Balance	Applicable Ratio (%)	Ratio Exceedance
	Alk	Cl	NO_3	SO_4	Total	Alk	Cl	NO_3	SO_4	Total	Cl	Alk	SO_4				
MW-10S	120	11	1.3	11	143.30	1.97	0.31	0.02	0.23	2.53	12	78	9	5.29	4.38	5	-
MW-11S	74.4	19	3.8	9.1	106.30	1.22	0.54	0.06	0.19	2.01	27	61	9	4.25	5.55	10	-
MW-12S	26.4	6.5	22	5.9	60.80	0.43	0.18	0.35	0.12	1.09	17	40	11	3.60	39.28	10	Exceeds
MW-13S	76.8	15	1.3	9.5	102.60	1.26	0.42	0.02	0.20	1.90	22	66	10	3.97	4.31	10	-
MW-14S	49.2	2.7	1.6	5.1	58.60	0.81	0.08	0.03	0.11	1.01	8	80	10	2.08	2.37	10	-
MW-15S	132	12	9.1	5.6	158.70	2.16	0.34	0.15	0.12	2.77	12	78	4	5.90	6.27	5	Exceeds
MW-17S	204	11	10	5.4	230.40	3.35	0.31	0.16	0.11	3.93	8	85	3	8.05	2.35	5	-
MW-18S	168	18	4.9	9.7	200.60	2.76	0.51	0.08	0.20	3.54	14	78	6	7.30	2.97	5	-
MW-29S	132	10	0.33	15	157.33	2.16	0.28	0.01	0.31	2.76	10	78	11	5.66	2.29	5	-
FMMW-1	132	13	0.9	13	158.90	2.16	0.37	0.01	0.27	2.82	13	77	10	5.70	1.20	5	-
FMMW-2	144	20	13	8.7	185.70	2.36	0.56	0.21	0.18	3.32	17	71	5	7.31	9.31	5	Exceeds
MW-10D	132	8.9	1.3	11	153.20	2.16	0.25	0.02	0.23	2.67	9	81	9	5.37	0.80	5	-
MW-11D(2)	99.6	5.8	1.8	9.0	116.20	1.63	0.16	0.03	0.19	2.01	8	81	9	4.15	2.94	10	-
MW-12D	192	9.4	0.93	6.8	209.13	3.15	0.27	0.01	0.14	3.57	7	88	4	6.98	2.36	5	-
MW-13D	120	13	1.0	12	146.00	1.97	0.37	0.02	0.25	2.60	14	76	10	5.43	4.15	5	-
MW-14D	106.8	6.2	0.2	7.9	121.10	1.75	0.17	0.00	0.16	2.09	8	84	8	3.91	7.01	10	-
MW-15D	156	9.4	0.66	11	177.06	2.56	0.27	0.01	0.23	3.06	9	84	7	6.35	3.60	5	-
MW-18D	120	6.7	1.6	7.8	136.10	1.97	0.19	0.03	0.16	2.34	8	84	7	4.84	3.11	10	-
MW-14R	57.6	1.6	0.2	3.6	63.00	0.94	0.05	0.00	0.07	1.07	4	88	7	2.18	1.89	10	-
MW-20R	56.4	1.6	0.2	3.1	61.30	0.92	0.05	0.00	0.06	1.04	4	89	6	2.06	0.57	10	-
MW-26R	112.8	4.6	0.2	10	127.60	1.85	0.13	0.00	0.21	2.19	6	84	9	4.27	2.60	10	-

Notes:
mg/L = milligrams per liter
meq/L = milliequivalents per liter
Total alkalinity concentration, reported as calcium carbonate (CaCO3), is converted to the bicarbonate (HCO3-) ion by multiplying by a factor of 1.2.
Cation / anion balance equation is the equivalent percent difference in cations minus anions divided by the sum of cations and anions [(cations-anions)/(anions+cations)*100].
The MRL was used for analytes that were non-detect
A 10% difference threshold is used if the total cation-anion sums are < 5.0 meq/liter.
A 5% difference threshold is used if the total cation-anion sums are > or = to 5.0 meq/liter.

Table 10. Leachate Monitoring Results
Semi - Annual Monitoring Event No. 1 - January 2020
Hidden Valley Landfill, Pierce County, Washington

Parameters	MRL	Leachate-East Area	Leachate-Side Slope	Leak Detection-Side Slope	Hydraulic Gradient Control System
Volatile Organics (µg/L)					
1,4-Dichlorobenzene	0.5-0.8	1.4	*	*	*
Acetone	10.0	28	17	*	*
Benzene	0.5-0.8	1.1	2.8	*	*
Carbon disulfide	0.5-0.84	3.0	6.4	*	*
cis-1,2-Dichloroethene	0.5-0.75	*	*	1.7	*
Ethylbenzene	1.00	1.9	1.8	*	*
m-Xylene & p-Xylene	0.5-0.77	4.9	1.0	*	*
o-Xylene	0.5-0.95	2.4	*	*	*
Toluene	0.5-0.85	5.4	3.2	0.93	*
Total Metals (mg/L)					
Calcium	0.2-0.78	99	17	40	100
Iron	0.18	2.2	1.0	0.9	1.9
Magnesium	0.1-0.26	52	28	25	26
Manganese	0.0	1.6	0.10	0.23	4.3
Potassium	2-2.4	270	500	300	3.7
Sodium	1-3.7	2,600	6,100	4,200	19
Inorganic Parameters (mg/L)					
Alkalinity	10	4,700	7,800	5,500	410
Ammonia	0.1-2.2	360	460	230	*
Chloride	0.2-300	2,500	7,600	5,500	3.7
Nitrate as N	0.5-0.9	1.8	* H	55 H	*
Sulfate	0.2-5.0	89	590	610	13
Total Dissolved Solids	10-470	9,600	24,000	17,000	450
Total Organic Carbon - Quad	1-69	500	730	360	2.1
Total Suspended Solids	4.0	19	7.6	7.2	4.4
Field Parameters					
Dissolved Oxygen (mg/L)	—	1.45	2.14	2.00	5.92
Oxidation Reduction Potential (mV)	—	-149.0	-273.5	-86.7	173.4
pH (SU)	—	7.42	8.37	8.15	6.74
Specific Conductivity (µS/cm)	—	15,608	32,722	25,629	763
Temperature (°C)	—	12.2	20.9	22.8	12.8
Turbidity (NTU)	—	24.6	9.4	12.9	25.7

Notes:
Analyses performed by TestAmerica, Arvada, Coloradc
Volatile organic compounds not listed were not present at concentrations exceeding the MRL
°C = degrees celcius
H = Sample was prepped or analyzed beyond specified holding time
mg/L = milligrams per liter
mV = millivolts
NTU = Nephelometric Turbidity Units
SU = standard units
µg/L = micrograms per liter
µS/cm = microsiemens per centimeter
— = not applicable or not analyzed
* = not reported at or above the MRL (Method Reporting Limit)

Appendix E

TIME SERIES PLOTS

Figure 1

Specific Conductivity

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11S, MW-12S, MW-13S, MW-14S, and MW-17S

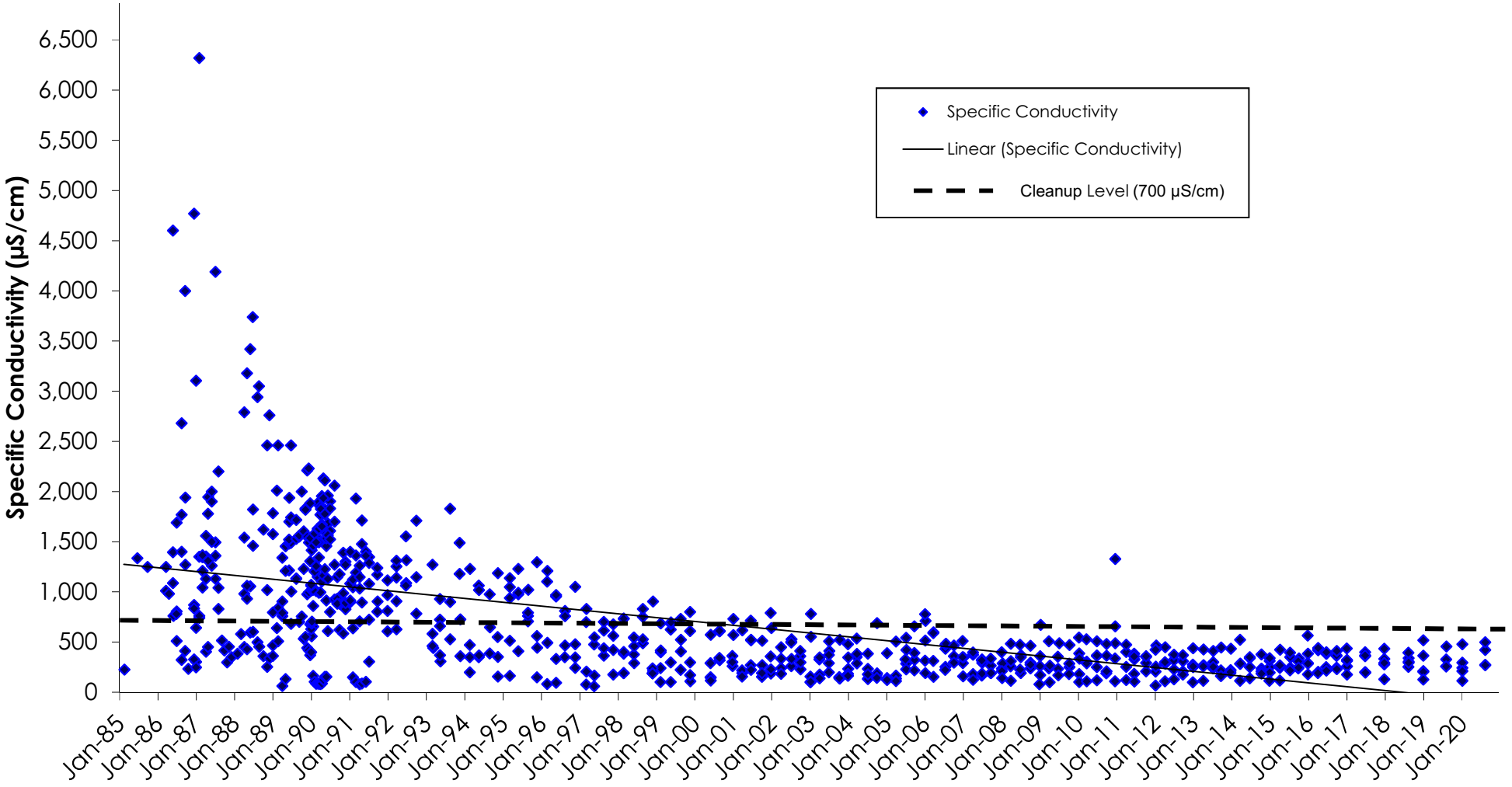


Figure 2

Ammonia

Shallow Perched Aquifer, Hidden Valley Landfill

Wells MW-11S, MW-12S, MW-13S, MW-14S, and MW-17S

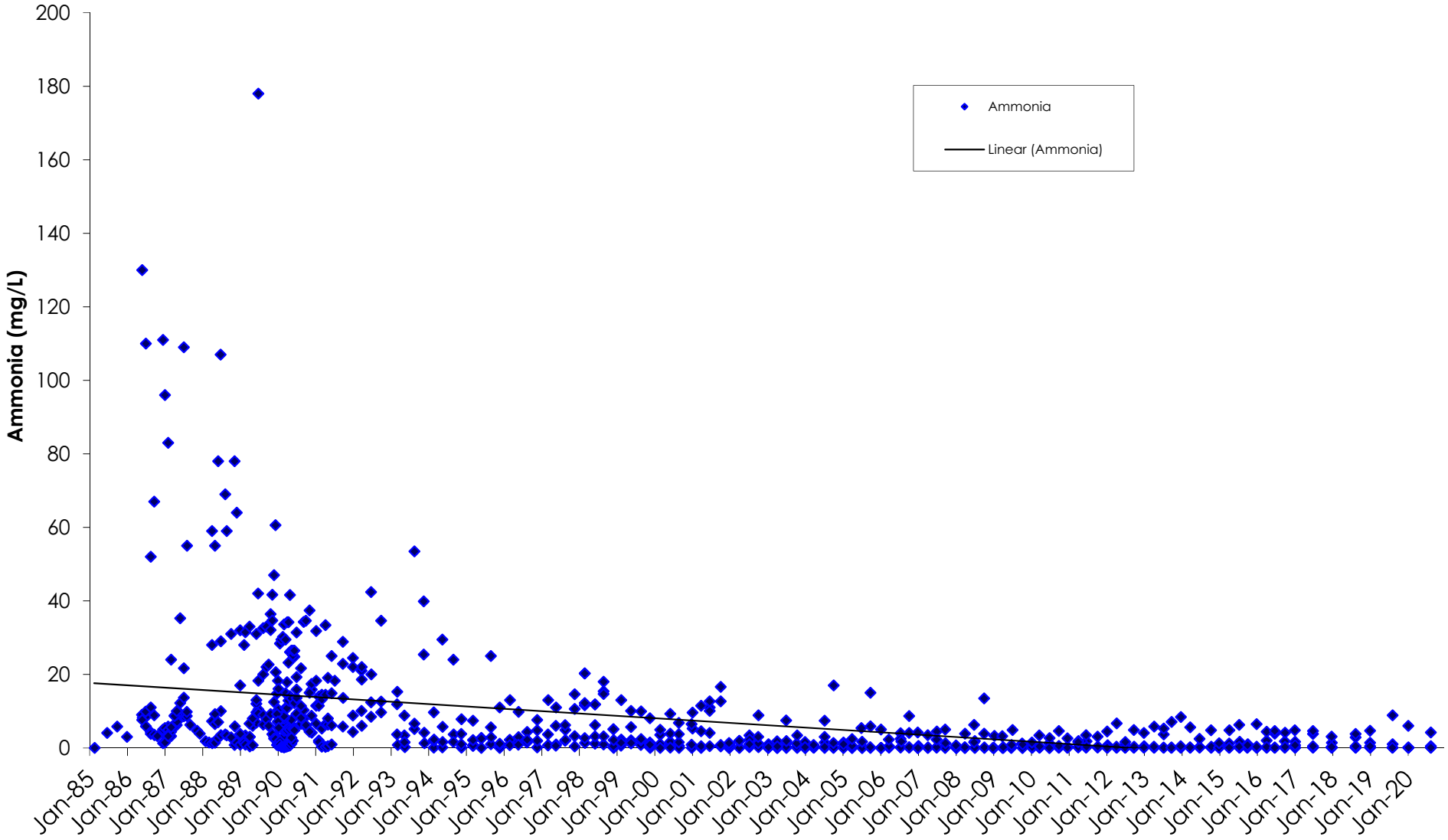


Figure 3

Nitrate

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11S, MW-12S, MW-13S, MW-14S, and MW-17S

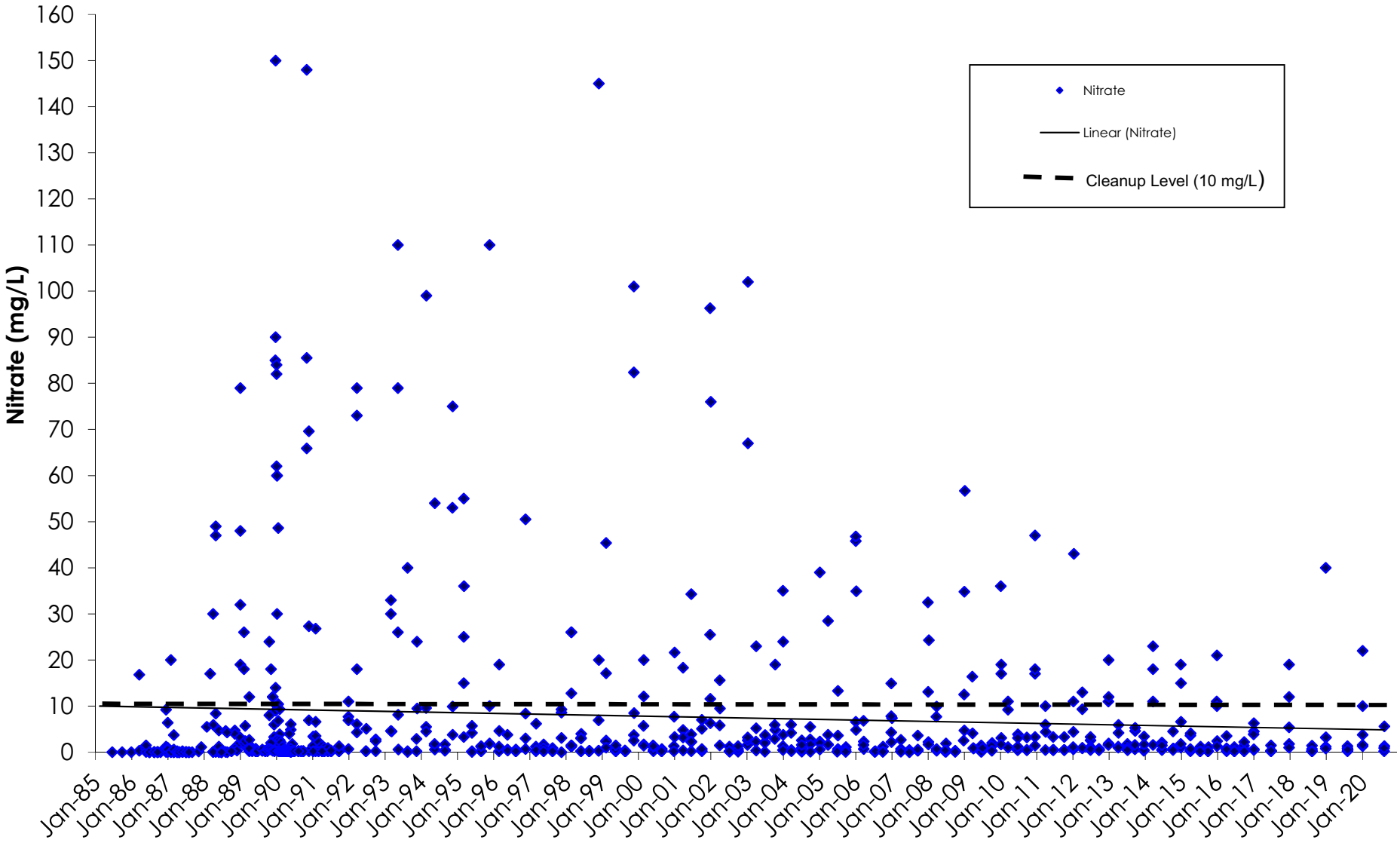


Figure 4

Dissolved Iron

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11S, MW-12S, MW-13S, MW-14S, and MW-17S

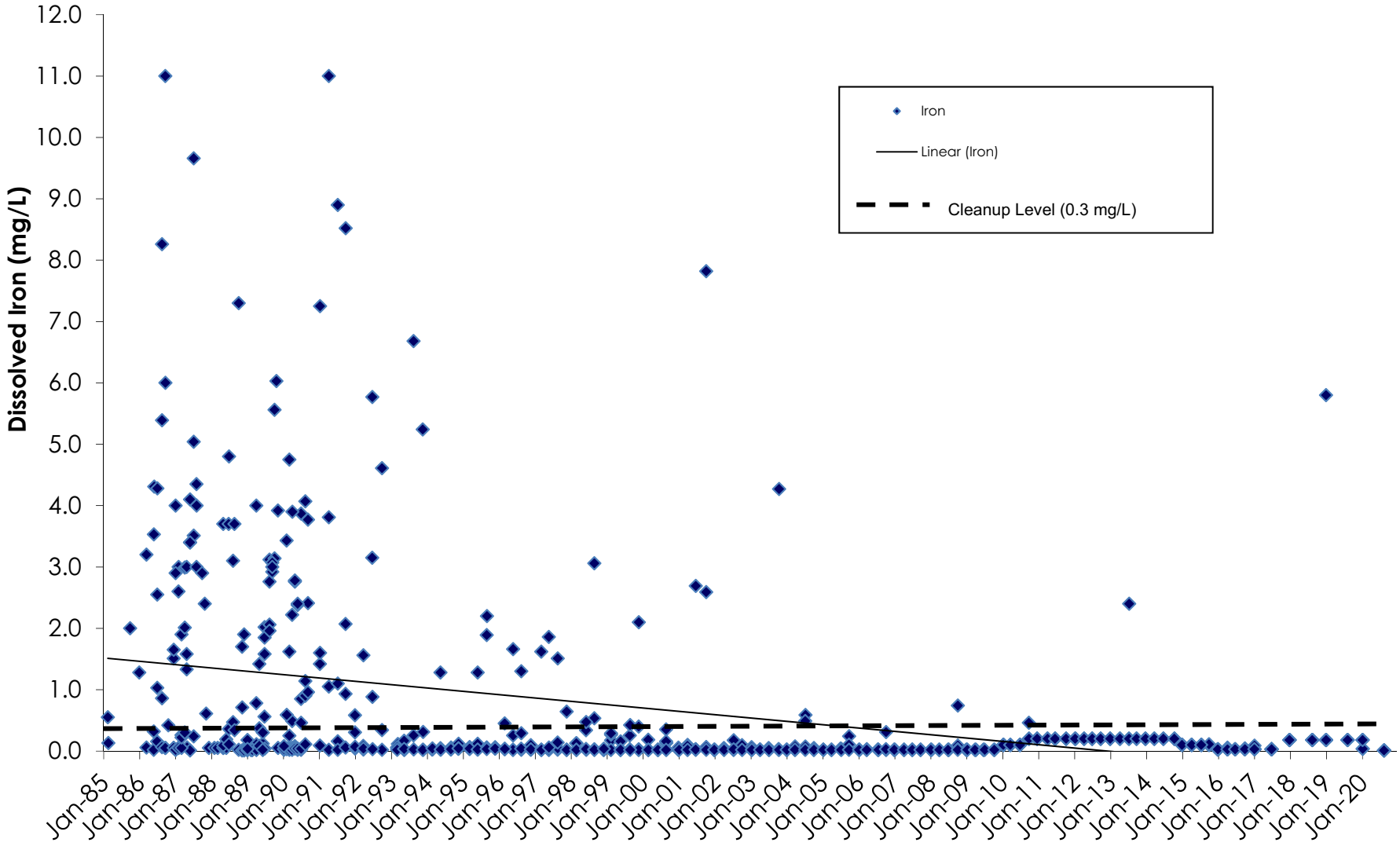


Figure 5

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill
Wells MW-11S, MW-12S, MW-13S, MW-14S, and MW-17S

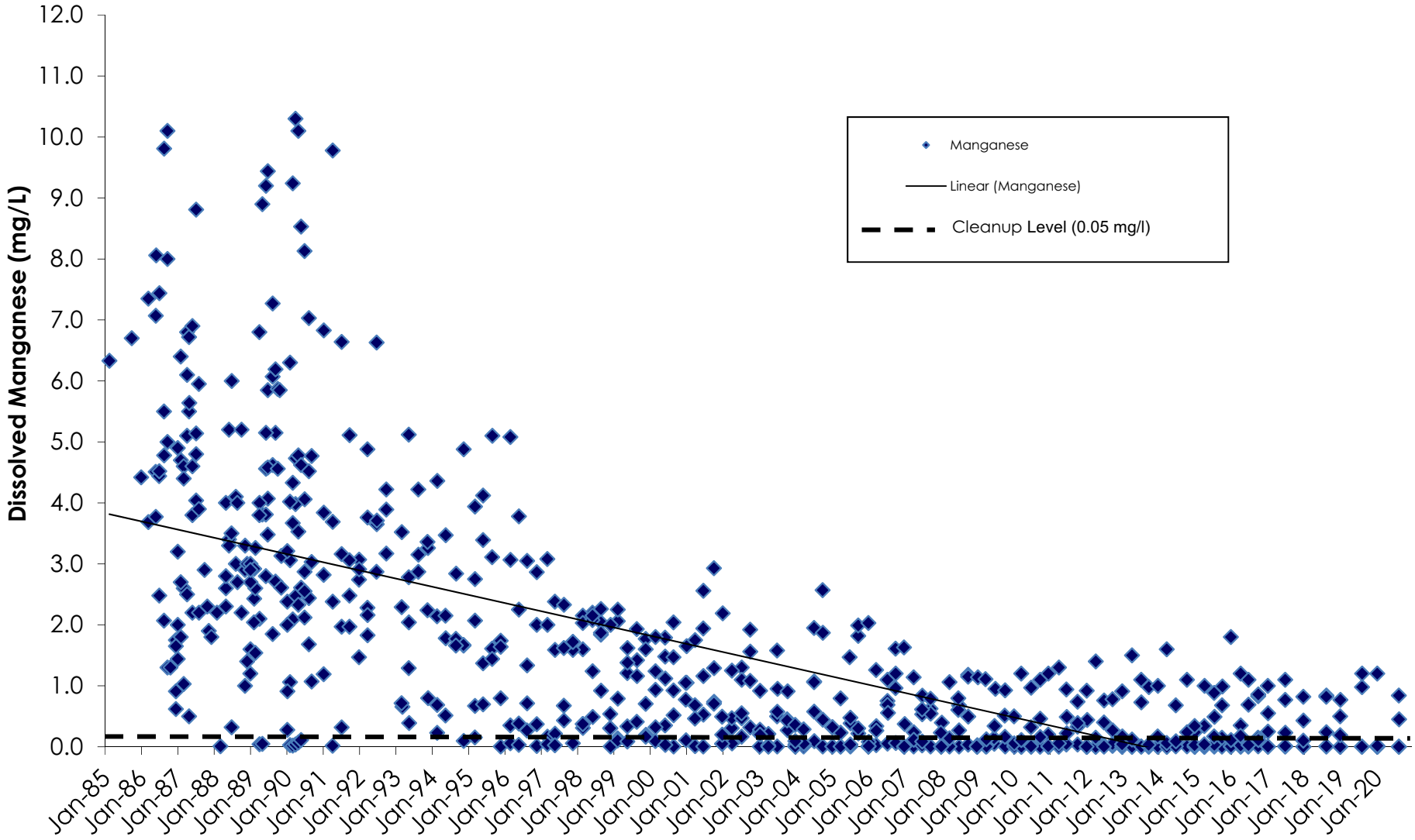


Figure 6

Specific Conductivity

Upper Regional Aquifer, Hidden Valley Landfill

Wells MW-11D(2), MW-12D, MW-13D, and MW-14D

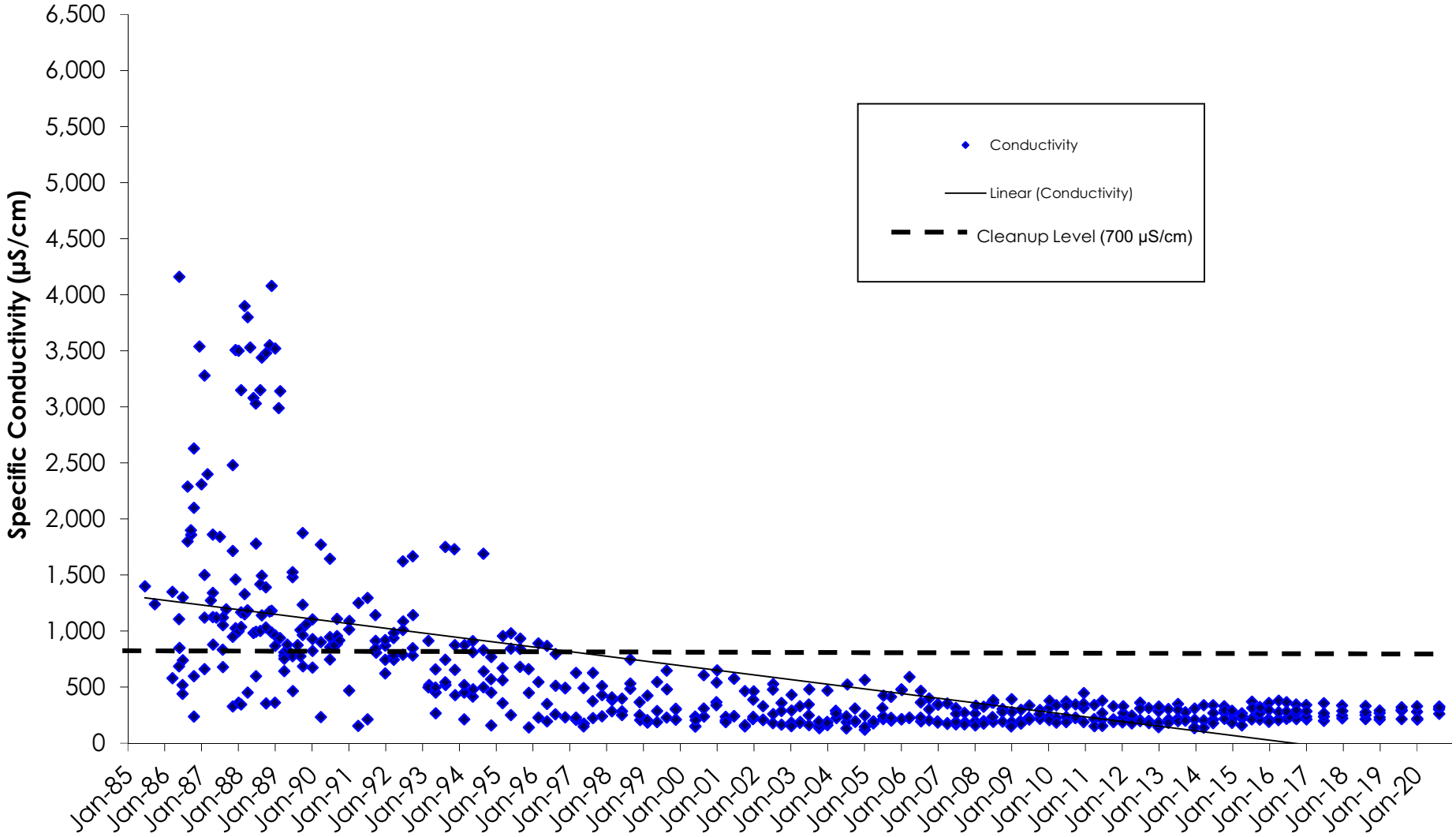


Figure 7

Ammonia

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-12D, MW-13D, and MW-14D

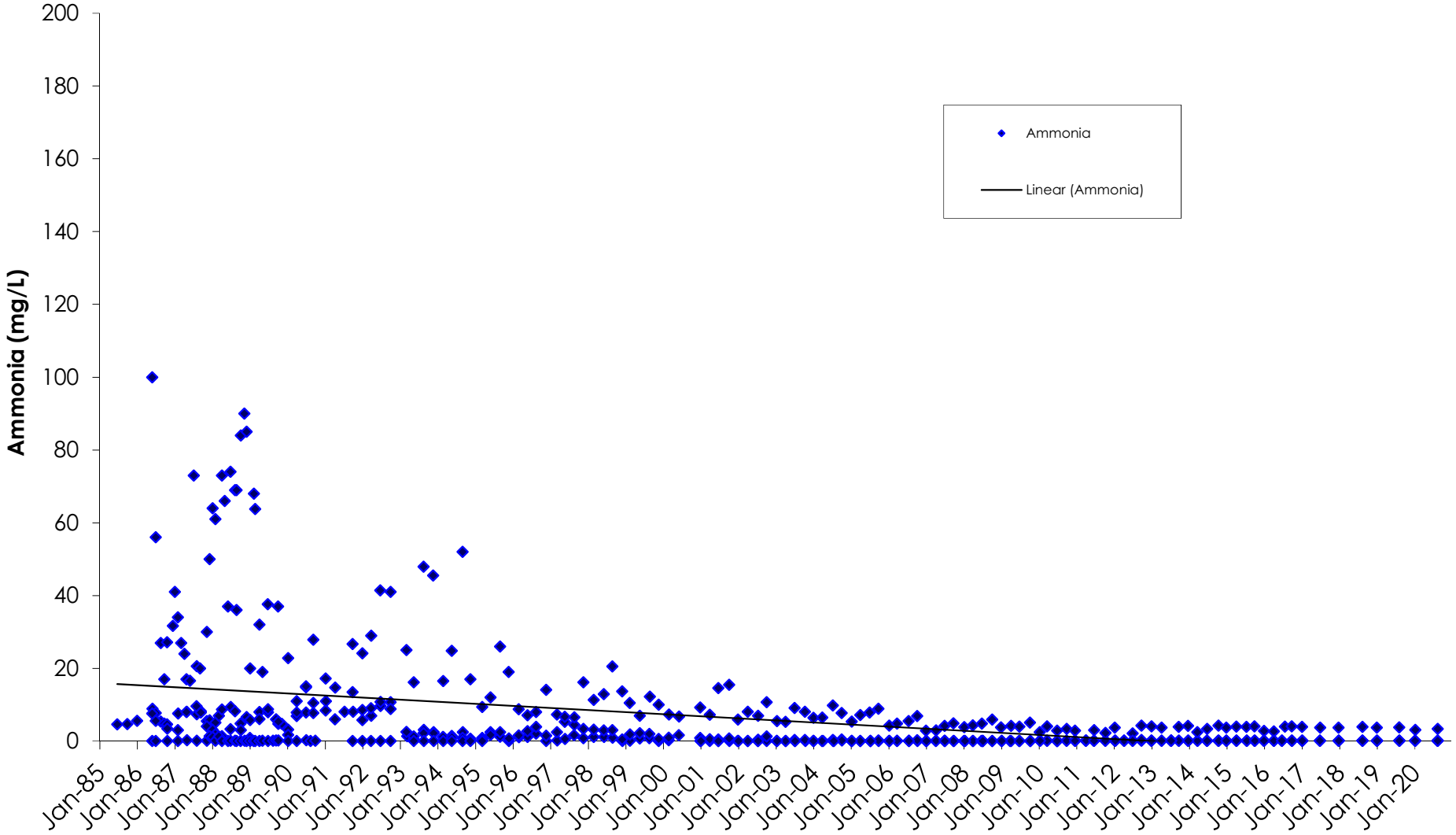


Figure 8

Nitrate

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-12D, MW-13D, and MW-14D

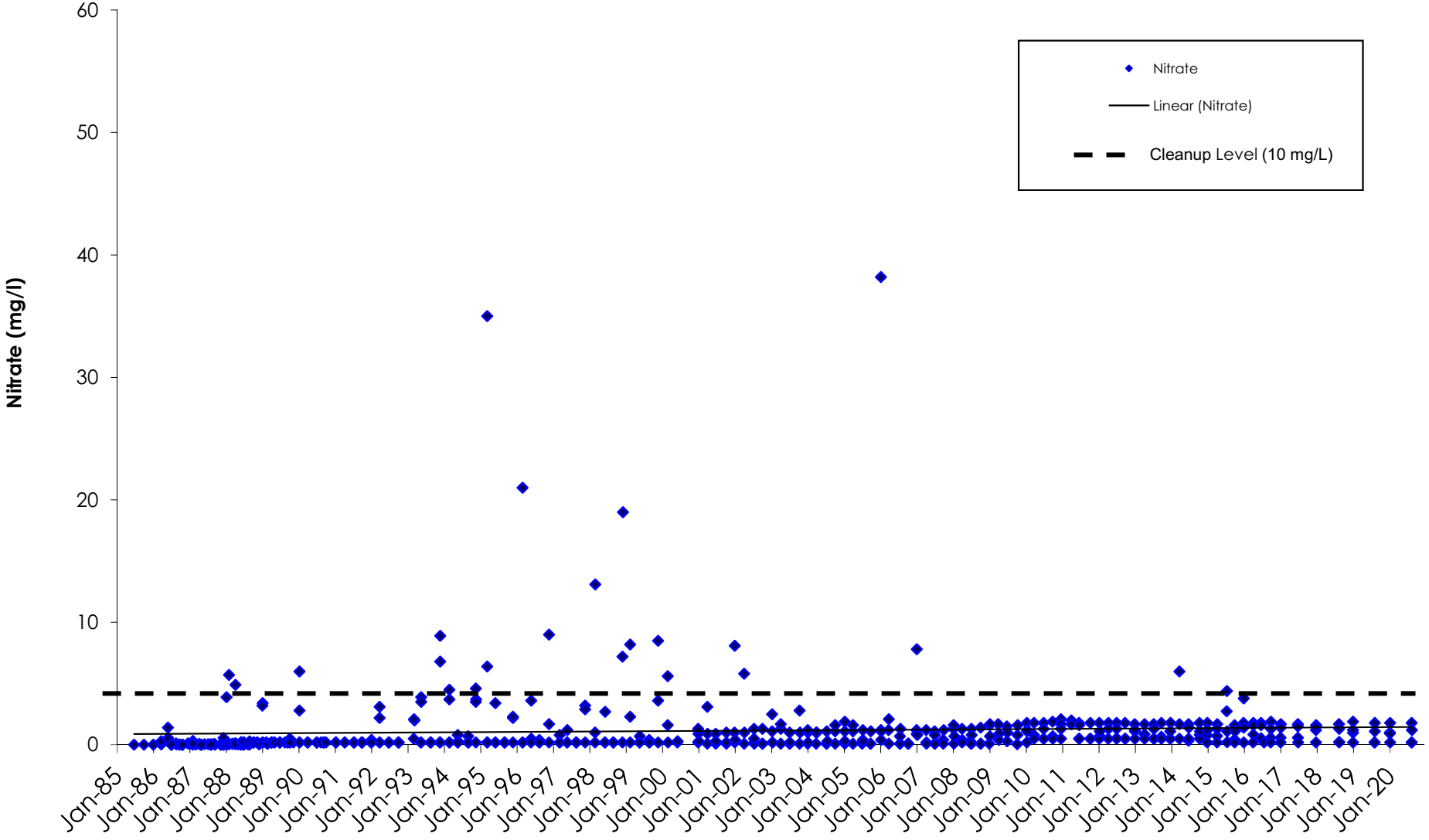


Figure 9

Dissolved Iron

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-12D, MW-13D, and MW-14D

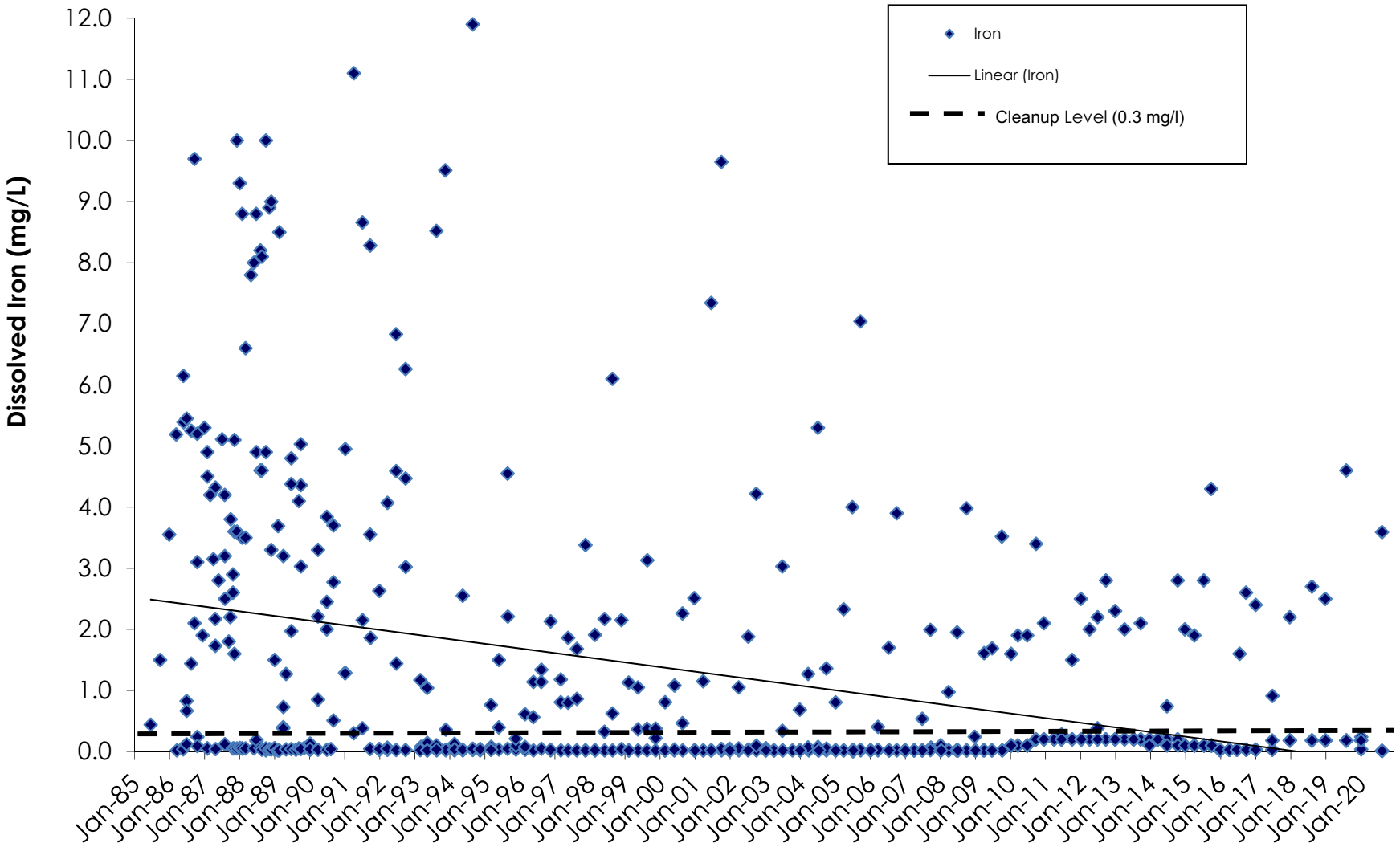


Figure 10

Dissolved Manganese

Upper Regional Aquifer, Hidden Valley Landfill
Wells MW-11D(2), MW-12D, MW-13D, and MW-14D

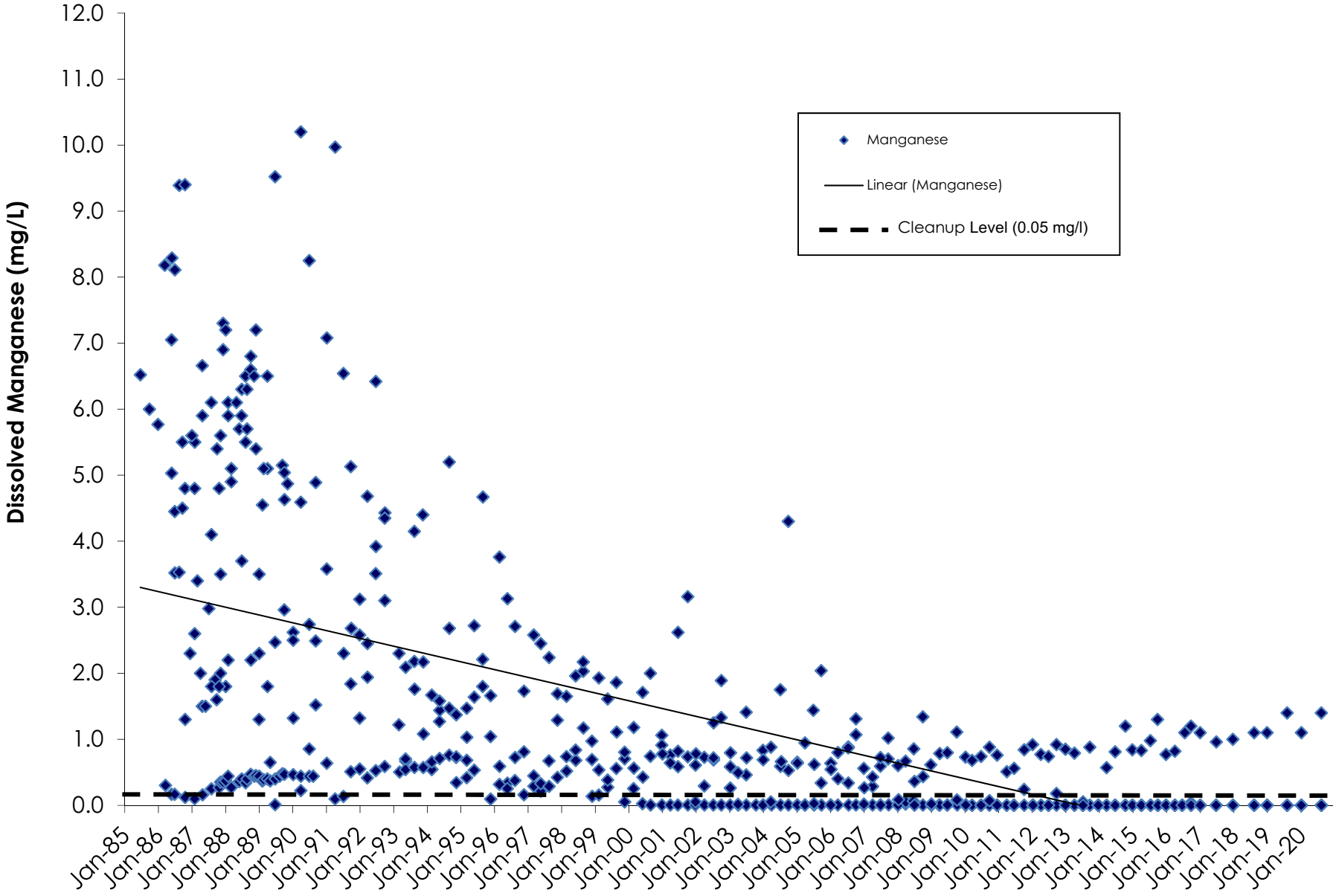


Figure 11

Nitrate

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-12S, 10 year Trend

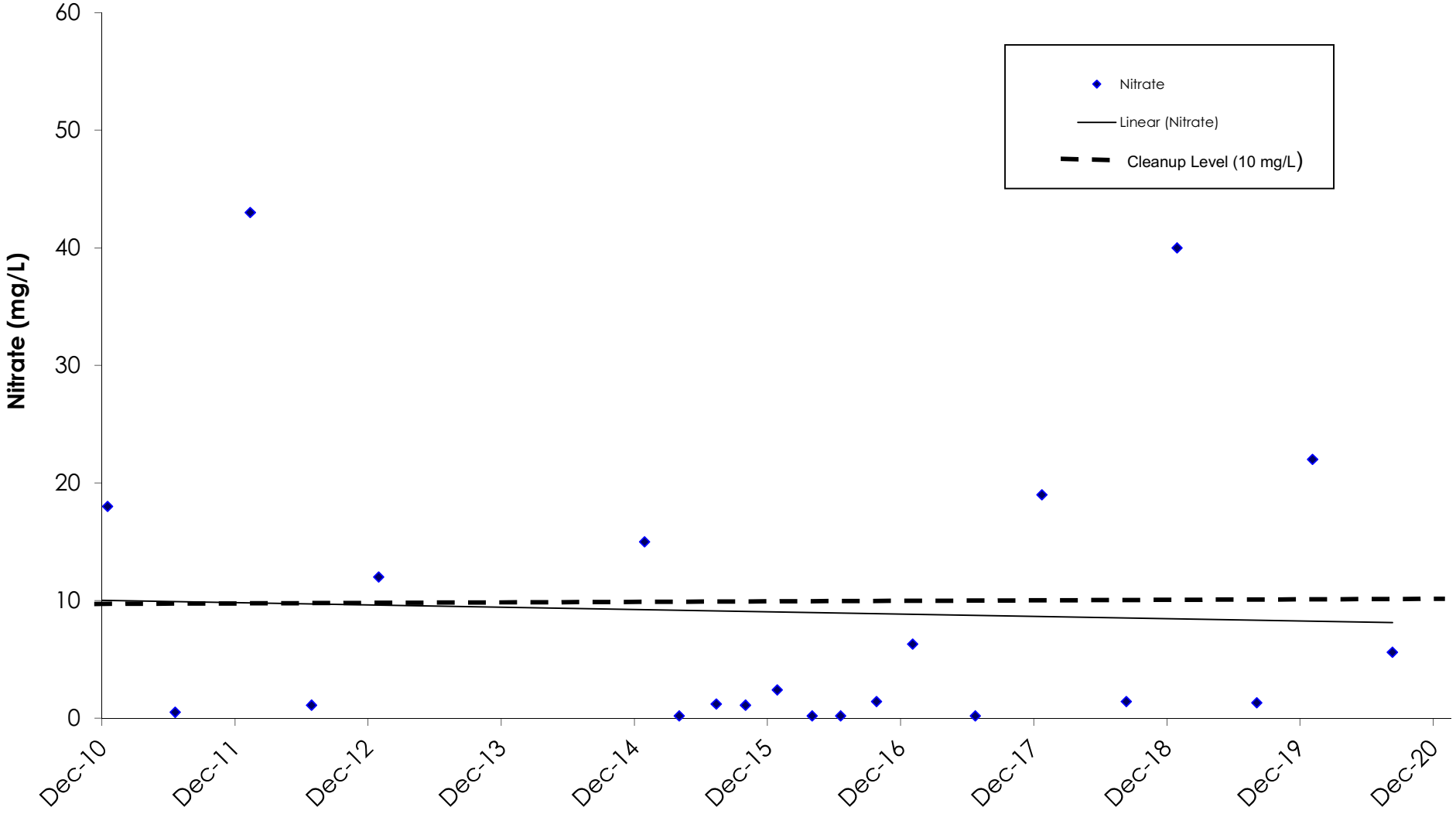


Figure 12

Dissolved Iron

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-13S, 10 year Trend

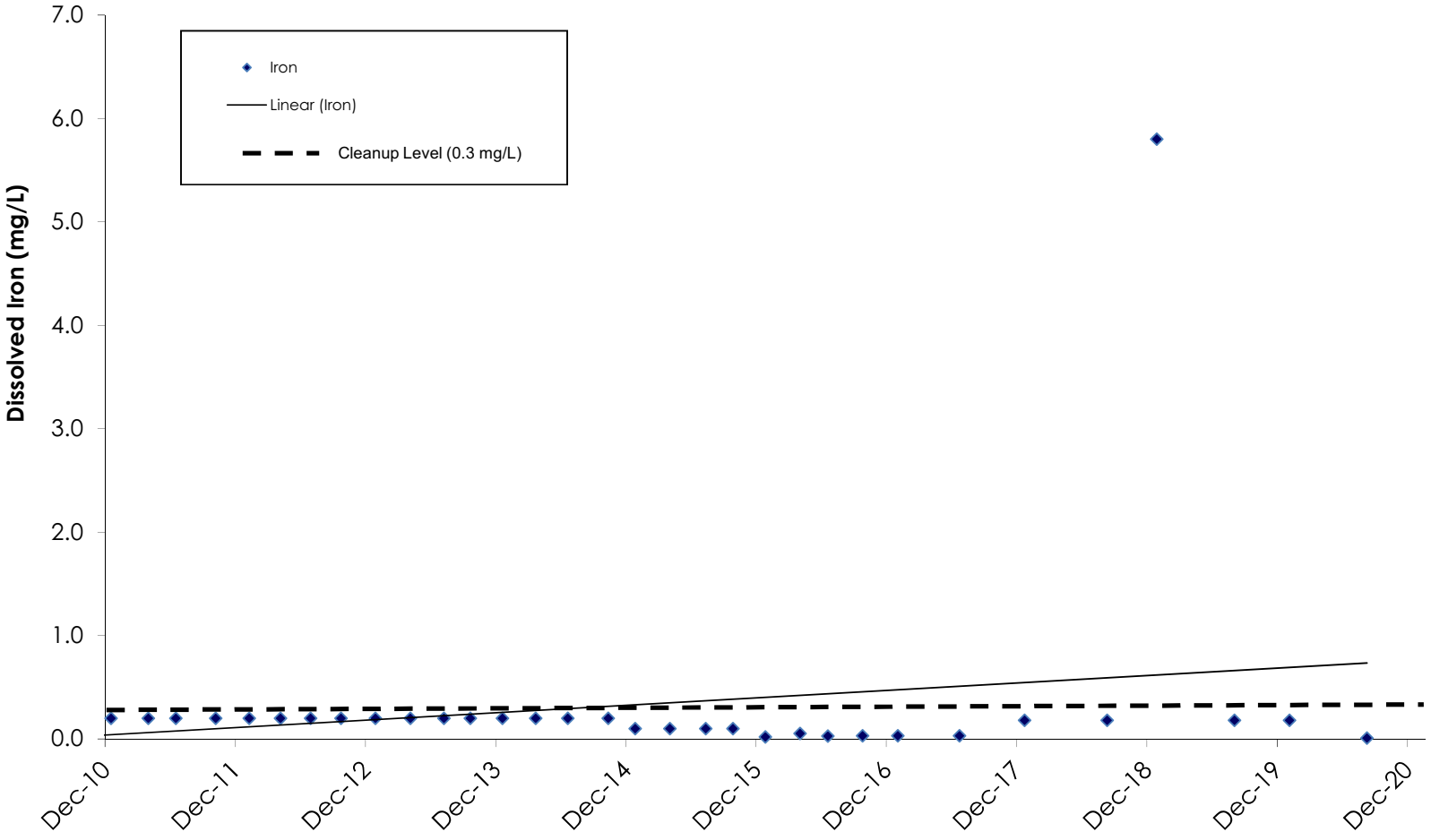


Figure 13

Dissolved Iron

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-14S, 10 year trend

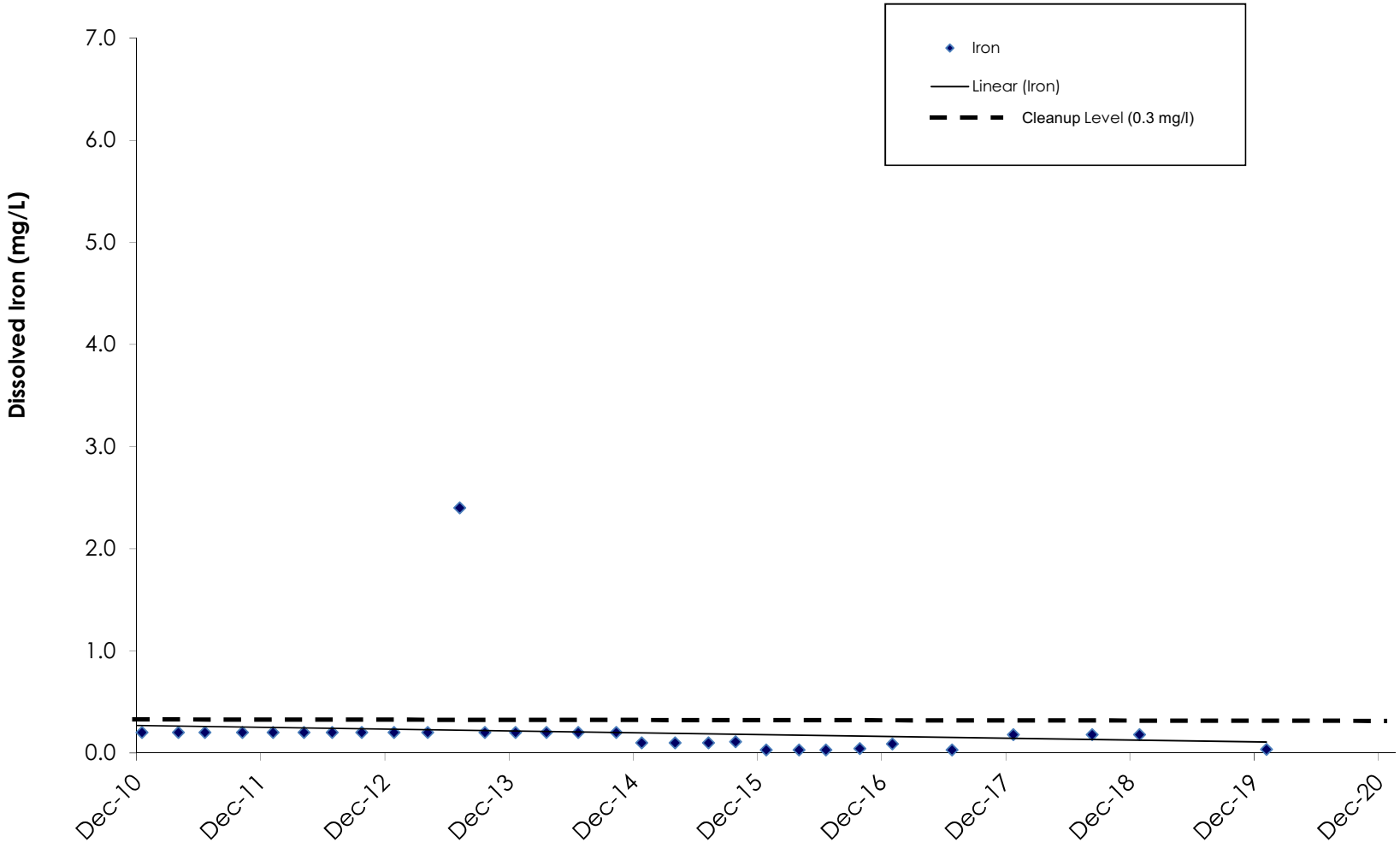


Figure 14

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-11S, 10 Year Trend

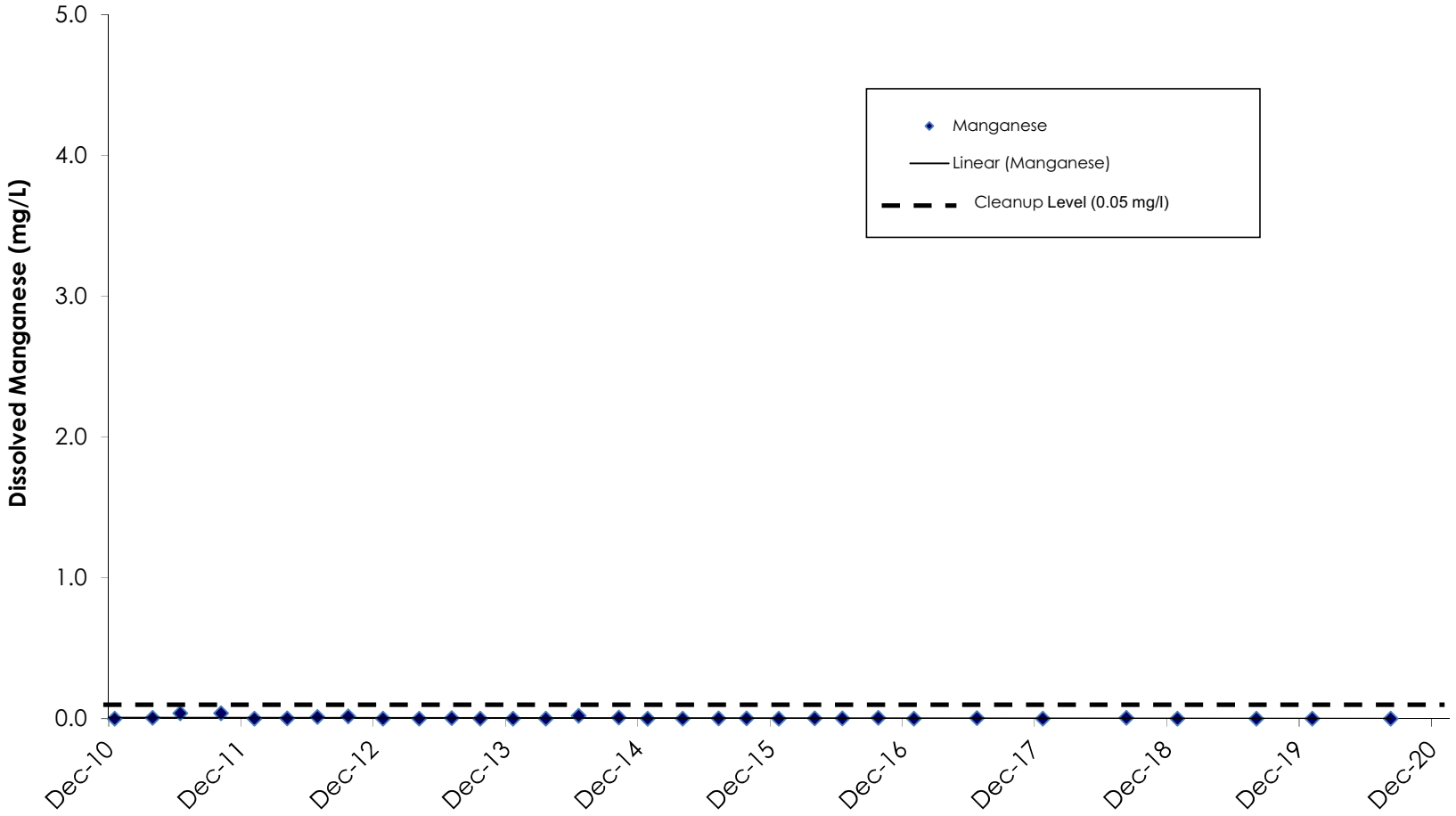


Figure 15

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-12S, 10 year trend

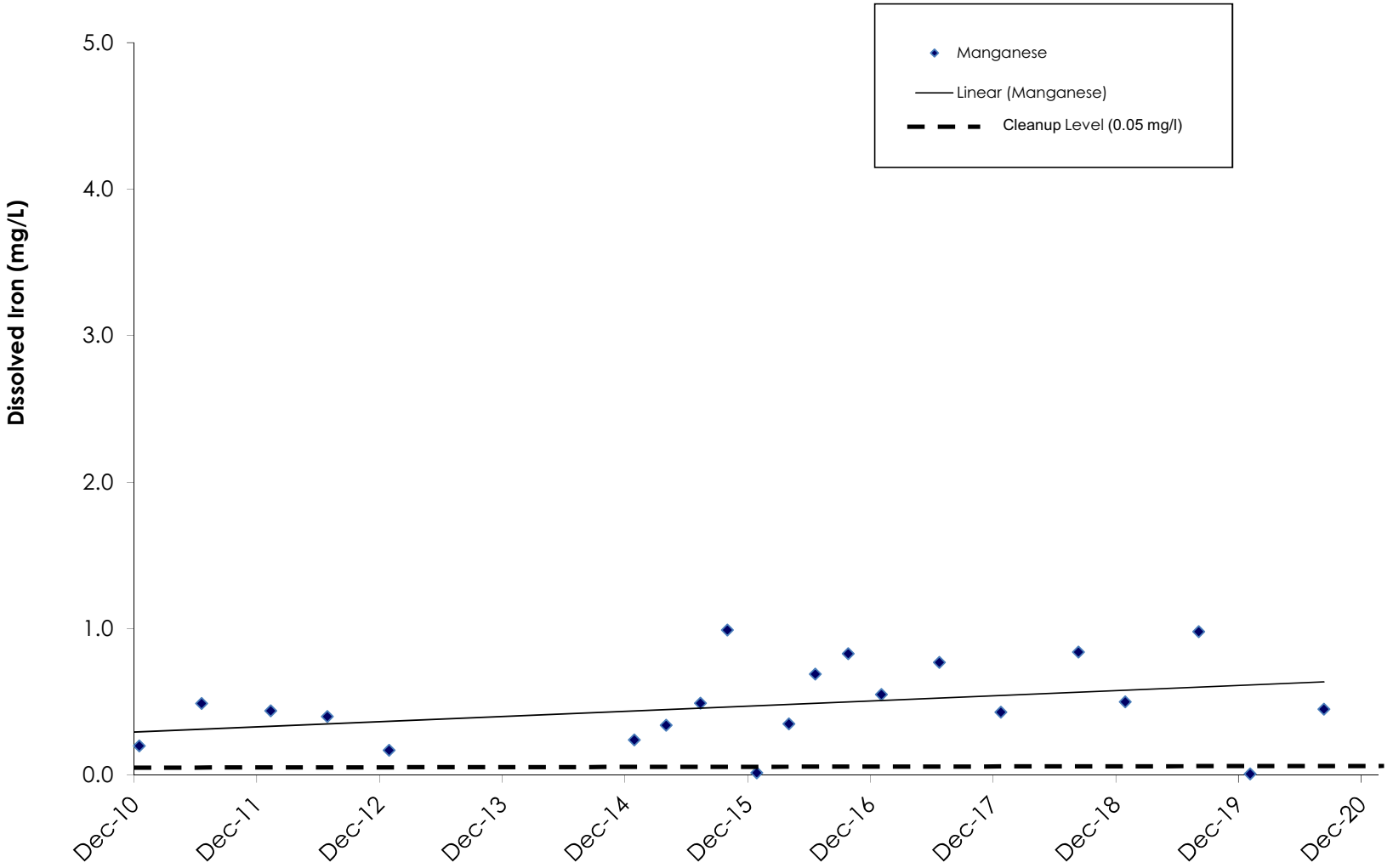


Figure 16

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill

Well MW-13S, 10 year trend

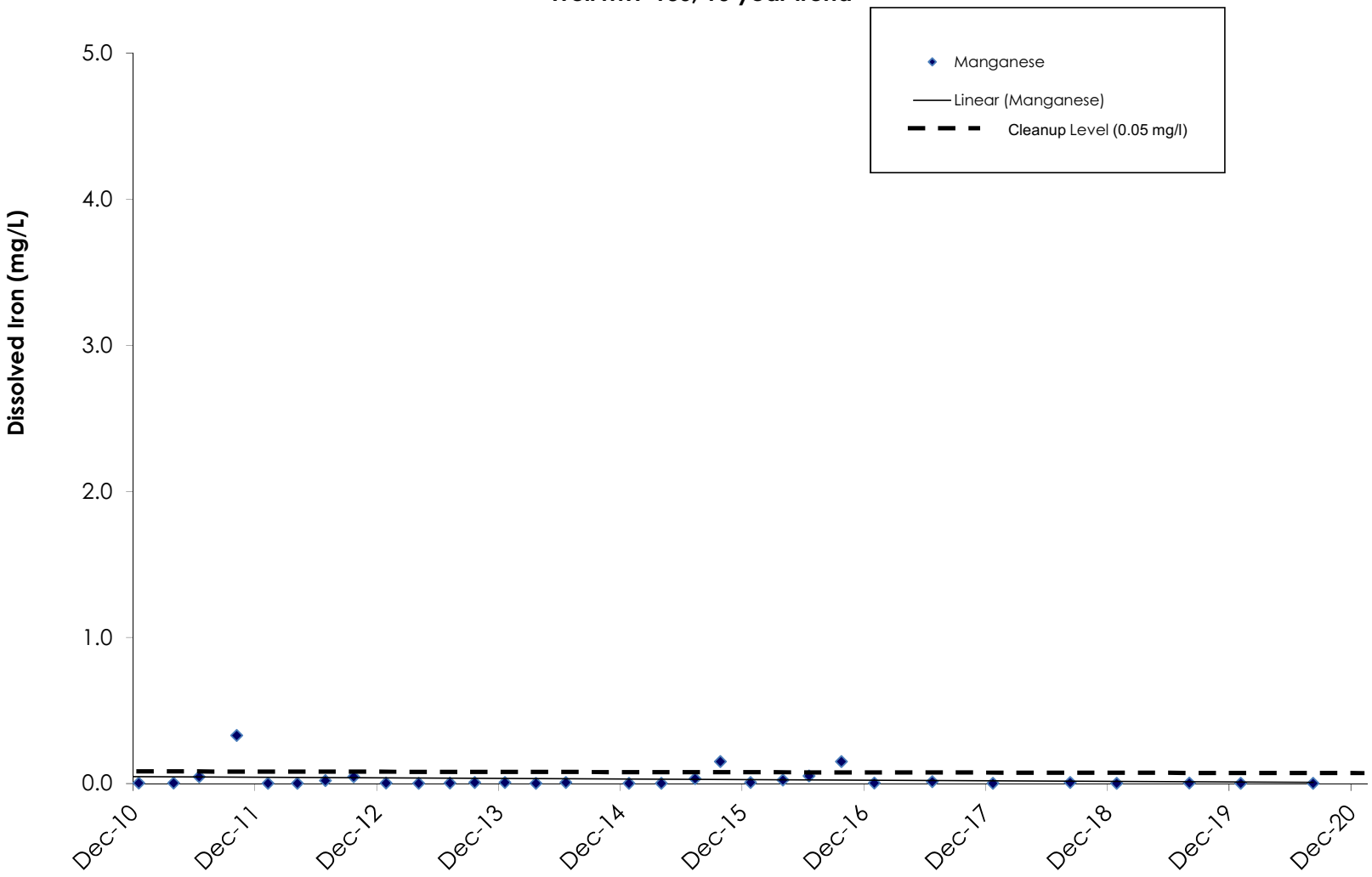


Figure 17

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-14S, 10 year trend

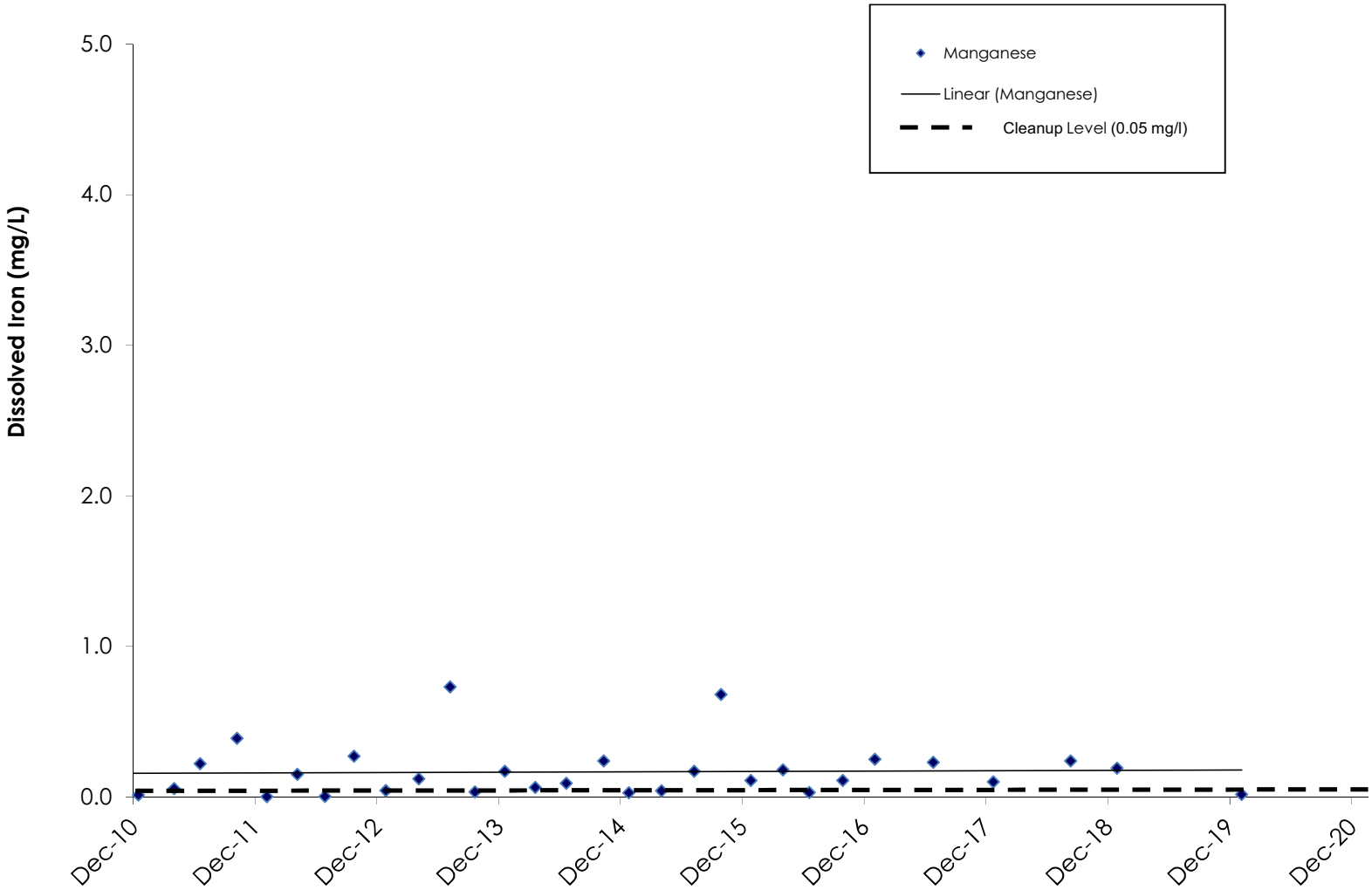


Figure 18

Dissolved Manganese

Shallow Perched Aquifer, Hidden Valley Landfill
Well MW-17S, 10 year trend

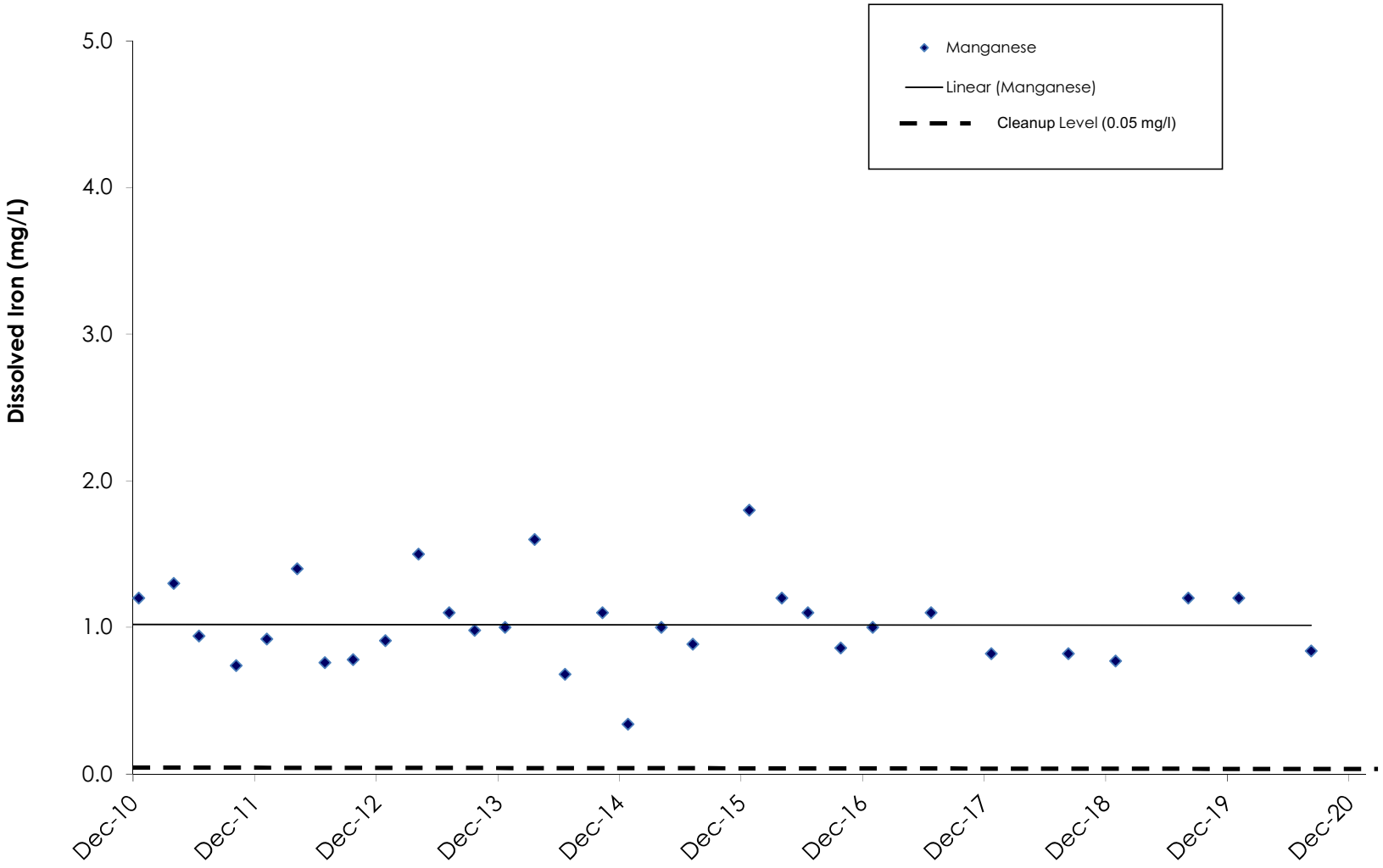


Figure 19

Dissolved Iron

Upper Regional Aquifer, Hidden Valley Landfill
Well MW-11D(2), 10 year trend

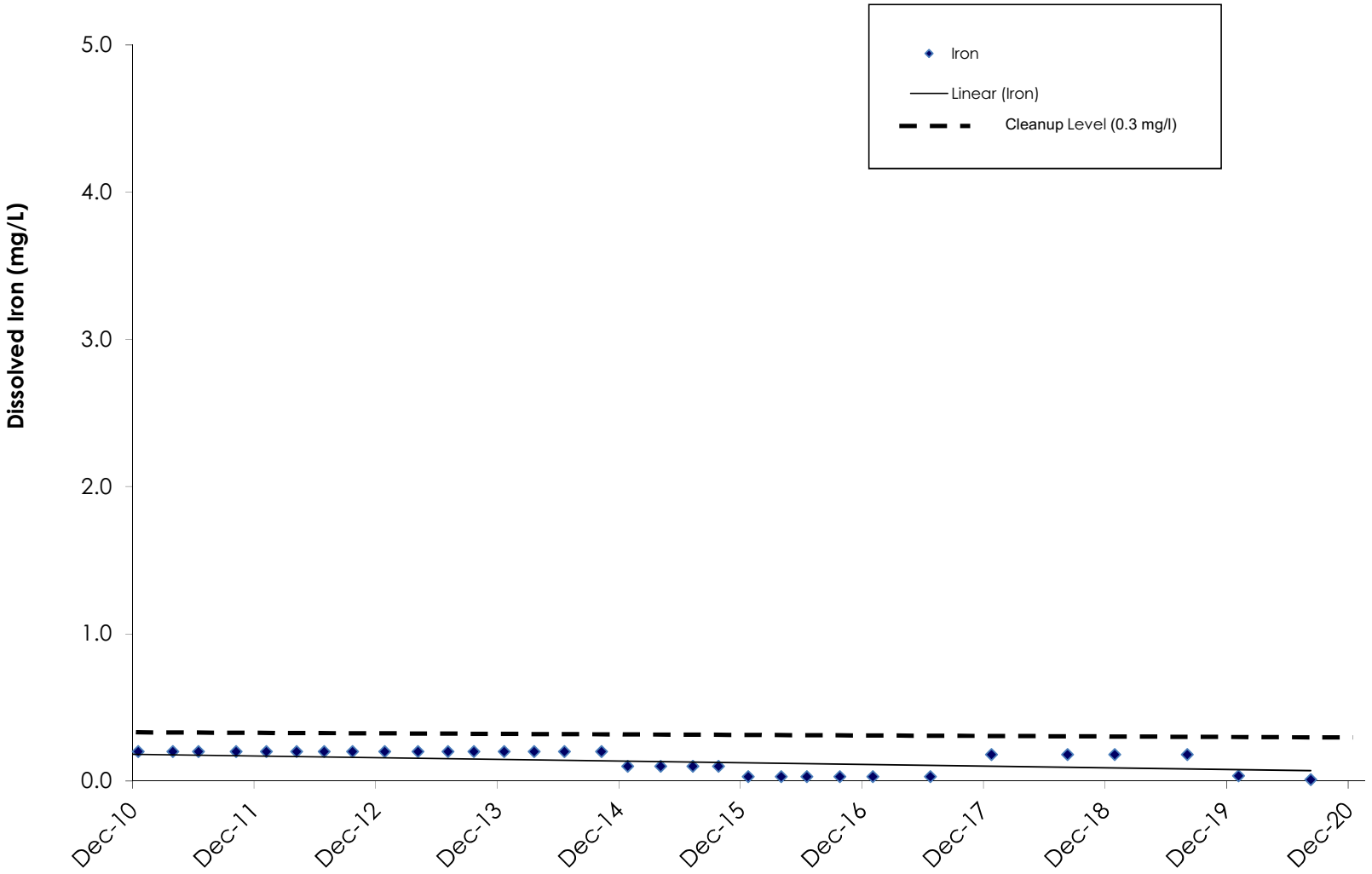


Figure 20

Dissolved Iron

Upper Regional Aquifer, Hidden Valley Landfill
Well MW-12D, 10 year trend

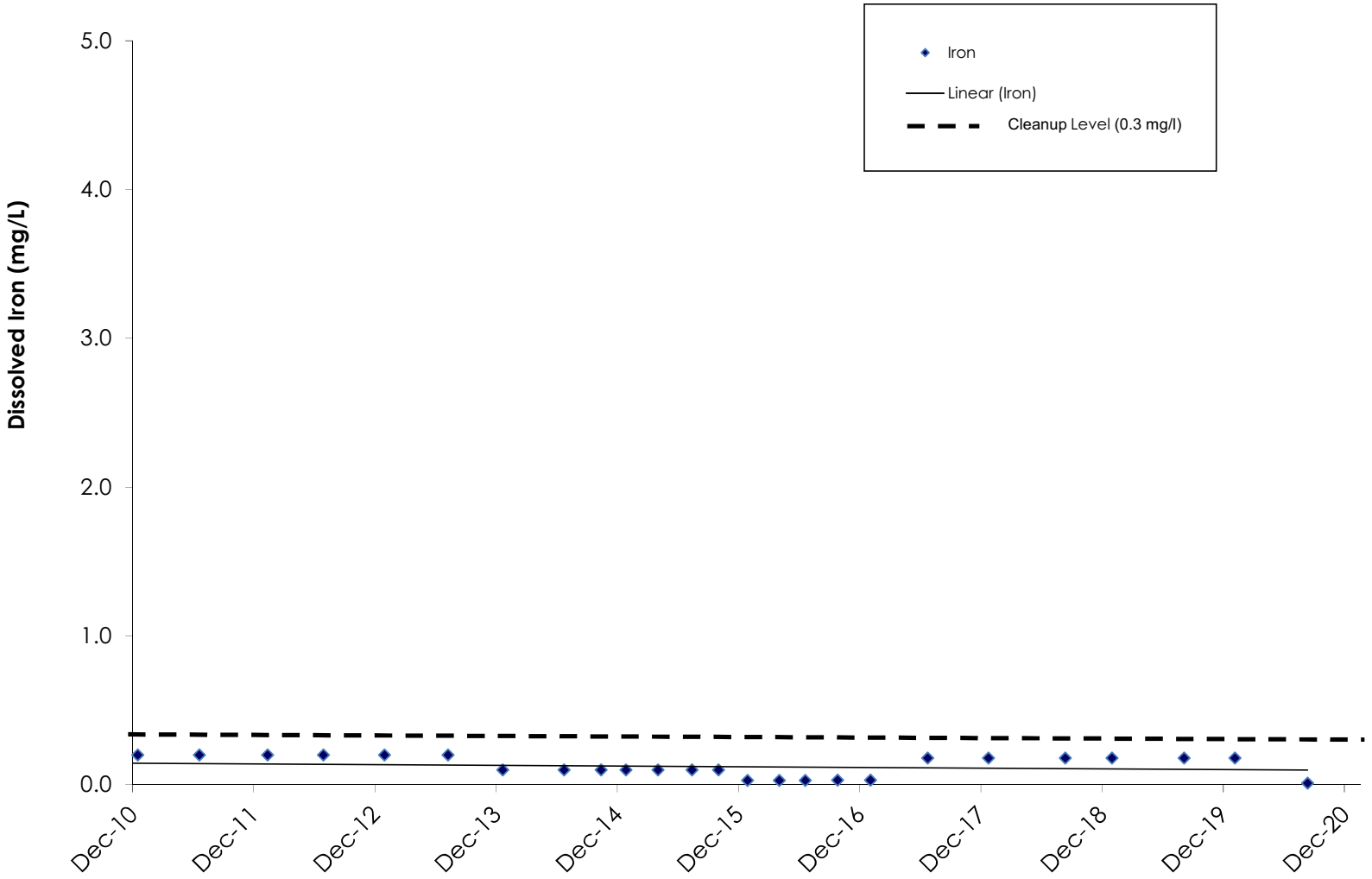


Figure 21

Dissolved Iron

Upper Regional Aquifer, Hidden Valley Landfill

Well MW-13D, 10 year trend

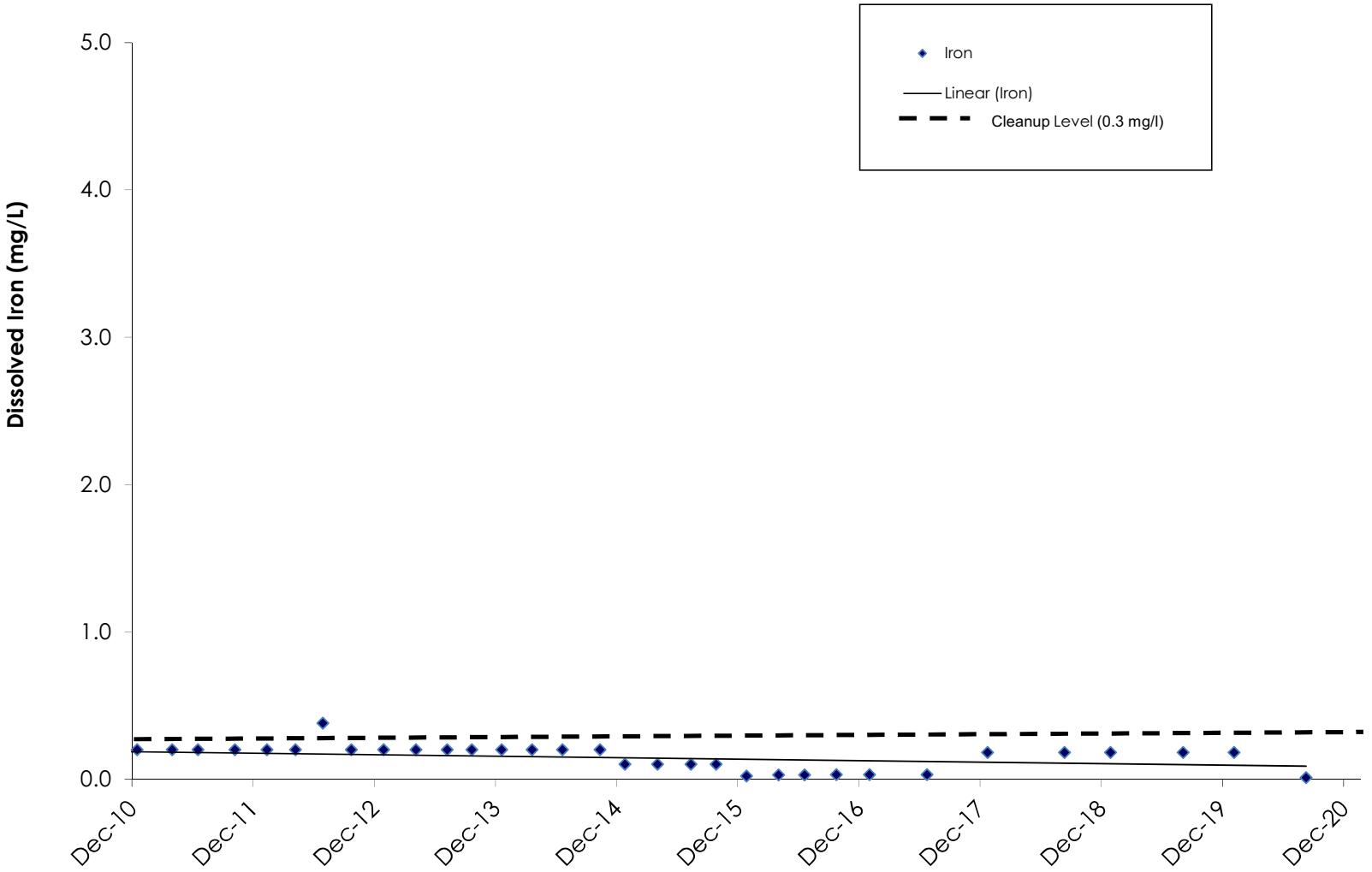


Figure 22

Dissolved Iron

Upper Regional Aquifer, Hidden Valley Landfill
Well MW-14D, 10 year trend

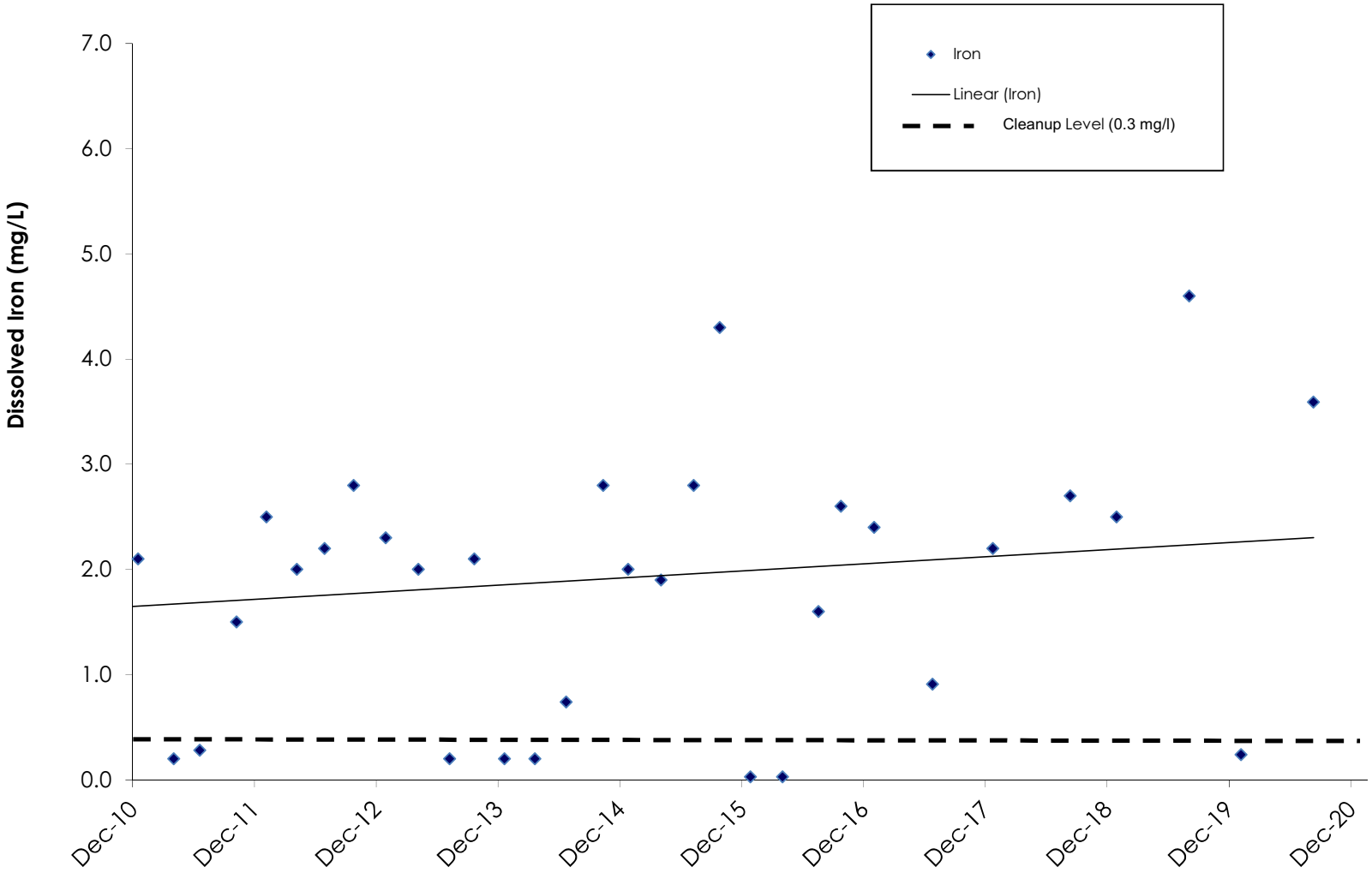


Figure 23

Dissolved Manganese

Upper Regional Aquifer, Hidden Valley Landfill
Well MW-11D(2), 10 year trend

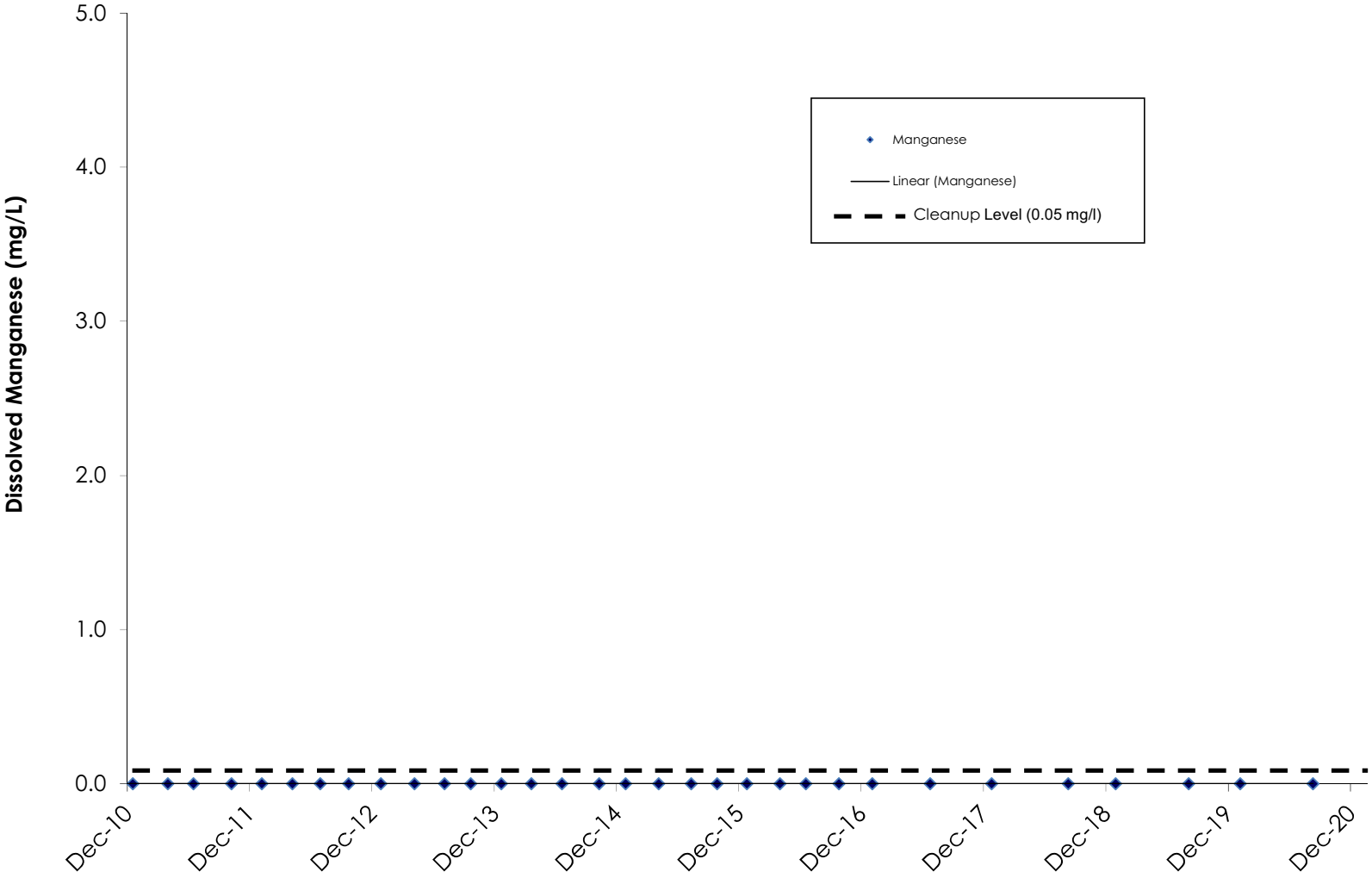


Figure 24

Dissolved Manganese

Upper Regional Aquifer, Hidden Valley Landfill
Well MW-12D, 10 year trend

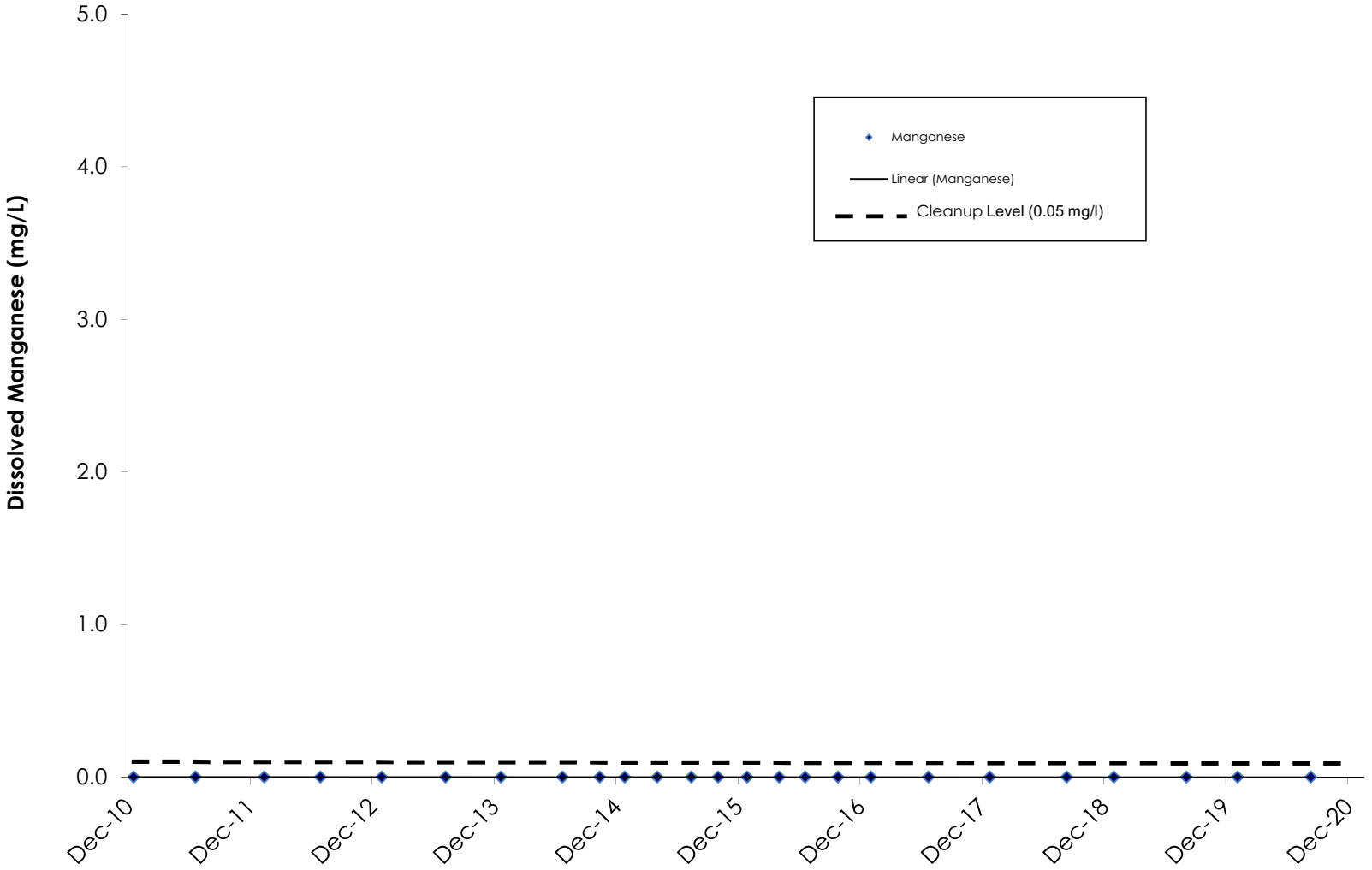


Figure 25

Dissolved Manganese

Upper Regional Aquifer, Hidden Valley Landfill
Well MW-13D, 10 year trend

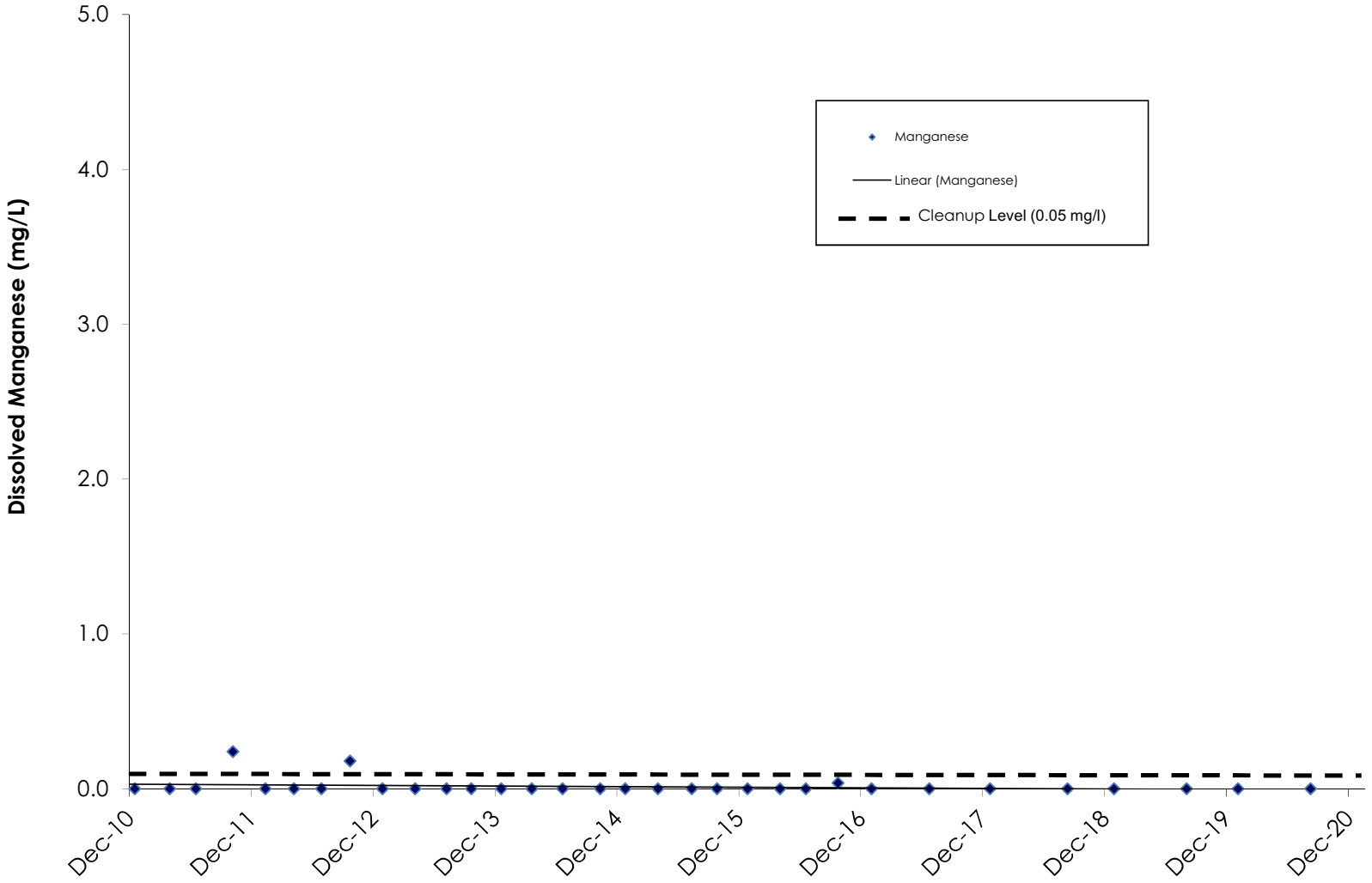
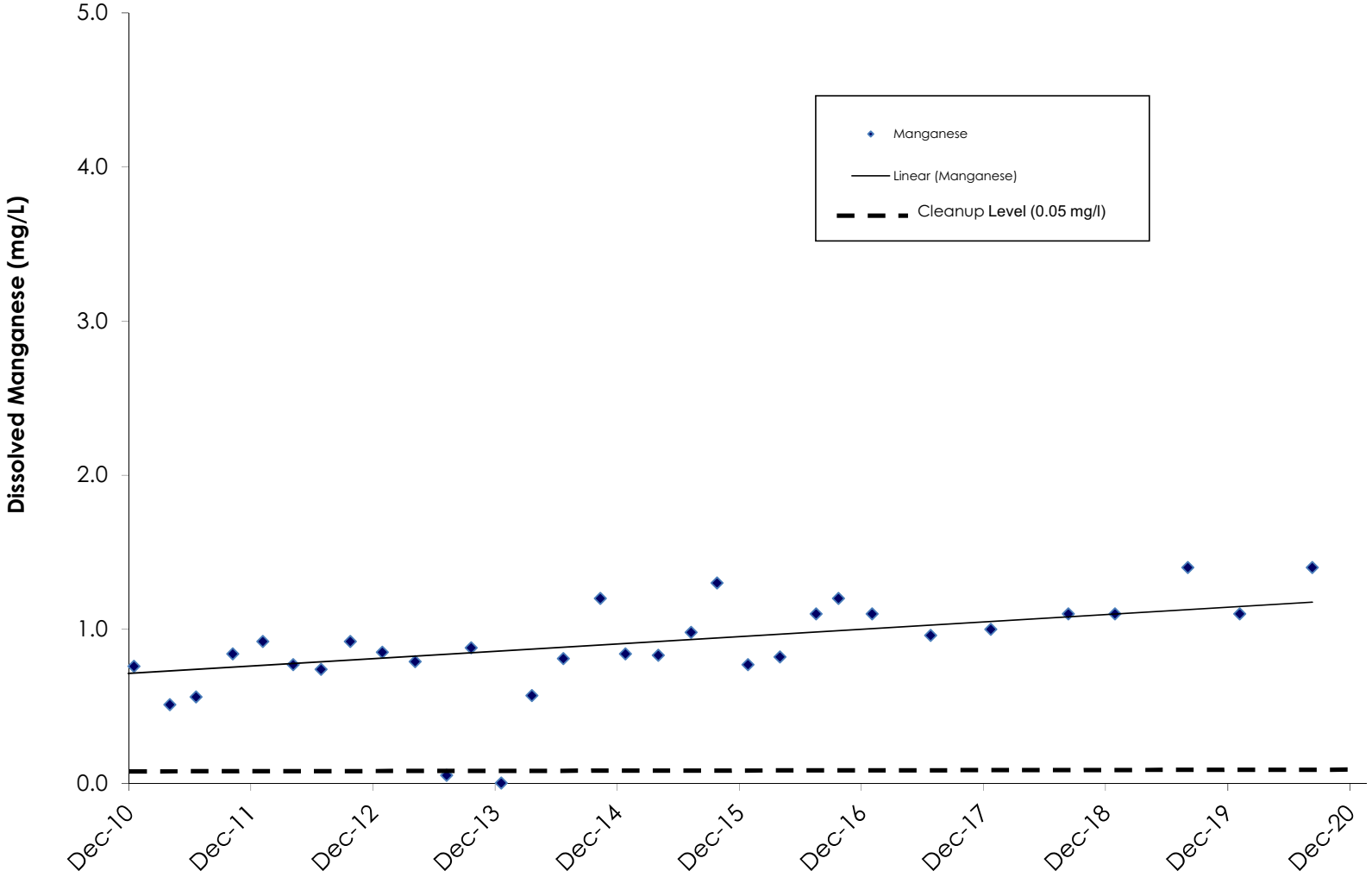


Figure 26

Dissolved Manganese

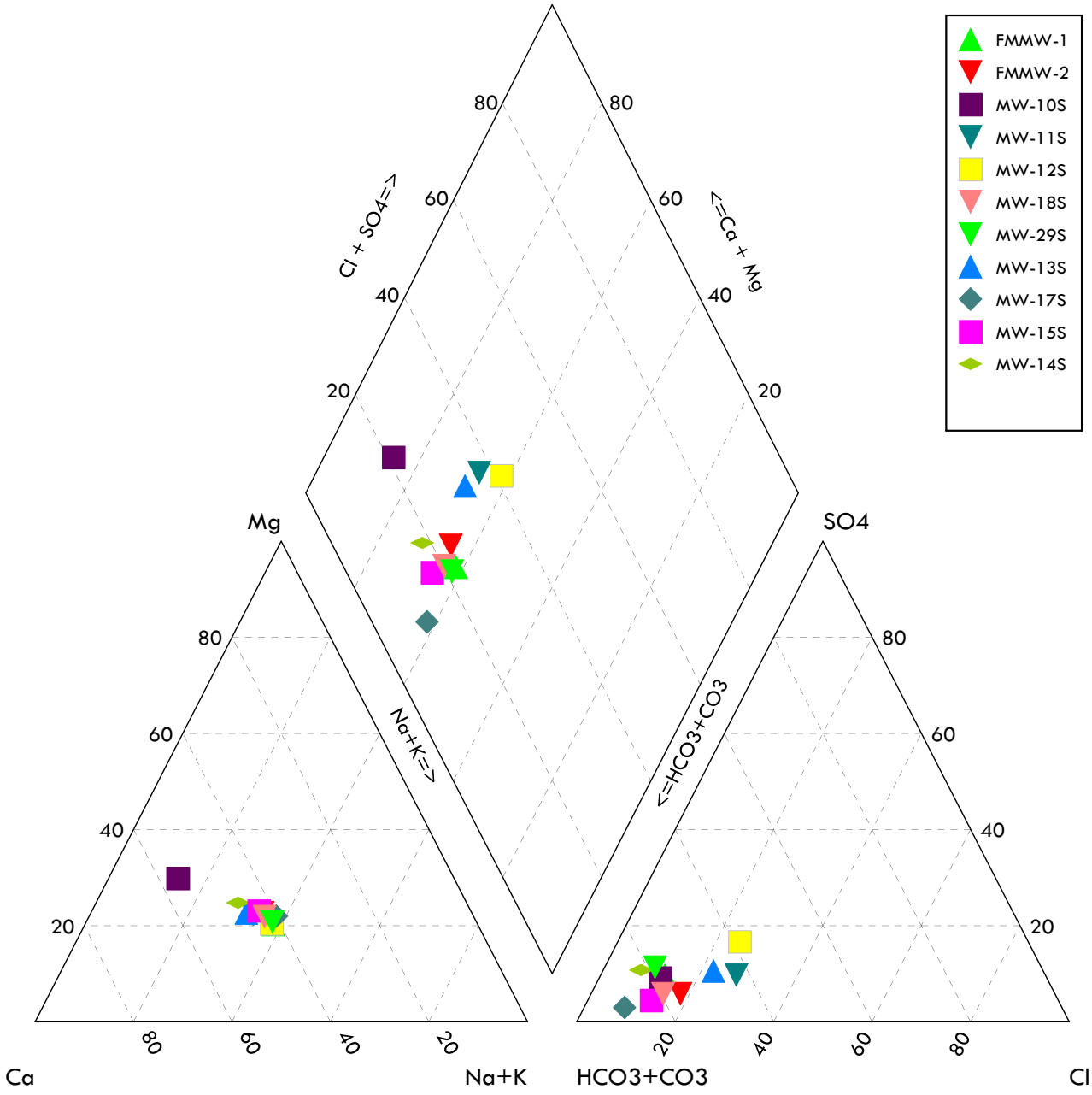
Upper Regional Aquifer, Hidden Valley Landfill
Well MW-14D, 10 year trend



Appendix F

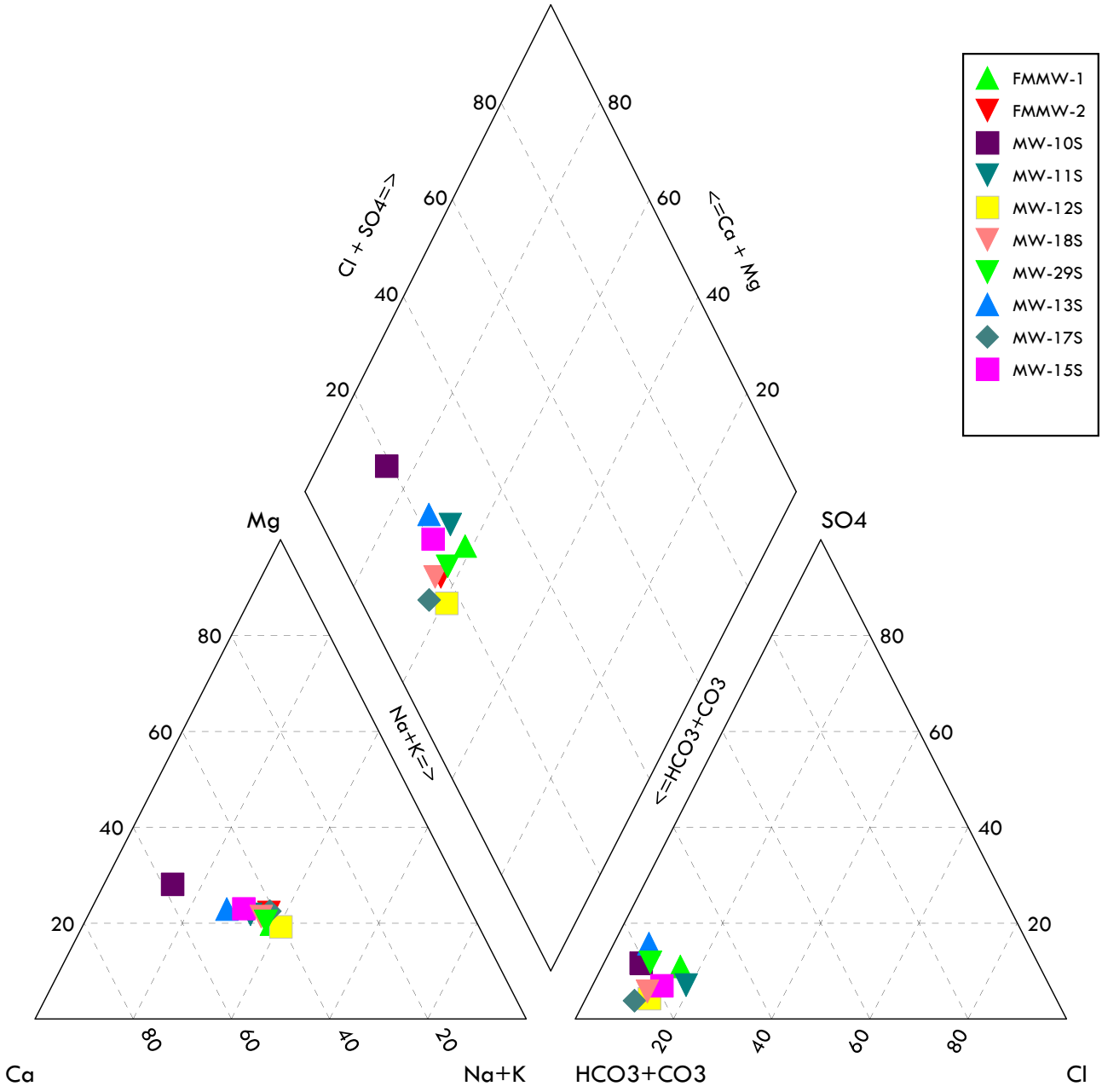
TRILINEAR DIAGRAMS

Shallow Aquifer - Semi-annual Event No. 1, 2020



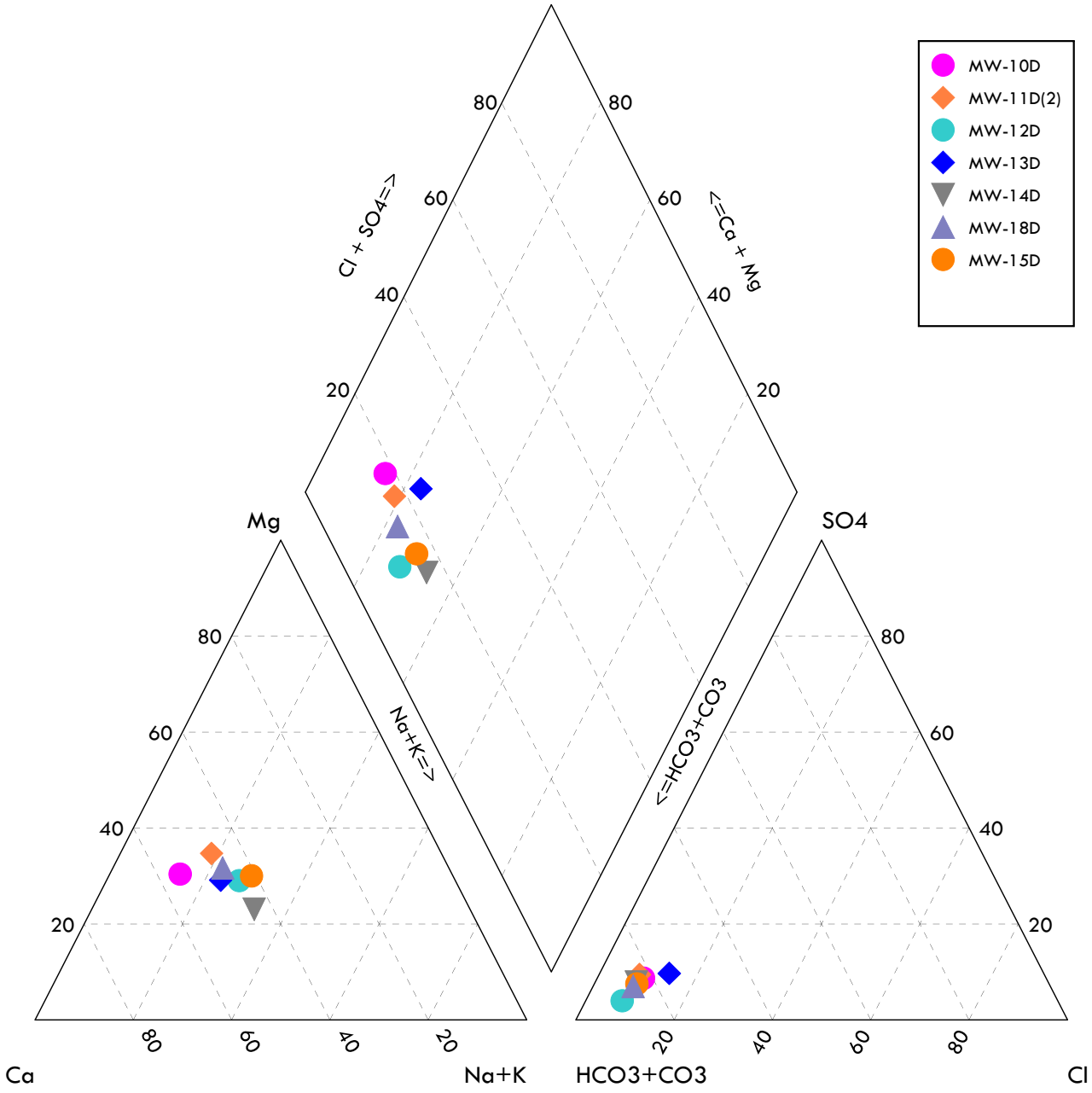
DESCRIPTION: Trilinear Diagram: Shallow Aquifer - Semi-annual Event No. 1, 2020		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: April 2020

Shallow Aquifer - Semi-annual Event No. 2, 2020



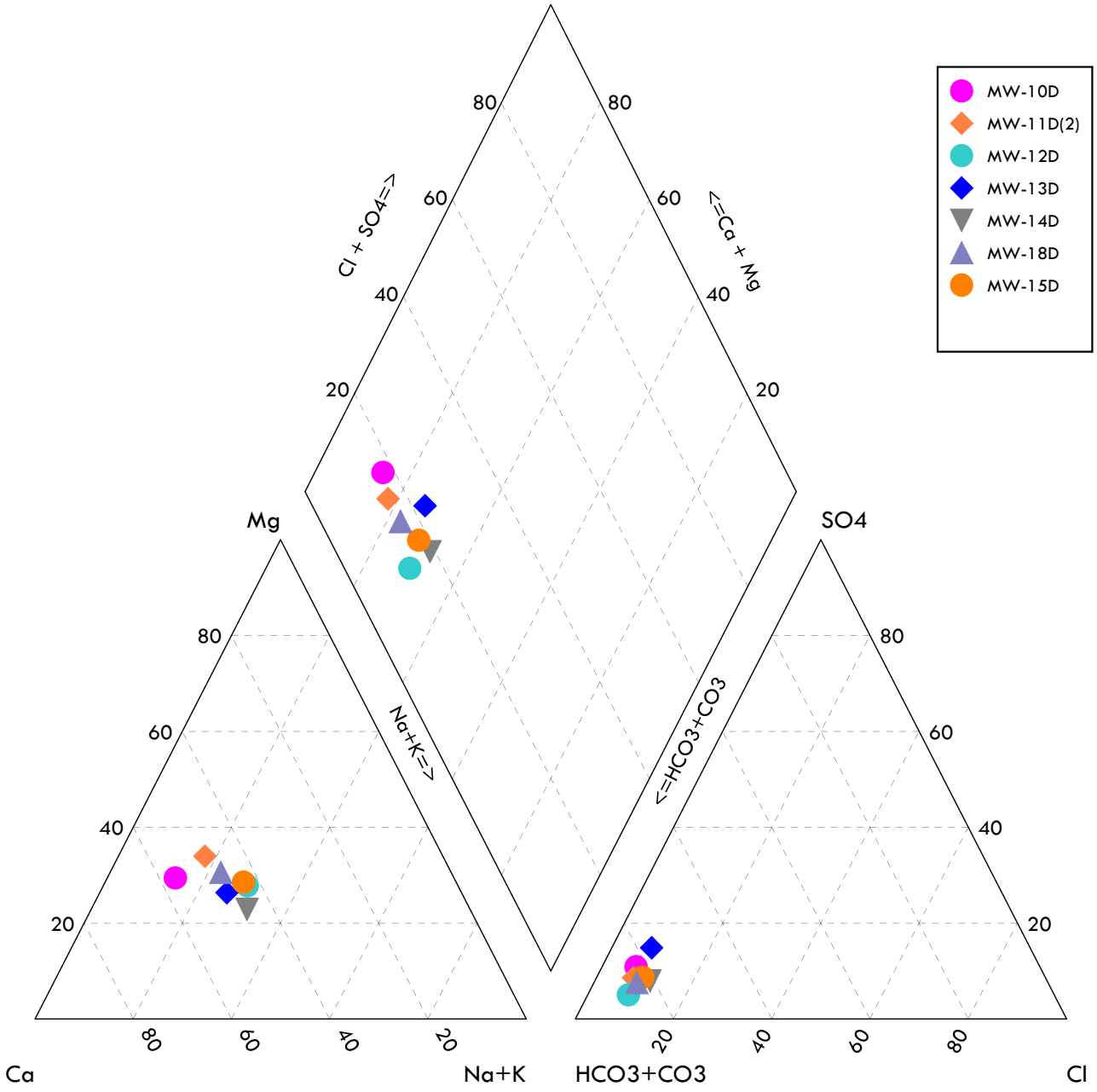
DESCRIPTION: Trilinear Diagram		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: February 2021

Upper Regional Aquifer - Semi-annual No. 1, 2020



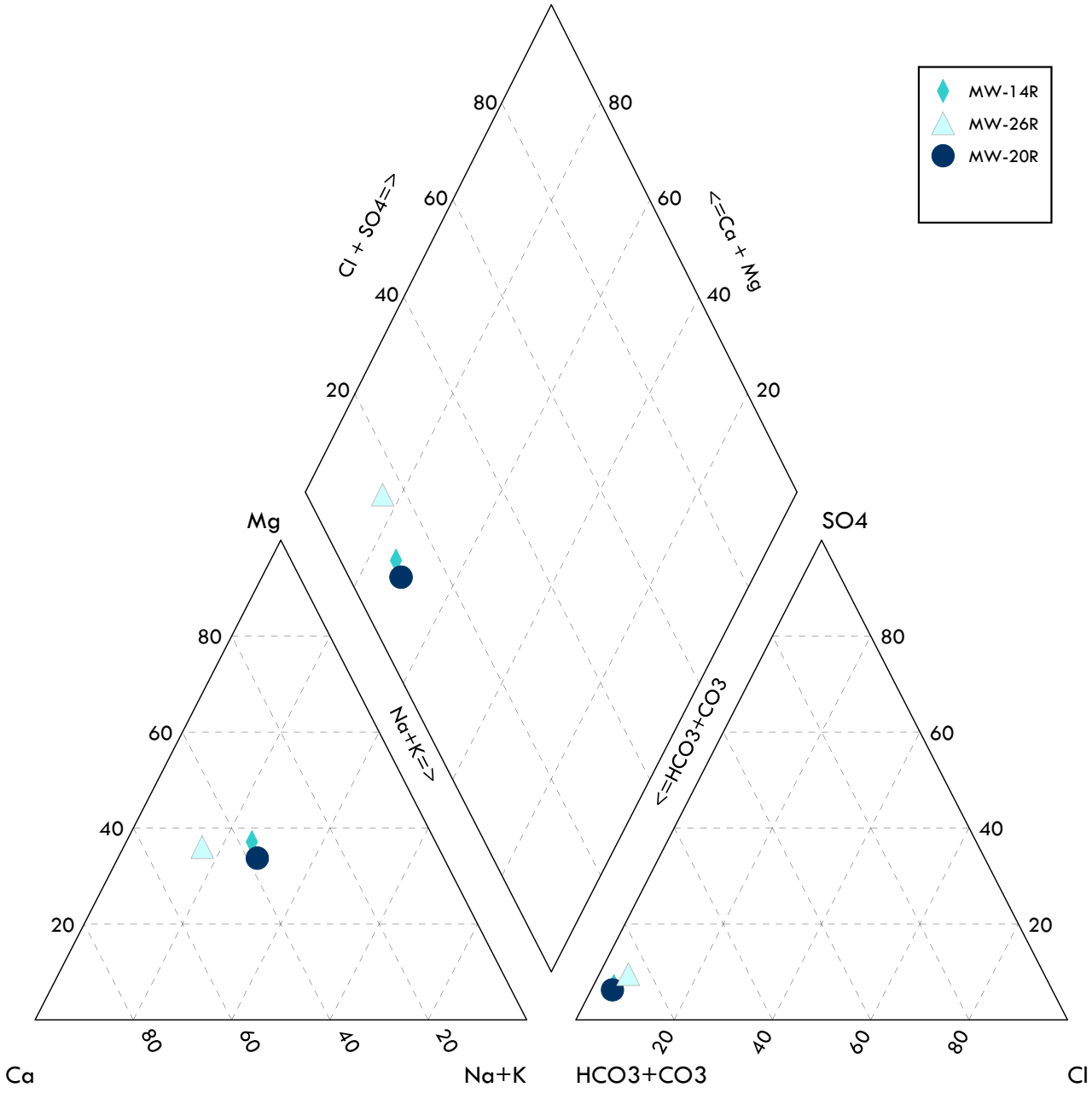
DESCRIPTION: Trilinear Diagram: Upper Regional Aquifer - Semi-annual Event No. 1, 2020		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: April 2020

Upper Regional Aquifer - Semi-annual Event No. 2, 2020



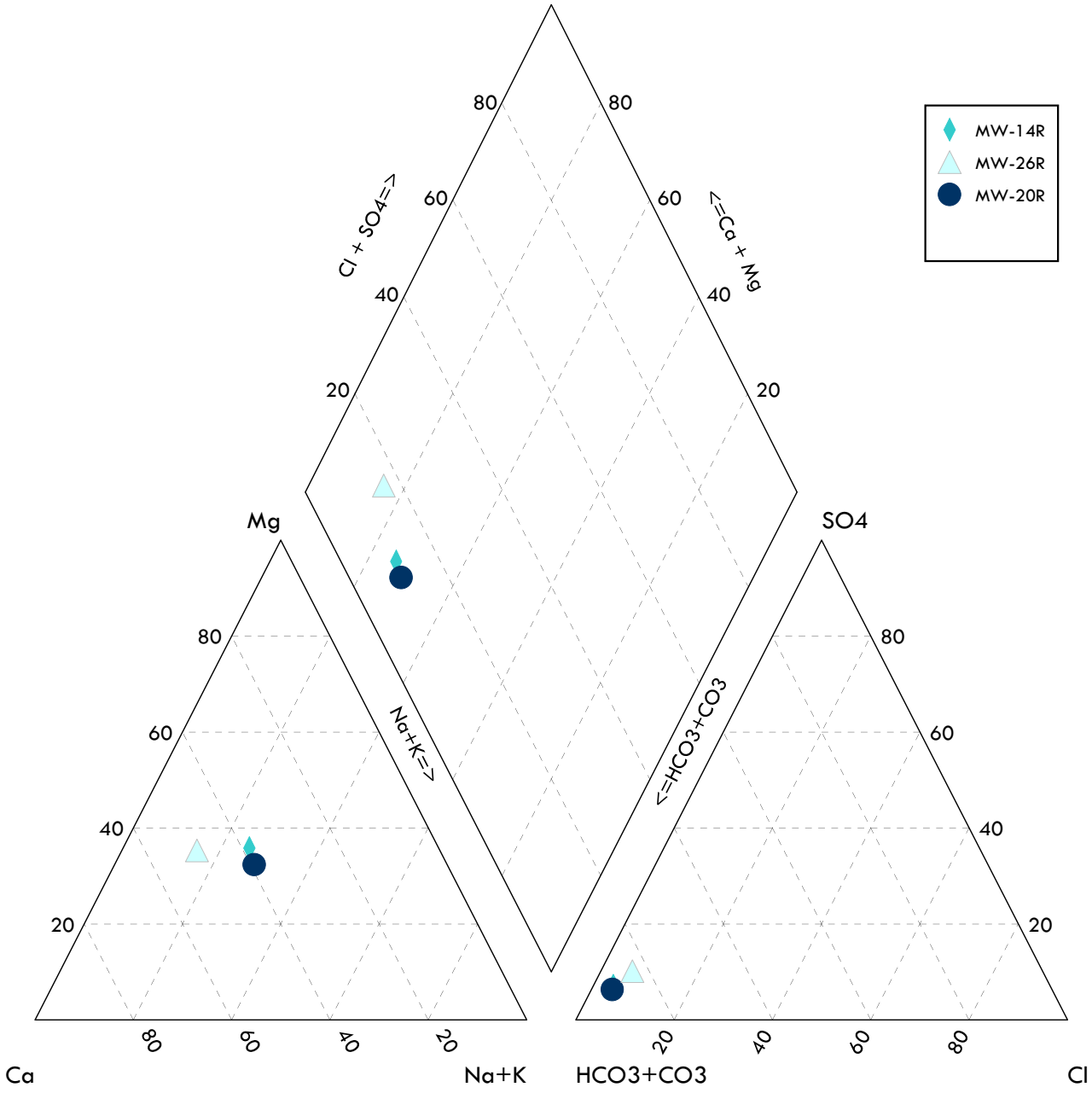
DESCRIPTION: Trilinear Diagram		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: February 2021

Lower Regional Aquifer - Semi-annual Event No. 1, 2020



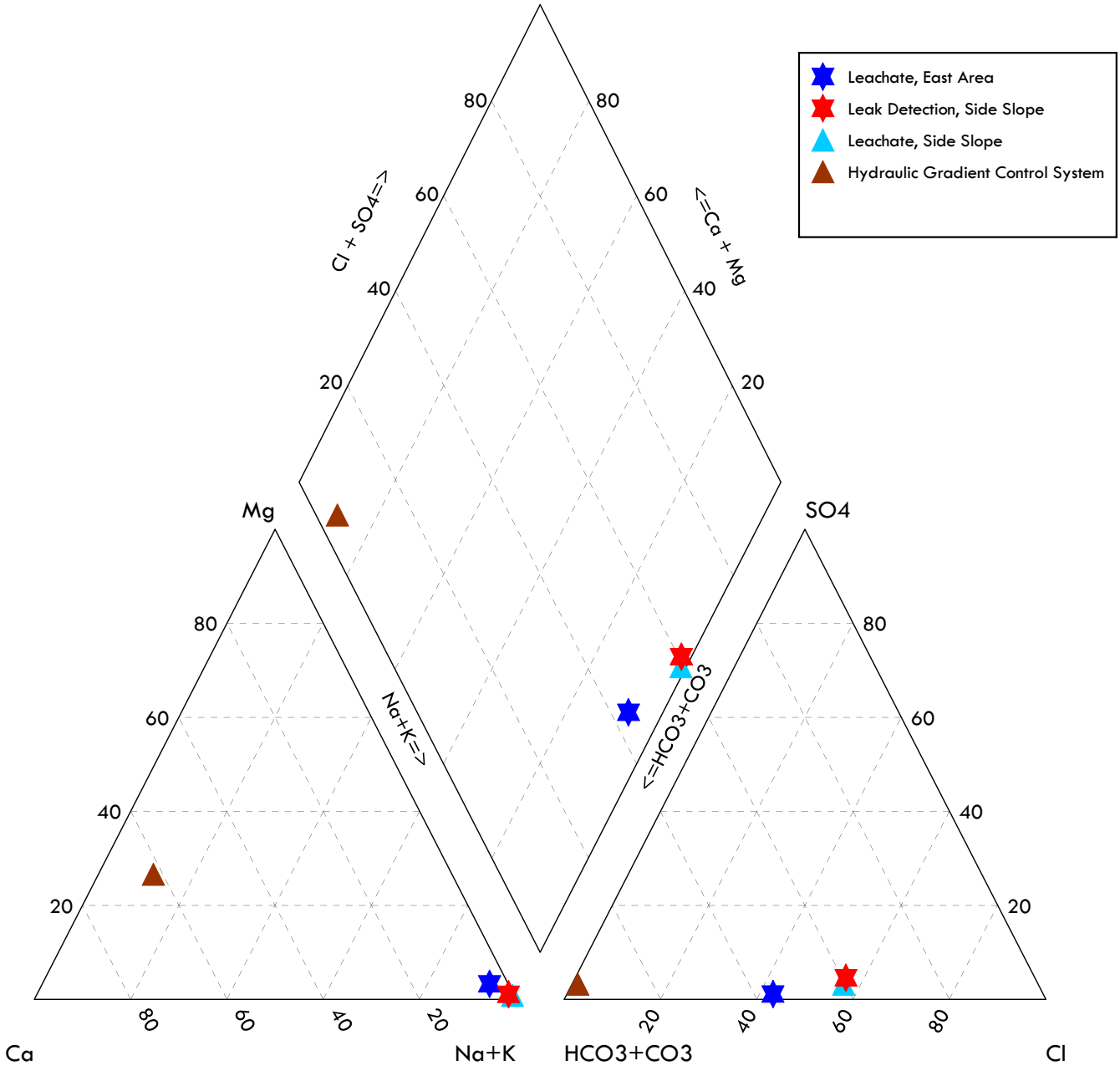
DESCRIPTION: Trilinear Diagram: Lower Regional Aquifer - Semi-annual Event No. 1, 2020		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: April 2020

Lower Regional Aquifer - Semi-annual Event No. 2, 2020



DESCRIPTION: Trilinear Diagram		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: February 2021

Leachate and Leak Detection Locations - Semi-annual Event No. 1, 2020



DESCRIPTION: Trilinear Diagram: Leachate and Leak Detection Locations - Semi-annual Event No. 1, 2020		
	PROJECT: Hidden Valley Landfill	PROJECT NO: 04220002.03
	CLIENT: LRI Hidden Valley	DATE: April 2020

Appendix G

STATISTICAL CALCULATIONS

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-10D																	
MW-10D	1/13/2016	226	226	93	93	5.9	5.9	0.38	0.38	2.1	2.1	7.9	7.9	150	150	1.0 L	0.5
MW-10D	4/19/2016	229	229	92	92	6.6	6.6	0.1 L	0.05	2.1	2.1	10	10	150	150	1.0 L	0.5
MW-10D	7/5/2016	231	231	87	87	8.0	8.0	0.1 L	0.05	0.99	0.99	14	14	130	130	1.1	1.1
MW-10D	10/10/2016	243	243	96	96	7.3	7.3	0.1 L	0.05	0.66	0.66	13.0	13	140	140	1.0	1.0
MW-10D	1/18/2017	217	217	84	84	5.6	5.6	0.1 L	0.05	1.7	1.7	11	11	140	140	1.0 L	0.5
MW-10D	7/13/2017	214	214	76	76	5.2	5.2	0.1 L	0.05	1.3	1.3	12	12	140	140	1.0 L	0.5
MW-10D	1/8/2018	222	222	79	79	4.9	4.9	0.1 L	0.05	2.3	2.3	8.6	8.6	140	140	1.0 L	0.5
MW-10D	8/28/2018	242	242	96	96	5.9	5.9	0.1 L	0.05	0.56	0.56	13	13	160	160	1.1	1.1
MW-10D	1/14/2019	258	258	110	110	5.7	5.7	0.1 L	0.05	0.85	0.85	9.2	9.2	180	180	1.0	1.0
MW-10D	8/20/2019	193	193	72	72	5.1	5.1	0.1 L	0.05	2.1	2.1	8.8	8.8	140	140	1.0 L	0.5
MW-10D	1/22/2020	265	265	110	110	8.9	8.9	0.1 L	0.05	1.3	1.3	11	11	160	160	1.0	1.0
MW-10D	8/25/2020	258	258	120	120	7.1	7.1	0.1 L	0.05	0.6	0.56	15.0	15	180	180	1.2	1.2
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		1		12		12		12		6	
Minimum conc.			193		72		4.9		0.050		0.56		7.9		130		0.5
Maximum conc.			265		120		8.9		0.38		2.3		15		180		1.2
Average conc.			233		93		6.4		0.078		1.4		11.1		151		0.8
Distribution			Lognormal		Lognormal		Lognormal		NC		Lognormal		Lognormal		Neither		NC
UCL 95			244.9		101.31		7.06		NC		2.0		12.52		180*		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-10S																	
MW-10S	1/13/2016	243	243	91	91	13	13	0.1 L	0.05	1.5	1.5	12	12	140	140	1.1	1.1
MW-10S	4/18/2016	236	236	87	87	9.0	9.0	0.1 L	0.05	1.1	1.1	14	14	130	130	1.4	1.4
MW-10S	7/5/2016	235	235	88	88	8.0	8.0	0.1 L	0.05	0.75	0.75	15	15	130	130	1.2	1.2
MW-10S	10/10/2016	254	254	100	100	7.8	7.8	0.1 L	0.05	0.8	0.81	12	12	150	150	1.1	1.1
MW-10S	1/18/2017	245	245	92	92	7.9	7.9	0.1 L	0.05	1.1	1.1	15	15	150	150	1.2	1.2
MW-10S	7/13/2017	225	225	83	83	5.7	5.7	0.1 L	0.05	0.46	0.46	14	14	140	140	1.4	1.4
MW-10S	1/8/2018	291	291	120	120	6.6	6.6	0.1 L	0.05	0.76	0.76	8.9	8.9	160	160	1.1	1.1
MW-10S	8/28/2018	247	247	99	99	6.0	6.0	0.1 L	0.05	0.48	0.48	13	13	140	140	1.1	1.1
MW-10S	1/14/2019	254	254	110	110	6.1	6.1	0.19	0.19	0.81	0.81	9.6	9.6	160	160	1.1	1.1
MW-10S	8/20/2019	306	306	130	130	7.7	7.7	0.1 L	0.05	0.2 L	0.1	17	17	180	180	1.6	1.6
MW-10S	1/21/2020	269	269	100	100	11	11	0.1 L	0.05	1.3	1.3	11	11	160	160	1.1	1.1
MW-10S	8/25/2020	298	298	110	110	7.2	7.2	0.1 L	0.05	0.87	0.87	15	15	180	180	1.4	1.4
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		1		11		12		12		12	
Minimum conc.			225		83		5.7		0.05		0.10		8.9		130		1.1
Maximum conc.			306		130		13.0		0.19		1.5		17		180		1.6
Average conc.			259		101		8.0		0.06		0.8		13		152		1.2
Distribution			Lognormal		Lognormal		Lognormal		NC		Normal		Lognormal		Lognormal		Neither
UCL 95			272.9		108.69		9.20		NC		1.04		14.56		161.0		1.6*

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-11D(2)																	
MW-11D(2)	1/11/2016	216	216	87	87	5.4	5.4	0.1 L	0.05	1.8	1.8	7.8	7.8	260	260	1 L	0.5
MW-11D(2)	4/19/2016	217	217	86	86	6.2	6.2	0.1 L	0.05	1.8	1.8	8.0	8.0	140	140	1 L	0.5
MW-11D(2)	7/5/2016	217	217	85	85	6.0	6.0	0.1 L	0.05	1.8	1.8	7.9	7.9	130	130	1 L	0.5
MW-11D(2)	10/12/2016	214	214	86	86	6.2	6.2	0.1 L	0.05	1.9	1.9	8.0	8.0	140	140	1 L	0.5
MW-11D(2)	1/19/2017	213	213	85	85	6.1	6.1	0.1 L	0.05	1.7	1.7	8.2	8.2	130	130	1 L	0.5
MW-11D(2)	7/11/2017	199	199	82	82	7.2	7.2	0.1 L	0.05	1.7	1.7	8.3	8.3	140	140	1 L	0.5
MW-11D(2)	1/10/2018	221	221	78	78	5.8	5.8	0.1 L	0.05	1.6	1.6	8.7	8.7	140	140	1 L	0.5
MW-11D(2)	8/27/2018	215	215	80	80	5.8	5.8	0.1 L	0.05	1.7	1.7	9.6	9.6	130	130	1 L	0.5
MW-11D(2)	1/15/2019	211	211	82	82	5.6	5.6	0.1 L	0.05	1.9	1.9	9.4	9.4	140	140	1 L	0.5
MW-11D(2)	8/21/2019	215	215	83	83	5.5	5.5	0.1 L	0.05	1.8	1.8	9.3	9.3	150	150	1 L	0.5
MW-11D(2)	1/22/2020	210	210	83	83	5.8	5.8	0.1 L	0.05	1.8	1.8	9.0	9.0	140	140	1 L	0.5
MW-11D(2)	8/26/2020	328	328	86	86	5.4	5.4	0.1 L	0.05	1.8	1.8	8.3	8.3	150	150	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		12		12		12		0	
Minimum conc.			199		78		5.4		0.05		1.6		7.8		130		0.5
Maximum conc.			328		87		7.2		0.05		1.9		9.6		260		0.5
Average conc.			223		84		5.9		0.05		1.8		8.5		149		0.5
Distribution			Neither		Lognormal		Neither		NC		Neither		Lognormal		Neither		NC
UCL 95			328*		85.05		7.2*		NC		1.9*		8.88		260*		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-11S																	
MW-11S	1/11/2016	293	293	69	69	15	15	0.1 L	0.05	11	11	16	16	200	200	1.4	1.4
MW-11S	4/19/2016	204	204	53	53	12	12	0.1 L	0.05	3.5	3.5	14	14	130	130	1.5	1.5
MW-11S	7/5/2016	250	250	73	73	19	19	0.1 L	0.05	1.1	1.1	13	13	150	150	1.2	1.2
MW-11S	10/12/2016	245	245	78	78	19	19	0.1 L	0.05	0.76	0.76	12	12	150	150	1.0	1.0
MW-11S	1/18/2017	257	257	70	70	16	16	0.1 L	0.05	4.5	4.5	12	12	160	160	1.1	1.1
MW-11S	7/11/2017	201	201	65	65	13	13	0.17	0.17	1.5	1.5	13	13	160	160	1	1.0
MW-11S	1/9/2018	277	277	74	74	16	16	0.1 L	0.05	5.4 H	5.4	11	11	170	170	1.2	1.2
MW-11S	8/27/2018	254	254	85	85	14	14	0.1 L	0.05	0.67	0.67	11	11	170	170	1.3	1.3
MW-11S	1/15/2019	211	211	54	54	17	17	0.1 L	0.05	3.2	3.2	7.4	7.4	140	140	1 L	0.5
MW-11S	8/21/2019	257	257	100	100	11	11	0.1 L	0.05	0.86	0.86	8.2	8.2	170	170	1 L	0.5
MW-11S	1/22/2020	244	244	62	62	19	19	0.1 L	0.05	3.8	3.8	9.1	9.1	170	170	1 L	0.5
MW-11S	8/26/2020	422	422	100	100	18	18	0.1 L	0.05	1.3	1.3	9.0	9.0	200	200	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		1		12		12		12		8	
Minimum conc.			201		53		11.0		0.05		0.67		7.4		130		0.5
Maximum conc.			422		100		19.0		0.17		11.0		16.0		200		1.5
Average conc.			260		74		15.8		0.06		3.1		11.3		164		1.0
Distribution			Neither		Lognormal		Lognormal		NC		Lognormal		Lognormal		Lognormal		Neither
UCL 95			422*		82.62		17.5		NC		6.81		12.92		176.03		1.5*

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-12S																	
MW-12S	1/14/2016	284	284	110	110	20	20	0.1 L	0.05	2.4	2.4	4.2	4.2	200	200	2.5	2.5
MW-12S	4/19/2016	428	428	170	170	28	28	2.0	2.0	0.2 L	0.1	1.2	1.2	240	240	4.6	4.6
MW-12S	7/6/2016	384	384	160	160	20	20	3.9	3.9	0.2 L	0.1	0.66	0.66	210	210	3.3	3.3
MW-12S	10/12/2016	362	362	150	150	20	20	1.8	1.8	1.4	1.4	2.1	2.1	210	210	2.1	2.1
MW-12S	1/19/2017	313	313	100	100	14	14	1.7	1.7	6.3	6.3	3.7	3.7	210	210	2.3	2.3
MW-12S	7/10/2017	398	398	160	160	23	23	3.8	3.8	0.2 L	0.1	0.63	0.63	230	230	3.8	3.8
MW-12S	1/9/2018	331	331	45	45	14	14	1.4	1.4	19 H	19	2.9	2.9	230	230	2.0	2.0
MW-12S	8/28/2018	340	340	140	140	11	11	2.9	2.9	1.4 H	1.4	0.81	0.81	210	210	2.2	2.2
MW-12S	1/14/2019	518	518	59	59	9.2	9.2	1.4	1.4	40	40	3.1	3.1	380	380	1.6	1.6
MW-12S	8/21/2019	326	326	160	160	10	10	1.0	1	1	1	8.7	8.7	220	220	1.7	1.7
MW-12S	1/21/2020	296	296	22	22	6.5	6.5	0.1 L	0.05	22	22	5.9	5.9	240	240	1.2	1.2
MW-12S	8/27/2020	272	272	110	110	12	12	0.5	0.5	5.6	5.6	5.3	5.3	230	230	1.8	1.8
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		10		9		12		12		12	
Minimum conc.			272		22		6.5		0.05		0.1		0.63		200		1.2
Maximum conc.			518		170		28.0		3.90		40.0		8.7		380		4.6
Average conc.			354		116		15.6		1.71		8.3		3.3		234		2.4
Distribution			Lognormal		Neither		Lognormal		Normal		Lognormal		Lognormal		Neither		Lognormal
UCL 95			392.8		170*		20.7		2.38		**40.0***		7.42		380*		3.07

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-12D																	
MW-12D	1/14/2016	297	297	140	140	9.4	9.4	0.1 L	0.05	1.4	1.4	6.5	6.5	190	190	1 L	0.5
MW-12D	4/19/2016	278	278	120	120	8.3	8.3	0.1 L	0.05	1.6	1.6	6.9	6.9	230	230	1 L	0.5
MW-12D	7/6/2016	282	282	120	120	7.4	7.4	0.1 L	0.05	1.6	1.6	7.0	7.0	170	170	1 L	0.5
MW-12D	10/12/2016	293	293	130	130	9.2	9.2	0.1 L	0.05	1.3	1.3	6.4	6.4	180	180	1 L	0.5
MW-12D	1/19/2017	284	284	120	120	8.1	8.1	0.1 L	0.05	1.4	1.4	6.8	6.8	170	170	1 L	0.5
MW-12D	7/10/2017	266	266	110	110	7.7	7.7	0.1 L	0.05	1.5	1.5	6.8	6.8	170	170	1 L	0.5
MW-12D	1/9/2018	287	287	110	110	8.1	8.1	0.1 L	0.05	1.5 H	1.5	6.7	6.7	170	170	1 L	0.5
MW-12D	8/28/2018	275	275	120	120	8.4	8.4	0.1 L	0.05	1.3 H	1.3	7.6	7.6	180	180	1 L	0.5
MW-12D	1/16/2019	291	291	160	160	8.7	8.7	0.1 L	0.05	1.2	1.2	7.1	7.1	200	200	1 L	0.5
MW-12D	8/21/2019	321	321	140	140	9	9.0	0.1 L	0.05	1.1	1.1	7.2	7.2	210	210	1 L	0.5
MW-12D	1/21/2020	330	330	160	160	9.4	9.4	0.1 L	0.05	0.9	0.93	6.8	6.8	200	200	1 L	0.5
MW-12D	8/27/2020	321	321	130	130	8.7	8.7	0.1 L	0.05	1.2	1.2	7.1	7.1	210	210	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		12		12		12		0	
Minimum conc.			266		110		7.4		0.05		0.9		6.4		170		0.5
Maximum conc.			330		160		9.4		0.05		1.6		7.6		230		0.5
Average conc.			294		130		8.5		0.05		1.3		6.9		190		0.5
Distribution			Lognormal		Lognormal		Lognormal		NC		Lognormal		Lognormal		Lognormal		NC
UCL 95			304.5		139.3		8.9		NC		1.46		7.08		200.86		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-13D																	
MW-13D	1/13/2016	360	360	140	140	14	14	0.1 L	0.05	3.8	3.8	16	16	230	230	1 L	0.5
MW-13D	4/19/2016	379	379	150	150	17	17	0.1 L	0.05	0.84	0.84	15	15	230	230	1.2	1.2
MW-13D	7/6/2016	366	366	150	150	15	15	0.1 L	0.05	0.54	0.54	12	12	220	220	1 L	0.5
MW-13D	10/10/2016	345	345	150	150	14	14	0.1 L	0.05	0.58	0.58	14	14	200	200	1.0 L	0.5
MW-13D	1/18/2017	341	341	140	140	12	12	0.1 L	0.05	0.57	0.57	16	16	200	200	1.1	1.1
MW-13D	7/10/2017	358	358	150	150	15	15	0.1 L	0.05	0.57	0.57	10	10	220	220	1.3	1.3
MW-13D	1/8/2018	337	337	120	120	12	12	0.1 L	0.05	1.2	1.2	12	12	200	200	1.1	1.1
MW-13D	8/28/2018	333	333	130	130	12	12	0.1 L	0.05	0.24	0.24	19	19	98	98	1.1	1.1
MW-13D	1/14/2019	270	270	100	100	8.9	8.9	0.1 L	0.05	0.99	0.99	13	13	180	180	1 L	0.5
MW-13D	8/20/2019	298	298	120	120	8.2	8.2	0.1 L	0.05	0.2 L	0.1	19	19	180	180	1.1	1.1
MW-13D	1/21/2020	280	280	100	100	13	13	0.1 L	0.05	1.0	1.0	12	12	170	170	1 L	0.5
MW-13D	8/25/2020	302	302	110	110	8.1	8.1	0.1 L	0.05	0.20 L	0.1	20	20	190	190	1.0 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		10		12		12		6	
Minimum conc.			270		100		8.1		0.05		0.10		10		98		0.5
Maximum conc.			379		150		17.0		0.05		3.8		20		230		1.3
Average conc.			331		130		12.4		0.05		0.9		14.8		193		0.8
Distribution			Lognormal		Neither		Lognormal		NC		Lognormal		Lognormal		Neither		Neither
UCL 95			351.1		150*		14.4		NC		2.41		16.81		230*		1.3*

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-13S																	
MW-13S	1/13/2016	383	383	110	110	16	16	0.1 L	0.05	10	10	17	17	250	250	1.0	1.0
MW-13S	4/19/2016	420	420	140	140	28	28	0.1 L	0.05	0.65	0.65	19	19	240	240	1.7	1.7
MW-13S	7/6/2016	383	383	150	150	20	20	0.1	0.1	0.2 L	0.1	8.8	8.8	210	210	1.6	1.6
MW-13S	10/11/2016	366	366	150	150	18	18	0.1 L	0.05	0.2 L	0.1	16	16	220	220	1.2	1.2
MW-13S	1/18/2017	323	323	130	130	12	12	0.1 L	0.05	0.46	0.46	17	17	190	190	1.2	1.2
MW-13S	7/10/2017	359	359	140	140	18	18	0.11	0.11	0.2 L	0.1	6.4	6.4	230	230	2.1	2.1
MW-13S	1/8/2018	293	293	100	100	10	10	0.1 L	0.05	1.8	1.8	12	12	180	180	1.2	1.2
MW-13S	8/28/2018	304	304	110	110	11	11	0.1 L	0.05	0.2 L	0.1	22	22	190	190	1.2	1.2
MW-13S	1/14/2019	204	204	70	70	8.0	8.0	0.1 L	0.05	1.2	1.2	15	15	150	150	1.1	1.1
MW-13S	8/20/2019	257	257	100	100	6.5	6.5	0.1 L	0.05	0.2 L	0.1	19	19	160	160	1 L	0.5
MW-13S	1/21/2020	210	210	64	64	15	15	0.1 L	0.05	1.3	1.3	10	10	150	150	1 L	0.5
MW-13S	8/25/2020	270	270	99	99	6.4	6.4	0.1 L	0.05	0.2 L	0.1	19	19	170	170	1.0 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		2		6		12		12		9	
Minimum conc.			204		64		6.4		0.05		0.1		6.4		150		0.5
Maximum conc.			420		150		28.0		0.11		10.0		22.0		250		2.1
Average conc.			314		114		14.1		0.06		1.3		15.1		195		1.2
Distribution			Lognormal		Lognormal		Lognormal		NC		Neither		Normal		Lognormal		Normal
UCL 95			360.5		134.2		19.1		NC		10.0*		17.57		215.5		1.41

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-14D																	
MW-14D	1/13/2016	190	190	72	72	8.1	8.1	2.8	2.8	0.2 L	0.10	8.4	8.4	110	110	1.5	1.5
MW-14D	4/18/2016	206	206	76	76	9.6	9.6	2.7	2.7	0.2 L	0.10	11	11	120	120	1.6	1.6
MW-14D	8/4/2016	235	235	95	95	10	10	4.0	4.0	0.2 L	0.10	13	13	140	140	2.0	2.0
MW-14D	10/10/2016	264	264	91	91	15	15	4.1	4.1	0.2 L	0.10	12	12	140	140	1.5	1.5
MW-14D	1/18/2017	238	238	88	88	10	10	3.9	3.9	0.2 L	0.10	11	11	140	140	1.8	1.8
MW-14D	7/12/2017	238	238	84	84	8.3	8.3	3.7	3.7	0.2 L	0.10	10	10	130	130	1.7	1.7
MW-14D	1/8/2018	247	247	83	83	11	11	3.7	3.7	0.2 L	0.10	11	11	140	140	1.8	1.8
MW-14D	8/28/2018	250	250	90	90	9.0	9.0	3.9	3.9	0.2 H L	0.10	13	13	150	150	1.6	1.6
MW-14D	1/14/2019	230	230	88	88	8.3	8.3	3.7	3.7	0.2 L	0.10	9.3	9.3	160	160	1.9	1.9
MW-14D	8/20/2019	289	289	120	120	12.0	12	3.8	3.8	0.2 L	0.10	7.5	7.5	170	170	1.8	1.8
MW-14D	1/22/2020	219	219	89	89	6.2	6.2	3.1	3.1	0.2 L	0.10	7.9	7.9	130	130	2.0	2.0
MW-14D	8/26/2020	262	262	100	100	10	9.7	3.4	3.4	0.2 L	0.10	9.3	9.3	180	180	1.6	1.6
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		12		0		12		12		12	
Minimum conc.			190		72		6.2		2.7		0.1		7.5		110		1.5
Maximum conc.			289		120		15		4.1		0.1		13.0		180		2.0
Average conc.			239		90		10		3.6		0.1		10		143		1.7
Distribution			Lognormal		Lognormal		Lognormal		Neither		NC		Lognormal		Lognormal		Lognormal
UCL 95			254.2		96.3		11.1		4.1*		NC		11.41		153.88		1.83

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-14R																	
MW-14R	1/12/2016	103	103	56	56	1.8	1.8	0.1 L	0.05	0.2 L	0.10	3.5	3.5	94	94	1 L	0.5
MW-14R	4/18/2016	106	106	47	47	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.6	3.6	96	96	1 L	0.5
MW-14R	7/6/2016	103	103	47	47	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.7	3.7	89	89	1 L	0.5
MW-14R	10/12/2016	104	104	47	47	1.8	1.8	0.1 L	0.05	0.2 L	0.10	3.6	3.6	96	96	1 L	0.5
MW-14R	1/18/2017	105	105	47	47	1.6	1.6	0.1 L	0.05	0.2 L	0.10	3.6	3.6	91	91	1 L	0.5
MW-14R	7/11/2017	99	99	46	46	2.0	2.0	0.1 L	0.05	0.2 L	0.10	3.4	3.4	100	100	1 L	0.5
MW-14R	1/8/2018	104	104	44	44	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.4	3.4	86	86	1 L	0.5
MW-14R	8/27/2018	107	107	45	45	1.6	1.6	0.1 L	0.05	0.2 L	0.10	3.6	3.6	110	110	1 L	0.5
MW-14R	1/14/2019	105	105	44	44	1.6	1.6	0.1 L	0.05	0.2 L	0.10	3.5	3.5	120	120	1 L	0.5
MW-14R	8/20/2019	113	113	49	49	1.7	1.7	0.1 L	0.05	0.2 L	0.10	3.4	3.4	97	97	1 L	0.5
MW-14R	1/21/2020	104	104	48	48	1.6	1.6	0.1 L	0.05	0.2 L	0.10	3.6	3.6	100	100	1 L	0.5
MW-14R	8/25/2020	196	196	50	50	1.6	1.6	0.1 L	0.05	0.2 L	0.10	3.8	3.8	110	110	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		0		12		12		0	
Minimum conc.			99		44		1.6		0.05		0.1		3.4		86		0.5
Maximum conc.			196		56		2.0		0.05		0.1		3.8		120		0.5
Average conc.			112		48		1.7		0.05		0.1		3.6		99		0.5
Distribution			Neither		Neither		Neither		NC		NC		Lognormal		Lognormal		NC
UCL 95			196*		56*		2.0*		NC		NC		3.62		104.36		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-14S																	
MW-14S	1/13/2016	178	178	64	64	8.2	8.2	0.36	0.36	1.3	1.3	7.4	7.4	110	110	1.5	1.5
MW-14S	4/18/2016	192	192	63	63	9.8	9.8	0.28	0.28	0.86	0.86	11	11	120	120	1.7	1.7
MW-14S	7/6/2016	216	216	70	70	13	13	0.1 L	0.05	0.42	0.42	14	14	130	130	1.3	1.3
MW-14S	10/14/2016	231	231	74	74	14	14	0.27	0.27	2.2	2.2	8.2	8.2	140	140	2.2	2.2
MW-14S	1/18/2017	176	176	62	62	7.7	7.7	0.75	0.75	0.64	0.64	8.9	8.9	110	110	1.6	1.6
MW-14S	7/12/2017	196	196	67	67	6.8	6.8	0.46	0.46	0.34	0.34	11	11	110	110	1.7	1.7
MW-14S	1/8/2018	128	128	42	42	4.4	4.4	0.27	0.27	1.0	1.0	5.4	5.4	83	83	1.8	1.8
MW-14S	8/28/2018	295	295	110	110	21	21	0.50	0.50	0.2 L	0.1	7.0	7.0	170	170	2.2	2.2
MW-14S	1/14/2019	127	127	46	46	3.1	3.1	0.48	0.48	0.80	0.80	5.5	5.5	95	95	1.9	1.9
MW-14S	1/22/2020	113	113	41	41	2.7	2.7	0.1 L	0.05	1.6	1.6	5.1	5.1	86	86	1.8	1.8
No. Analyzed		10		10		10		10		10		10		10		10	
No. Detect		10		10		10		8		9		10		10		10	
Minimum conc.			113		41		2.7		0.05		0.1		5.1		83		1.3
Maximum conc.			295		110		21.0		0.75		2.2		14.0		170		2.2
Average conc.			185		64		9.1		0.347		0.9		8.4		115		1.8
Distribution			Lognormal		Lognormal		Lognormal		Normal		Lognormal		Lognormal		Lognormal		Lognormal
UCL 95			226.6		78.0		16.20		0.47		2.2*		10.57		133.0		1.96

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-15D																	
MW-15D	1/13/2016	294	294	130	130	9.7	9.7	0.1 L	0.05	0.58	0.58	10	10	170	170	1.1	1.1
MW-15D	4/18/2016	266	266	110	110	8.1	8.1	0.1 L	0.05	1.0	1.0	9.6	9.6	160	160	1 L	0.5
MW-15D	7/6/2016	266	266	110	110	8.8	8.8	0.1 L	0.05	0.94	0.94	9.9	9.9	160	160	1 L	0.5
MW-15D	10/10/2016	291	291	120	120	9.9	9.9	0.1 L	0.05	0.80	0.80	8.6	8.6	160	160	1 L	0.5
MW-15D	1/17/2017	277	277	120	120	8.7	8.7	0.1 L	0.05	0.83	0.83	10	10	380	380	1 L	0.5
MW-15D	7/11/2017	237	237	110	110	8.4	8.4	0.1 L	0.05	0.98	0.98	9.3	9.3	180	180	1 L	0.5
MW-15D	1/8/2018	262	262	100	100	8.5	8.5	0.1 L	0.05	0.82	0.82	9.6	9.6	170	170	1 L	0.5
MW-15D	8/27/2018	270	270	110	110	8.5	8.5	0.1 L	0.05	0.82	0.82	10	10	170	170	1 L	0.5
MW-15D	1/14/2019	286	286	120	120	9.3	9.3	0.1 L	0.05	0.70	0.70	9.6	9.6	190	190	1 L	0.5
MW-15D	8/20/2019	308	308	130	130	9.3	9.3	0.1 L	0.05	0.66	0.66	11	11	170	170	1 L	0.5
MW-15D	1/21/2020	309	309	130	130	9.4	9.4	0.1 L	0.05	0.66	0.66	11	11	180	180	1 L	0.5
MW-15D	8/26/2020	294	294	110	110	8.8	8.8	0.1 L	0.05	0.65	0.65	11	11	210	210	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		12		12		12		1	
Minimum conc.			237		100		8.1		0.05		0.58		8.6		160		0.5
Maximum conc.			309		130		9.9		0.05		1.0		11.0		380		1.1
Average conc.			280		117		9.0		0.05		0.79		10.0		192		0.6
Distribution			Lognormal		Neither		Lognormal		NC		Lognormal		Lognormal		Neither		NC
UCL 95			291.7		130*		9.25		NC		0.87		10.37		380*		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-15S																	
MW-15S	1/13/2016	235	235	85	85	10	10	3.3	3.3	1.1	1.1	8.4	8.4	130	130	1.6	1.6
MW-15S	4/18/2016	259	259	95	95	12	12	2.9	2.9	0.42	0.42	10	10	150	150	1.6	1.6
MW-15S	7/6/2016	273	273	91	91	17	17	3.4	3.4	0.2 L	0.1	11	11	140	140	1.8	1.8
MW-15S	10/10/2016	270	270	89	89	19	19	2.8	2.8	0.2 L	0.1	11	11	150	150	1.7	1.7
MW-15S	1/17/2017	279	279	100	100	14	14	3.5	3.5	0.2 L	0.1	11	11	160	160	1.6	1.6
MW-15S	7/10/2017	264	264	96	96	12	12	2.7	2.7	0.2 L	0.1	11	11	160	160	1.6	1.6
MW-15S	1/8/2018	273	273	90	90	17	17	2.7	2.7	0.91	0.91	8.4	8.4	150	150	1.9	1.9
MW-15S	8/27/2018	282	282	98	98	16	16	3.2	3.2	0.2 L	0.1	10	10	170	170	2.0	2
MW-15S	1/14/2019	316	316	110	110	13	13	3.5	3.5	4.1	4.1	5.9	5.9	200	200	1.6	1.6
MW-15S	8/20/2019	376	376	160	160	15	15	4.1	4.1	0.29	0.29	3.9	3.9	200	200	1.8	1.8
MW-15S	1/21/2020	362	362	110	110	12	12	3.7	3.7	9.1	9.1	5.6	5.6	200	200	1.4	1.4
MW-15S	8/26/2020	333	333	120	120	15	15	3.1	3.1	0.37	0.37	10	10	210	210	1.7	1.7
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		12		7		12		12		12	
Minimum conc.			235		85		10.0		2.7		0.1		3.9		130		1.4
Maximum conc.			376		160		19.0		4.1		9.1		11.0		210		2.0
Average conc.			294		104		14.3		3.2		1.4		8.9		168		1.7
Distribution			Lognormal		Neither		Lognormal		Lognormal		Neither		Neither		Lognormal		Lognormal
UCL 95			317.4		160*		15.9		3.48		9.1*		11.0*		184		1.78

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-17S																	
MW-17S	1/12/2016	564	564	150	150	23	23	6.5	6.5	21	21	7.7	7.7	340	340	2.0	2.0
MW-17S	4/19/2016	442	442	190	190	26	26	4.4	4.4	0.66	0.66	5.7	5.7	240	240	2.7	2.7
MW-17S	7/6/2016	400	400	160	160	21	21	4.6	4.6	0.2 L	0.1	4.8	4.8	220	220	2.1	2.1
MW-17S	10/13/2016	411	411	170	170	22	22	4.2	4.2	0.2 L	0.1	4.7	4.7	250	250	2.0	2.0
MW-17S	1/17/2017	435	435	170	170	17	17	4.8	4.8	3.9	3.9	4.4	4.4	230	230	2.0	2.0
MW-17S	7/11/2017	367	367	150	150	24	24	4.6	4.6	0.31	0.31	5.2	5.2	220	220	2.0	2.0
MW-17S	1/8/2018	434	434	120	120	20	20	3.1	3.1	12	12	4.6	4.6	250	250	1.8	1.8
MW-17S	8/27/2018	393	393	160	160	13	13	3.8	3.8	0.2 L	0.1	2.0	2.0	220	220	1.9	1.9
MW-17S	1/16/2019	364	364	160	160	12	12	4.7	4.7	3.2	3.2	2.4	2.4	230	230	1.9	1.9
MW-17S	8/22/2019	457	457	210	210	11	11	8.9	8.9	0.51	0.51	3.9	3.9	240	240	2.0	2.0
MW-17S	1/21/2020	478	478	170	170	11	11	6.0	6.0	10	10	5.4	5.4	270	270	1.7	1.7
MW-17S	8/25/2020	499	499	170	170	14	14	4.2	4.2	0.88	0.88	7.1	7.1	250	250	1.7	1.7
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		12		9		12		12		12	
Minimum conc.			364		120		11.0		3.1		0.1		2.0		220		1.7
Maximum conc.			564		210		26.0		8.9		21.0		7.7		340		2.7
Average conc.			437		165		17.8		4.98		4.4		4.8		247		2.0
Distribution			Lognormal		Normal		Lognormal		Lognormal		Lognormal		Normal		Neither		Neither
UCL 95			468.5		176.4		21.7		5.83		**21.0***		5.68		340*		2.7*

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-18D																	
MW-18D	1/11/2016	260	260	120	120	7.6	7.6	0.1 L	0.05	1.6	1.6	6.5	6.5	170	170	1 L	0.5
MW-18D	4/19/2016	269	269	120	120	8.2	8.2	0.1 L	0.05	1.7	1.7	6.6	6.6	170	170	1 L	0.5
MW-18D	7/6/2016	269	269	110	110	7.7	7.7	0.1 L	0.05	1.6	1.6	6.7	6.7	170	170	1 L	0.5
MW-18D	10/11/2016	262	262	110	110	8.1	8.1	0.1 L	0.05	1.6	1.6	6.5	6.5	170	170	1 L	0.5
MW-18D	1/17/2017	260	260	110	110	7.2	7.2	0.1 L	0.05	1.7	1.7	6.7	6.7	170	170	1 L	0.5
MW-18D	7/13/2017	273	273	110	110	7.4	7.4	0.1 L	0.05	1.6	1.6	6.5	6.5	170	170	1 L	0.5
MW-18D	1/10/2018	265	265	100	100	7.4	7.4	0.1 L	0.05	1.5	1.5	6.7	6.7	160	160	1 L	0.5
MW-18D	8/29/2018	261	261	100	100	7.4	7.4	0.1 L	0.05	1.6	1.6	7.8	7.8	190	190	1 L	0.5
MW-18D	1/15/2019	251	251	98	98	7.3	7.3	0.1 L	0.05	1.7	1.7	7.4	7.4	150	150	1 L	0.5
MW-18D	8/21/2019	266	266	110	110	7.0	7.0	0.1 L	0.05	1.6	1.6	8.0	8.0	170	170	1 L	0.5
MW-18D	1/22/2020	250	250	100	100	6.7	6.7	0.1 L	0.05	1.6	1.6	7.8	7.8	160	160	1 L	0.5
MW-18D	8/25/2020	320	320	92	92	6.7	6.7	0.1 L	0.05	1.7	1.7	7.9	7.9	160	160	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		12		12		12		0	
Minimum conc.			250		92		6.7		0.05		1.5		6.5		150		0.5
Maximum conc.			320		120		8.2		0.05		1.7		8.0		190		0.5
Average conc.			267		107		7.4		0.05		1.6		7.1		168		0.5
Distribution			Neither		Lognormal		Lognormal		NC		Neither		Neither		Neither		NC
UCL 95			320*		111.5		7.65		NC		1.7*		8.0*		190*		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-18S																	
MW-18S	1/11/2016	410	410	120	120	17	17	0.1 L	0.05	11	11	10	10	260	260	1.4	1.4
MW-18S	4/19/2016	360	360	140	140	26	26	0.1 L	0.05	0.55	0.55	4.8	4.8	210	210	2.1	2.1
MW-18S	7/6/2016	343	343	140	140	22	22	0.1 L	0.05	0.2 L	0.1	4.6	4.6	200	200	1.6	1.6
MW-18S	10/11/2016	337	337	140	140	21	21	0.1 L	0.05	0.2 L	0.1	3.4	3.4	210	210	1.4	1.4
MW-18S	1/17/2017	395	395	130	130	15	15	0.1 L	0.05	11	11	4.9	4.9	230	230	1.4	1.4
MW-18S	7/13/2017	365	365	130	130	24	24	0.1 L	0.05	0.49	0.49	3.5	3.5	200	200	1.9	1.9
MW-18S	1/10/2018	421	421	120	120	17	17	0.1 L	0.05	10 H	10	4.5	4.5	260	260	1.5	1.5
MW-18S	8/29/2018	326	326	130	130	14	14	0.1 L	0.05	0.28	0.28	4.0	4.0	210	210	1.5	1.5
MW-18S	1/15/2019	337	337	130	130	14	14	0.1 L	0.05	3.1	3.1	4.7	4.7	200	200	1.3	1.3
MW-18S	8/21/2019	346	346	140	140	12	12	0.1 L	0.05	3.2	3.2	7.5	7.5	220	220	1.2	1.2
MW-18S	1/22/2020	383	383	140	140	18	18	0.1 L	0.05	4.9	4.9	9.7	9.7	230	230	1.2	1.2
MW-18S	8/25/2020	389	389	120	120	12	12	0.1 L	0.05	1.6	1.6	7.9	7.9	200	200	1.1	1.1
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		10		12		12		12	
Minimum conc.			326		120		12.0		0.05		0.1		3.4		200		1.1
Maximum conc.			421		140		26.0		0.05		11.0		10.0		260		2.1
Average conc.			368		132		17.7		0.05		3.9		5.8		219		1.5
Distribution			Lognormal		Neither		Lognormal		NC		Lognormal		Lognormal		Neither		Lognormal
UCL 95			384.7		140*		20.56		NC		**11.0***		7.3		260*		1.63

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-20R																	
MW-20R	1/12/2016	94	94	46	46	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.0	3.0	88	88	1 L	0.5
MW-20R	4/19/2016	102	102	48	48	1.8	1.8	0.1 L	0.05	0.2 L	0.1	3.1	3.1	97	97	1 L	0.5
MW-20R	7/6/2016	100	100	46	46	1.7	1.7	0.1 L	0.05	0.2 L	0.1	3.1	3.1	79	79	1 L	0.5
MW-20R	10/13/2016	100	100	47	47	1.7	1.7	0.1 L	0.05	0.2 L	0.1	2.8	2.8	100	100	1 L	0.5
MW-20R	1/18/2017	100	100	46	46	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.1	3.1	85	85	1 L	0.5
MW-20R	7/12/2017	105	105	44	44	1.7	1.7	0.1 L	0.05	0.2 L	0.1	2.9	2.9	86	86	1 L	0.5
MW-20R	1/8/2018	100	100	43	43	1.7	1.7	0.1 L	0.05	0.2 L	0.1	3.0	3.0	87	87	1 L	0.5
MW-20R	8/28/2018	98	98	44	44	1.7	1.7	0.1 L	0.05	0.2 L	0.1	3.1	3.1	92	92	1 L	0.5
MW-20R	1/14/2019	100	100	42	42	1.6	1.6	0.1 L	0.05	0.2 L	0.1	2.9	2.9	110	110	1 L	0.5
MW-20R	8/21/2019	106	106	47	47	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.2	3.2	95	95	1 L	0.5
MW-20R	1/22/2020	102	102	47	47	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.1	3.1	93	93	1 L	0.5
MW-20R	8/25/2020	228	228	48	48	1.6	1.6	0.1 L	0.05	0.2 L	0.1	3.2	3.2	99	99	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		0		12		12		0	
Minimum conc.			94		42		1.6		0.05		0.1		2.8		79		0.5
Maximum conc.			228		48		1.8		0.05		0.1		3.2		110		0.5
Average conc.			111		46		1.7		0.05		0.1		3.0		93		0.5
Distribution			Neither		Lognormal		Neither		NC		NC		Lognormal		Lognormal		NC
UCL 95			228*		46.7		1.8*		NC		NC		3.11		97.11		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-26R																	
MW-26R	1/12/2016	193	193	85	85	4.4	4.4	0.10 L	0.05	0.2 L	0.10	9.7	9.7	130	130	1 L	0.5
MW-26R	4/19/2016	197	197	87	87	4.6	4.6	0.10 L	0.05	0.2 L	0.10	9.9	9.9	130	130	1 L	0.5
MW-26R	7/6/2016	195	195	84	84	4.6	4.6	0.10 L	0.05	0.2 L	0.10	9.2	9.2	120	120	1 L	0.5
MW-26R	10/12/2016	191	191	91	91	4.5	4.5	0.10 L	0.05	0.2 L	0.10	8.8	8.8	110	110	1 L	0.5
MW-26R	1/18/2017	199	199	85	85	4.4	4.4	0.10 L	0.05	0.2 L	0.10	9.9	9.9	130	130	1 L	0.5
MW-26R	7/11/2017	184	184	84	84	4.8	4.8	0.10 L	0.05	0.2 L	0.10	8.9	8.9	150	150	1 L	0.5
MW-26R	1/8/2018	201	201	81	81	4.5	4.5	0.10 L	0.05	0.2 L	0.10	9.2	9.2	130	130	1 L	0.5
MW-26R	8/28/2018	193	193	84	84	4.5	4.5	0.10 L	0.05	0.2 L	0.10	8.0	8.0	140	140	1 L	0.5
MW-26R	1/14/2019	203	203	84	84	4.6	4.6	0.10 L	0.05	0.2 L	0.10	9.5	9.5	150	150	1 L	0.5
MW-26R	8/20/2019	200	200	91	91	4.4	4.4	0.10 L	0.05	0.2 L	0.10	8.5	8.5	130	130	1 L	0.5
MW-26R	1/23/2020	211	211	94	94	4.6	4.6	0.14	0.14	0.2 L	0.10	10	10	130	130	1 L	0.5
MW-26R	8/25/2020	335	335	87	87	4.7	4.7	0.10 L	0.05	0.2 L	0.10	10	10	130	130	1 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		1		0		12		12		0	
Minimum conc.			184		81		4.4		0.05		0.10		8.0		110		0.5
Maximum conc.			335		94		4.8		0.14		0.10		10.0		150		0.5
Average conc.			209		86		4.6		0.06		0.10		9.3		132		0.5
Distribution			Neither		Neither		Lognormal		NC		NC		Lognormal		Neither		NC
UCL 95			335*		94*		4.61		NC		NC		9.66		150*		NC

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
FMMW-1																	
FMMW-1	1/11/2016	257	257	95	95	8.3	8.3	0.1 L	0.05	2.0	2.0	15	15	170	170	1.1	1.1
FMMW-1	4/20/2016	330	330	110	110	20	20	0.1 L	0.05	2.9	2.9	11	11	190	190	1.2	1.2
FMMW-1	7/5/2016	331	331	120	120	22	22	0.1 L	0.05	1.7	1.7	12	12	210	210	1.0 L	0.5
FMMW-1	10/11/2016	320	320	110	110	22	22	0.1 L	0.05	1.3	1.3	12	12	240	240	1.0 L	0.5
FMMW-1	1/18/2017	299	299	110	110	14	14	0.1 L	0.05	1.9	1.9	11	11	180	180	1.1	1.1
FMMW-1	7/12/2017	341	341	110	110	21	21	0.1 L	0.05	1.4	1.4	8.0	8.0	190	190	1.4	1.4
FMMW-1	1/10/2018	312	312	100	100	15	15	0.1 L	0.05	3.0	3.0	8.2	8.2	190	190	1.3	1.3
FMMW-1	8/28/2018	278	278	98	98	14	14	0.1 L	0.05	1.6	1.6	16	16	170	170	1.0 L	0.5
FMMW-1	1/15/2019	291	291	100	100	15	15	0.1 L	0.05	0.81	0.81	14	14	180	180	1.0 L	0.5
FMMW-1	8/21/2019	290	290	96	96	14	14	0.1 L	0.05	1.3	1.3	14	14	170	170	1.0 L	0.5
FMMW-1	1/21/2020	285	285	110	110	13	13	0.1 L	0.05	0.9	0.9	13	13	170	170	1.0 L	0.5
FMMW-1	8/26/2020	382	382	92	92	14	14	0.1 L	0.05	1.2	1.2	13	13	190	190	1.0 L	0.5
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		0		12		12		12		5	
Minimum conc.			257		92		8.3		0.05		0.81		8.0		170		0.5
Maximum conc.			382		120		22		0.05		3.0		16		240		1.4
Average conc.			310		104		16.0		0.05		1.7		12.3		188		0.8
Distribution			Lognormal		Lognormal		Neither		NC		Lognormal		Lognormal		Neither		Neither
UCL 95			328.06		108.9		22*		NC		2.15		13.9		240*		1.4*

Statistical Summary of Groundwater Data - Inorganics
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Specific Conductance		Alkalinity		Chloride		Ammonia		Nitrate		Sulfate		TDS		TOC	
		Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
FMMW-2																	
FMMW-2	1/11/2016	501	501	110	110	15	15	0.1 L	0.05	22	22	20	20	330	330	1.4	1.4
FMMW-2	4/20/2016	336	336	110	110	23	23	0.1 L	0.05	1.3	1.3	14	14	190	190	1.8	1.8
FMMW-2	7/5/2016	300	300	100	100	19	19	0.1 L	0.05	1.5	1.5	13	13	200	200	1.3	1.3
FMMW-2	10/11/2016	362	362	130	130	22	22	0.11	0.11	3.9	3.9	5.7	5.7	230	230	1.5	1.5
FMMW-2	1/18/2017	351	351	96	96	17	17	0.1 L	0.05	9.6	9.6	9.0	9.0	230	230	1.3	1.3
FMMW-2	7/12/2017	309	309	100	100	17	17	0.1 L	0.05	1.6	1.6	13	13	190	190	1.7	1.7
FMMW-2	1/10/2018	378	378	92	92	19	19	0.1 L	0.05	9.8	9.8	11	11	230	230	1.3	1.3
FMMW-2	8/28/2018	317	317	120	120	15	15	0.1 L	0.05	1.7	1.7	5.4	5.4	200	200	1.5	1.5
FMMW-2	1/15/2019	430	430	95	95	19	19	0.13	0.13	17	17	5.2	5.2	290	290	1.4	1.4
FMMW-2	8/21/2019	417	417	140	140	16	16	0.1 L	0.05	5.3	5.3	6.7	6.7	240	240	1.3	1.3
FMMW-2	1/21/2020	438	438	120	120	20	20	0.1 L	0.05	13	13	8.7	8.7	270	270	1.2	1.2
FMMW-2	8/27/2020	374	374	130	130	15	15	0.1 L	0.05	4.3	4.3	8.0	8.0	240	240	1.3	1.3
No. Analyzed		12		12		12		12		12		12		12		12	
No. Detect		12		12		12		2		12		12		12		12	
Minimum conc.			300		92		15		0.05		1.3		5.2		190		1.2
Maximum conc.			501		140		23		0.13		22.0		20.0		330		1.8
Average conc.			376		112		18.1		0.06		7.6		10.0		237		1.4
Distribution			Lognormal		Lognormal		Lognormal		Neither		Lognormal		Lognormal		Lognormal		Neither
UCL 95			410.1		120.92		19.62		0.13*		**20.31**		13.1		260.3		1.8*

Notes:

Inorganic parameters measured in mg/L

Bold indicates UCL 95 is greater than Cleanup Level.

J indicates analyte was detected below the established reporting limit but above the detection limit

H indicates analyte was analyzed outside of specified holding time

L indicates below the given method reporting limit (MRL).

NC indicates not calculated due to less than 50 percent detection frequency.

MW-14S was dry in August of 2019 and 2020 and therefore was not sampled

* UCL represents maximum concentration detected because the calculated value was greater than the data sample range or the distribution was neither lognormal nor normal.

Statistical calculations use one half the MRL for non-detected parameters.

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-10D					
MW-10D	01/13/16	0.029	0.029	0.001 L	0.0005
MW-10D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-10D	07/05/16	0.029 L	0.015	0.001 L	0.0005
MW-10D	10/10/16	0.03 L	0.015	0.001 L	0.0005
MW-10D	01/18/17	0.03 L	0.015	0.001 L	0.0005
MW-10D	07/13/17	0.18 L	0.090	0.001 L	0.0005
MW-10D	01/08/18	0.18 L	0.090	0.001 L	0.0005
MW-10D	08/28/18	0.18 L	0.090	0.001 L	0.0005
MW-10D	01/14/19	0.18 L	0.090	0.001 L	0.0005
MW-10D	08/20/19	0.18 L	0.090	0.001 L	0.0005
MW-10D	01/22/20	0.036 L	0.018	0.001 L	0.0005
MW-10D	08/25/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		1		0	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0005
Average conc.			0.047		0.0005
Distribution			NC		NC
UCL 95			NC		NC
MW-10S					
MW-10S	01/13/16	0.029 L	0.015	0.001 L	0.0005
MW-10S	04/18/16	0.029 L	0.015	0.001 L	0.0005
MW-10S	07/05/16	0.029 L	0.015	0.001 L	0.0005
MW-10S	10/10/16	0.03 L	0.015	0.001 L	0.0005
MW-10S	01/18/17	0.03 L	0.015	0.001 L	0.0005
MW-10S	07/13/17	0.18 L	0.090	0.001 L	0.0005
MW-10S	01/08/18	0.18 L	0.090	0.001 L	0.0005
MW-10S	08/28/18	0.18 L	0.090	0.001 L	0.0005
MW-10S	01/14/19	0.18 L	0.090	0.001 L	0.0005
MW-10S	08/20/19	0.18 L	0.090	0.001 L	0.0005
MW-10S	01/21/20	0.18 L	0.090	0.001 L	0.0005
MW-10S	08/25/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		0		0	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0005
Average conc.			0.052		0.0005
Distribution			NC		NC
UCL 95			NC		NC

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-11D(2)					
MW-11D(2)	01/11/16	0.029 L	0.015	0.001 L	0.0005
MW-11D(2)	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-11D(2)	07/05/16	0.029 L	0.015	0.001 L	0.0005
MW-11D(2)	10/12/16	0.03 L	0.015	0.001 L	0.0005
MW-11D(2)	01/19/17	0.03 L	0.015	0.001 L	0.0005
MW-11D(2)	07/11/17	0.18 L	0.090	0.001 L	0.0005
MW-11D(2)	01/10/18	0.18 L	0.090	0.001 L	0.0005
MW-11D(2)	08/27/18	0.18 L	0.090	0.001 L	0.0005
MW-11D(2)	01/15/19	0.18 L	0.090	0.001 L	0.0005
MW-11D(2)	08/21/19	0.18 L	0.090	0.001 L	0.0005
MW-11D(2)	01/22/20	0.036 L	0.018	0.001 L	0.0005
MW-11D(2)	08/26/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		0		0	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0005
Average conc.			0.046		0.0005
Distribution			NC		NC
UCL 95			NC		NC
MW-11S					
MW-11S	01/11/16	0.029 L	0.015	0.001 L	0.0005
MW-11S	04/19/16	0.029 L	0.015	0.0014	0.0014
MW-11S	07/05/16	0.029 L	0.015	0.0032	0.0032
MW-11S	10/12/16	0.03 L	0.015	0.0072	0.0072
MW-11S	01/18/17	0.03 L	0.015	0.001 L	0.0005
MW-11S	07/11/17	0.18 L	0.090	0.0035	0.0035
MW-11S	01/09/18	0.18 L	0.090	0.001 L	0.0005
MW-11S	08/27/18	0.18 L	0.090	0.0058	0.0058
MW-11S	01/15/19	0.18 L	0.090	0.001 L	0.0005
MW-11S	08/21/19	0.18 L	0.090	0.001 L	0.0005
MW-11S	01/22/20	0.036 L	0.018	0.001 L	0.0005
MW-11S	08/26/20	0.01 L	0.005	0.001	0.0011
No. Analyzed		12		12	
No. Detect		0		6	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0072
Average conc.			0.046		0.0021
Distribution			NC		NC
UCL 95			NC		NC

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-12D					
MW-12D	01/14/16	0.029 L	0.015	0.001 L	0.0005
MW-12D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-12D	07/06/16	0.029 L	0.015	0.001 L	0.0005
MW-12D	10/12/16	0.03 L	0.015	0.001 L	0.0005
MW-12D	01/19/17	0.03 L	0.015	0.001 L	0.0005
MW-12D	07/10/17	0.18 L	0.090	0.001 L	0.0005
MW-12D	01/09/18	0.18 L	0.090	0.001 L	0.0005
MW-12D	08/28/18	0.18 L	0.090	0.001 L	0.0005
MW-12D	01/16/19	0.18 L	0.090	0.001 L	0.0005
MW-12D	08/21/19	0.18 L	0.090	0.001 L	0.0005
MW-12D	01/21/20	0.18 L	0.090	0.001 L	0.0005
MW-12D	08/27/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		0		0	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0005
Average conc.			0.052		0.0005
Distribution			NC		NC
UCL 95			NC		NC
MW-12S					
MW-12S	01/14/16	0.029 L	0.015	0.016	0.016
MW-12S	04/19/16	0.029 L	0.015	0.350	0.350
MW-12S	07/06/16	0.029 L	0.015	0.690	0.690
MW-12S	10/12/16	0.03 L	0.015	0.830	0.830
MW-12S	01/19/17	0.03 L	0.015	0.550	0.550
MW-12S	07/10/17	0.18 L	0.090	0.770	0.770
MW-12S	01/09/18	0.18 L	0.090	0.430	0.430
MW-12S	08/28/18	0.18 L	0.090	0.840	0.840
MW-12S	01/14/19	0.18 L	0.090	0.500	0.500
MW-12S	08/21/19	0.18 L	0.090	0.980	0.980
MW-12S	01/21/20	0.18 L	0.090	0.009	0.009
MW-12S	08/27/20	0.01 L	0.005	0.450	0.450
No. Analyzed		12		12	
No. Detect		0		12	
Minimum conc.			0.005		0.009
Maximum conc.			0.090		0.980
Average conc.			0.052		0.535
Distribution			NC		Normal
UCL 95			NC		**0.70**

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-13D					
MW-13D	01/13/16	0.02 L	0.010	0.001 L	0.0005
MW-13D	04/19/16	0.029 L	0.015	0.001 L	0.0005
MW-13D	07/06/16	0.029 L	0.015	0.001 L	0.0005
MW-13D	10/10/16	0.03 L	0.015	0.039	0.0390
MW-13D	01/18/17	0.03 L	0.015	0.001 L	0.0005
MW-13D	07/10/17	0.18 L	0.090	0.001 L	0.0005
MW-13D	01/08/18	0.18 L	0.090	0.001 L	0.0005
MW-13D	08/28/18	0.18 L	0.090	0.001 L	0.0005
MW-13D	01/14/19	0.18 L	0.090	0.001 L	0.0005
MW-13D	08/20/19	0.18 L	0.090	0.001 L	0.0005
MW-13D	01/21/20	0.18 L	0.090	0.001 L	0.0005
MW-13D	08/25/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		0		1	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0390
Average conc.			0.051		0.0037
Distribution			NC		NC
UCL 95			NC		NC
MW-13S					
MW-13S	01/13/16	0.02 L	0.010	0.0076	0.0076
MW-13S	04/19/16	0.054	0.054	0.024	0.024
MW-13S	07/06/16	0.029 L	0.015	0.051	0.051
MW-13S	10/11/16	0.03 L	0.015	0.150	0.150
MW-13S	01/18/17	0.03 L	0.015	0.0034	0.0034
MW-13S	07/10/17	0.18 L	0.090	0.013	0.013
MW-13S	01/08/18	0.18 L	0.090	0.001 L	0.0005
MW-13S	08/28/18	0.18 L	0.090	0.0074	0.0074
MW-13S	01/14/19	5.80	5.80	0.001 L	0.0005
MW-13S	08/20/19	0.18 L	0.09	0.003	0.0033
MW-13S	01/21/20	0.18 L	0.09	0.001 L	0.0005
MW-13S	08/25/20	0.01 L	0.005	0.0017	0.0017
No. Analyzed		12		12	
No. Detect		2		9	
Minimum conc.			0.005		0.0005
Maximum conc.			5.800		0.150
Average conc.			0.530		0.022
Distribution			NC		Lognormal
UCL 95			NC		**0.15***

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-14D					
MW-14D	01/13/16	0.029 L	0.0145	0.77	0.77
MW-14D	04/18/16	0.029 L	0.0145	0.82	0.82
MW-14D	08/04/16	1.60	1.60	1.1	1.1
MW-14D	10/10/16	2.60	2.60	1.2	1.2
MW-14D	01/18/17	2.40	2.40	1.1	1.1
MW-14D	07/12/17	0.910	0.910	0.96	0.96
MW-14D	01/08/18	2.20	2.20	1.0	1.0
MW-14D	08/28/18	2.70	2.70	1.1	1.1
MW-14D	01/14/19	2.50	2.50	1.1	1.1
MW-14D	08/20/19	4.60	4.60	1.4	1.4
MW-14D	01/22/20	0.24	0.24	1.1	1.1
MW-14D	08/26/20	3.59	3.59	1.4	1.4
No. Analyzed		12		12	
No. Detect		10		12	
Minimum conc.			0.0145		0.770
Maximum conc.			4.600		1.400
Average conc.			1.947		1.088
Distribution			Normal		Lognormal
UCL 95			**2.70**		**1.20**
MW-14S					
MW-14S	01/13/16	0.029 L	0.0145	0.110	0.110
MW-14S	04/18/16	0.029 L	0.0145	0.180	0.180
MW-14S	07/06/16	0.029 L	0.0145	0.029	0.029
MW-14S	10/14/16	0.043	0.043	0.110	0.110
MW-14S	01/18/17	0.088	0.088	0.250	0.250
MW-14S	07/12/17	0.180 L	0.090	0.240	0.240
MW-14S	01/08/18	0.180 L	0.090	0.100	0.100
MW-14S	08/28/18	0.180 L	0.090	0.240	0.240
MW-14S	01/14/19	0.180 L	0.090	0.190	0.190
MW-14S	01/22/20	0.036 L	0.018	0.017	0.017
No. Analyzed		10		10	
No. Detect		2		10	
Minimum conc.			0.015		0.017
Maximum conc.			0.090		0.250
Average conc.			0.055		0.147
Distribution			NC		Normal
UCL 95			NC		**0.20**

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-14R					
MW-14R	01/12/16	0.045	0.045	0.20	0.20
MW-14R	04/18/16	0.059	0.059	0.20	0.20
MW-14R	07/06/16	0.045	0.045	0.18	0.18
MW-14R	10/12/16	0.063	0.063	0.19	0.19
MW-14R	01/18/17	0.059	0.059	0.18	0.18
MW-14R	07/11/17	0.18 L	0.090	0.42	0.42
MW-14R	01/08/18	0.18 L	0.090	0.18	0.18
MW-14R	08/27/18	0.18 L	0.090	0.19	0.19
MW-14R	01/14/19	0.18 L	0.090	0.0010 L	0.0005
MW-14R	08/20/19	0.18 L	0.090	0.19	0.19
MW-14R	01/21/20	0.18 L	0.090	0.18	0.18
MW-14R	08/25/20	0.050	0.050	0.19	0.19
No. Analyzed		12		12	
No. Detect		6		11	
Minimum conc.			0.045		0.0005
Maximum conc.			0.090		0.42
Average conc.			0.072		0.192
Distribution			NC		Neither
UCL 95			NC		**0.42***
MW-15D					
MW-15D	01/13/16	0.029 L	0.0145	0.190	0.190
MW-15D	04/18/16	0.029 L	0.0145	0.006	0.006
MW-15D	07/06/16	0.029 L	0.0145	0.096	0.096
MW-15D	10/10/16	0.03 L	0.015	0.0072	0.0072
MW-15D	01/17/17	0.03 L	0.015	0.088	0.088
MW-15D	07/11/17	0.18 L	0.090	0.083	0.083
MW-15D	01/08/18	0.18 L	0.090	0.064	0.064
MW-15D	08/27/18	0.18 L	0.090	0.023	0.023
MW-15D	01/14/19	0.18 L	0.090	0.026	0.026
MW-15D	08/20/19	0.18 L	0.090	0.026	0.026
MW-15D	01/21/20	0.18 L	0.090	0.028	0.028
MW-15D	08/26/20	0.01 L	0.005	0.018	0.018
No. Analyzed		12		12	
No. Detect		0		12	
Minimum conc.			0.005		0.006
Maximum conc.			0.090		0.190
Average conc.			0.052		0.055
Distribution			NC		Lognormal
UCL 95			NC		**0.160**

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-15S					
MW-15S	01/13/16	0.029 L	0.0145	0.67	0.67
MW-15S	04/18/16	0.029	0.029	0.74	0.74
MW-15S	07/06/16	0.054	0.054	0.81	0.81
MW-15S	10/10/16	0.10	0.100	0.88	0.88
MW-15S	01/17/17	0.03 L	0.015	0.93	0.93
MW-15S	07/10/17	0.18 L	0.090	0.64	0.64
MW-15S	01/08/18	0.18 L	0.090	0.85	0.85
MW-15S	08/27/18	0.18 L	0.090	0.83	0.83
MW-15S	01/14/19	0.18 L	0.090	1.1	1.1
MW-15S	08/20/19	0.18 L	0.090	1.2	1.2
MW-15S	01/21/20	0.18 L	0.090	1.2	1.2
MW-15S	08/26/20	0.028	0.028	1.2	1.2
No. Analyzed		12		12	
No. Detect		4		12	
Minimum conc.			0.015		0.640
Maximum conc.			0.100		1.200
Average conc.			0.065		0.921
Distribution			NC		Lognormal
UCL 95			NC		**1.05**
MW-17S					
MW-17S	01/12/16	0.029 L	0.0145	1.8	1.8
MW-17S	04/19/16	0.029 L	0.0145	1.2	1.2
MW-17S	07/06/16	0.029 L	0.0145	1.1	1.1
MW-17S	10/13/16	0.03 L	0.015	0.86	0.86
MW-17S	01/17/17	0.03 L	0.015	1.0	1.0
MW-17S	07/11/17	0.18 L	0.090	1.1	1.1
MW-17S	01/08/18	0.18 L	0.090	0.82	0.82
MW-17S	08/27/18	0.18 L	0.090	0.82	0.82
MW-17S	01/16/19	0.18 L	0.090	0.77	0.77
MW-17S	08/22/19	0.18 L	0.090	1.2	1.2
MW-17S	01/21/20	0.18 L	0.090	1.2	1.2
MW-17S	08/25/20	0.01 L	0.005	0.84	0.84
No. Analyzed		12		12	
No. Detect		0		12	
Minimum conc.			0.005		0.77
Maximum conc.			0.090		1.8
Average conc.			0.052		1.059
Distribution			NC		Neither
UCL 95			NC		**1.8***

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-18D					
MW-18D	01/11/16	0.029 L	0.0145	0.001 L	0.0005
MW-18D	04/19/16	0.029 L	0.0145	0.001 L	0.0005
MW-18D	07/06/16	0.029 L	0.0145	0.001 L	0.0005
MW-18D	10/11/16	0.03 L	0.015	0.001 L	0.0005
MW-18D	01/17/17	0.056	0.056	0.001 L	0.0005
MW-18D	07/13/17	0.18 L	0.090	0.001 L	0.0005
MW-18D	01/10/18	0.18 L	0.090	0.001 L	0.0005
MW-18D	08/29/18	0.18 L	0.090	0.001 L	0.0005
MW-18D	01/15/19	0.18 L	0.090	0.001 L	0.0005
MW-18D	08/21/19	0.41	0.410	0.001 L	0.0005
MW-18D	01/22/20	0.18 L	0.090	0.001 L	0.0005
MW-18D	08/25/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		2		0	
Minimum conc.			0.005		0.0005
Maximum conc.			0.410		0.0005
Average conc.			0.082		0.0005
Distribution			NC		NC
UCL 95			NC		NC
MW-18S					
MW-18S	01/11/16	0.029 L	0.0145	0.0010 L	0.0005
MW-18S	04/19/16	0.029 L	0.0145	0.0010 L	0.0005
MW-18S	07/06/16	0.029 L	0.0145	0.0014	0.0014
MW-18S	10/11/16	0.030 L	0.015	0.0056	0.0056
MW-18S	01/17/17	0.034	0.034	0.0010 L	0.0005
MW-18S	07/13/17	0.180 L	0.090	0.0010 L	0.0005
MW-18S	01/10/18	0.180 L	0.090	0.0010 L	0.0005
MW-18S	08/29/18	0.180 L	0.090	0.0010 L	0.0005
MW-18S	01/15/19	0.180 L	0.090	0.0010 L	0.0005
MW-18S	08/21/19	0.180 L	0.090	0.0010 L	0.0005
MW-18S	01/22/20	0.036 L	0.018	0.0010 L	0.0005
MW-18S	08/25/20	0.010 L	0.005	0.0010 L	0.0005
No. Analyzed		12		12	
No. Detect		1		2	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0056
Average conc.			0.047		0.0010
Distribution			NC		NC
UCL 95			NC		NC

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
MW-20R					
MW-20R	01/12/16	0.029 L	0.0145	0.001 L	0.0005
MW-20R	04/19/16	0.029 L	0.0145	0.001 L	0.0005
MW-20R	07/06/16	0.029 L	0.0145	0.001 L	0.0005
MW-20R	10/13/16	0.03 L	0.015	0.001	0.001
MW-20R	01/18/17	0.03 L	0.015	0.001 L	0.0005
MW-20R	07/12/17	0.18 L	0.090	0.001 L	0.0005
MW-20R	01/08/18	0.18 L	0.090	0.001 L	0.0005
MW-20R	08/28/18	0.18 L	0.090	0.001 L	0.0005
MW-20R	01/14/19	0.18 L	0.090	0.001 L	0.0005
MW-20R	08/21/19	0.18 L	0.090	0.001 L	0.0005
MW-20R	01/22/20	0.036 L	0.018	0.001 L	0.0005
MW-20R	08/25/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		0		1	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0010
Average conc.			0.046		0.001
Distribution			NC		NC
UCL 95			NC		NC
MW-26R					
MW-26R	01/12/16	0.68	0.68	0.40	0.40
MW-26R	04/19/16	0.66	0.66	0.38	0.38
MW-26R	07/06/16	0.70	0.70	0.37	0.37
MW-26R	10/12/16	0.69	0.69	0.40	0.40
MW-26R	01/18/17	0.60	0.60	0.38	0.38
MW-26R	07/11/17	0.69	0.69	0.20	0.20
MW-26R	01/08/18	0.64	0.64	0.38	0.38
MW-26R	08/28/18	0.60	0.60	0.39	0.39
MW-26R	01/14/19	0.58	0.58	0.39	0.39
MW-26R	08/20/19	0.67	0.67	0.41	0.41
MW-26R	01/23/20	0.14	0.14	0.42	0.42
MW-26R	08/25/20	0.711	0.711	0.42	0.42
No. Analyzed		12		12	
No. Detect		12		12	
Minimum conc.			0.140		0.20
Maximum conc.			0.711		0.42
Average conc.			0.613		0.378
Distribution			Neither		Neither
UCL 95			**0.711***		**0.42***

Statistical Summary of Groundwater Data - Dissolved Metals
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	Iron		Manganese	
		Result	Conc.	Result	Conc.
FMMW-1					
FMMW-1	01/11/16	0.029 L	0.0145	0.001 L	0.0005
FMMW-1	04/20/16	0.029 L	0.0145	0.001 L	0.0005
FMMW-1	07/05/16	0.029 L	0.0145	0.001 L	0.0005
FMMW-1	10/11/16	0.030 L	0.015	0.001 L	0.0005
FMMW-1	01/18/17	0.031	0.031	0.001 L	0.0005
FMMW-1	07/12/17	0.18 L	0.090	0.001 L	0.0005
FMMW-1	01/10/18	0.18 L	0.090	0.001 L	0.0005
FMMW-1	08/28/18	0.18 L	0.090	0.001 L	0.0005
FMMW-1	01/15/19	0.18 L	0.090	0.001 L	0.0005
FMMW-1	08/21/19	0.18 L	0.090	0.001 L	0.0005
FMMW-1	01/21/20	0.18 L	0.090	0.001 L	0.0005
FMMW-1	08/26/20	0.01 L	0.005	0.001 L	0.0005
No. Analyzed		12		12	
No. Detect		1		0	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0005
Average conc.			0.053		0.0005
Distribution			NC		NC
UCL 95			NC		NC
FMMW-2					
FMMW-2	01/11/16	0.029 L	0.0145	0.028	0.028
FMMW-2	04/20/16	0.029 L	0.0145	0.055	0.055
FMMW-2	07/05/16	0.029 L	0.0145	0.041	0.041
FMMW-2	10/11/16	0.03 L	0.015	0.067	0.067
FMMW-2	01/18/17	0.03 L	0.015	0.047	0.047
FMMW-2	07/12/17	0.18 L	0.090	0.036	0.036
FMMW-2	01/10/18	0.18 L	0.090	0.0065	0.0065
FMMW-2	08/28/18	0.18 L	0.090	0.043	0.043
FMMW-2	01/15/19	0.18 L	0.090	0.079	0.079
FMMW-2	08/21/19	0.18 L	0.090	0.011	0.011
FMMW-2	01/21/20	0.18 L	0.090	0.001 L	0.0005
FMMW-2	08/27/20	0.01 L	0.005	0.0029	0.0029
No. Analyzed		12		12	
No. Detect		0		11	
Minimum conc.			0.005		0.0005
Maximum conc.			0.090		0.0790
Average conc.			0.052		0.035
Distribution			NC		Normal
UCL 95			NC		0.048

Notes:

Metals measured in mg/L

MW-14S was dry in August of 2019 and 2020 and therefore was not sampled

Bold indicates UCL 95 is greater than Cleanup Level.

L indicates below the given method reporting limit (MRL).

NC indicates not calculated due to less than 50 percent detection frequency.

* UCL represents maximum concentration detected because the calculated value was greater than the data sample range or the distribution was neither lognormal nor normal.

Statistical calculations use one half the MRL for non-detected parameters.

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-11S			
MW-11S	01/11/16	0.5 L	0.25
MW-11S	04/19/16	0.5 L	0.25
MW-11S	07/05/16	0.5 L	0.25
MW-11S	10/12/16	0.5 L	0.25
MW-11S	01/18/17	0.5 L	0.25
MW-11S	07/11/17	0.5 L	0.25
MW-11S	01/09/18	0.5 L	0.25
MW-11S	08/27/18	0.5 L	0.25
MW-11S	01/15/19	0.5 L	0.25
MW-11S	08/21/19	0.5 L	0.25
MW-11S	01/22/20	0.5 L	0.25
MW-11S	08/26/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene Result	Conc.
MW-12S			
MW-12S	01/14/16	0.5 L	0.25
MW-12S	04/19/16	0.73	0.73
MW-12S	07/06/16	0.5 L	0.25
MW-12S	10/12/16	0.5 L	0.25
MW-12S	01/19/17	0.5 L	0.25
MW-12S	07/10/17	0.5 L	0.25
MW-12S	01/09/18	0.5 L	0.25
MW-12S	08/28/18	0.5 L	0.25
MW-12S	01/14/19	0.5 L	0.25
MW-12S	08/21/19	0.5 L	0.25
MW-12S	01/21/20	0.5 L	0.25
MW-12S	08/27/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		1	
Minimum conc.			0.25
Maximum conc.			0.73
Average conc.			0.29
Distribution			NC
UCL 95			NC
MW-12D			
MW-12D	01/14/16	0.5 L	0.25
MW-12D	04/19/16	0.5 L	0.25
MW-12D	07/06/16	0.5 L	0.25
MW-12D	10/12/16	0.5 L	0.25
MW-12D	01/19/17	0.5 L	0.25
MW-12D	07/10/17	0.5 L	0.25
MW-12D	01/09/18	0.5 L	0.25
MW-12D	08/28/18	0.5 L	0.25
MW-12D	01/16/19	0.5 L	0.25
MW-12D	08/21/19	0.5 L	0.25
MW-12D	01/21/20	0.5 L	0.25
MW-12D	08/27/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-13S			
MW-13S	01/13/16	0.5 L	0.25
MW-13S	04/19/16	0.5 L	0.25
MW-13S	07/06/16	0.5 L	0.25
MW-13S	10/11/16	0.5 L	0.25
MW-13S	01/18/17	0.5 L	0.25
MW-13S	07/10/17	0.5 L	0.25
MW-13S	01/08/18	0.5 L	0.25
MW-13S	08/28/18	0.5 L	0.25
MW-13S	01/14/19	0.5 L	0.25
MW-13S	08/20/19	0.5 L	0.25
MW-13S	01/21/20	0.5 L	0.25
MW-13S	08/25/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-13D			
MW-13D	01/13/16	0.5 L	0.25
MW-13D	04/19/16	0.5 L	0.25
MW-13D	07/06/16	0.5 L	0.25
MW-13D	10/10/16	0.5 L	0.25
MW-13D	01/18/17	0.5 L	0.25
MW-13D	07/10/17	0.5 L	0.25
MW-13D	01/08/18	0.5 L	0.25
MW-13D	08/28/18	0.5 L	0.25
MW-13D	01/14/19	0.5 L	0.25
MW-13D	08/20/19	0.5 L	0.25
MW-13D	01/21/20	0.5 L	0.25
MW-13D	08/25/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene Result	Conc.
MW-15S			
MW-15S	01/13/16	0.5 L	0.25
MW-15S	04/18/16	0.5 L	0.25
MW-15S	07/06/16	0.5 L	0.25
MW-15S	10/10/16	0.5 L	0.25
MW-15S	01/17/17	0.5 L	0.25
MW-15S	07/10/17	0.5 L	0.25
MW-15S	01/08/18	0.5 L	0.25
MW-15S	08/27/18	0.5 L	0.25
MW-15S	01/14/19	0.5 L	0.25
MW-15S	08/20/19	0.5 L	0.25
MW-15S	01/21/20	0.5 L	0.25
MW-15S	08/26/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene	
		Result	Conc.
MW-17S			
MW-17S	01/12/16	0.5 L	0.25
MW-17S	04/19/16	0.5 L	0.25
MW-17S	07/06/16	0.5 L	0.25
MW-17S	10/13/16	0.5 L	0.25
MW-17S	01/17/17	0.5 L	0.25
MW-17S	07/11/17	0.5 L	0.25
MW-17S	01/08/18	0.5 L	0.25
MW-17S	08/27/18	0.5 L	0.25
MW-17S	01/16/19	0.5 L	0.25
MW-17S	08/22/19	0.5 L	0.25
MW-17S	01/21/20	0.5 L	0.25
MW-17S	08/25/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene Result	Conc.
MW-18S			
MW-18S	01/11/16	0.5 L	0.25
MW-18S	04/19/16	0.5 L	0.25
MW-18S	07/06/16	0.5 L	0.25
MW-18S	10/11/16	0.5 L	0.25
MW-18S	01/17/17	0.5 L	0.25
MW-18S	07/13/17	0.5 L	0.25
MW-18S	01/10/18	0.5 L	0.25
MW-18S	08/29/18	0.5 L	0.25
MW-18S	01/15/19	0.5 L	0.25
MW-18S	08/21/19	0.5 L	0.25
MW-18S	01/22/20	0.5 L	0.25
MW-18S	08/25/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene Result	Conc.
FMMW-2			
FMMW-2	01/11/16	0.5 L	0.25
FMMW-2	04/20/16	0.5 L	0.25
FMMW-2	07/05/16	0.5 L	0.25
FMMW-2	10/11/16	0.5 L	0.25
FMMW-2	01/18/17	0.5 L	0.25
FMMW-2	07/12/17	0.5 L	0.25
FMMW-2	01/10/18	0.5 L	0.25
FMMW-2	08/28/18	0.5 L	0.25
FMMW-2	01/15/19	0.5 L	0.25
FMMW-2	08/21/19	0.5 L	0.25
FMMW-2	01/21/20	0.5 L	0.25
FMMW-2	08/27/20	0.5 L	0.25
No. Analyzed		12	
No. Detect		0	
Minimum conc.			0.25
Maximum conc.			0.25
Average conc.			0.25
Distribution			NC
UCL 95			NC

Notes:
VOCs measured in ug/L
L = below the method reporting limit (MRL)
NC = not calculated due to less than 50 percent detection frequency or historically no detections.
Statistical calculations use one half the MRL for non-detected

Statistical Summary of Groundwater Data - Volatile Organic Compounds
2020 Annual Monitoring Report
Hidden Valley Landfill, Pierce County, Washington

Monitoring Well	Date	1,4-Dichlorobenzene		Tetrachloroethene (PCE)	
		Result	Conc.	Result	Conc.
MW-11D(2)					
MW-11D(2)	01/11/16	0.5 L	0.25	0.98	0.98
MW-11D(2)	04/19/16	0.5 L	0.25	0.82	0.82
MW-11D(2)	07/05/16	0.5 L	0.25	0.96	0.96
MW-11D(2)	10/12/16	0.5 L	0.25	0.82	0.82
MW-11D(2)	01/19/17	0.5 L	0.25	1.00	1.00
MW-11D(2)	07/11/17	0.5 L	0.25	0.92	0.92
MW-11D(2)	01/10/18	0.5 L	0.25	0.80	0.80
MW-11D(2)	08/27/18	0.5 L	0.25	0.86	0.86
MW-11D(2)	01/15/19	0.5 L	0.25	0.99	0.99
MW-11D(2)	08/21/19	0.5 L	0.25	0.88	0.88
MW-11D(2)	01/22/20	0.5 L	0.25	1.1	1.1
MW-11D(2)	08/26/20	0.5 L	0.25	1.2	1.2
No. Analyzed		12		12	
No. Detect		0		12	
Minimum conc.			0.25		0.80
Maximum conc.			0.25		1.20
Average conc.			0.25		0.94
Distribution			NC		Lognormal
UCL 95			NC		**1.01**

Notes:
VOCs measured in ug/L
Bold indicates UCL 95 is greater than Cleanup Level.
L = below the method reporting limit (MRL)
NC = not calculated due to less than 50 percent detection frequency or historically no detections
Calculations use half the MRL for non-detected parameters

Appendix H

QUARTERLY SITE INSPECTION REPORTS

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Travis Berndahl Date: 2/25/20

Signature: [signature] Weather: Sunny

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		X	
Cracking of Cover Soils		X	
Inadequate Cover Soil or Rock		X	
Standing Water		X	
Vegetation			
Bare or Sparsely Vegetated Areas		X	
Areas of Dying Vegetation		X	
Large Root Vegetation (ex. Bushes)	X		East side of landfill, large roots forming /west side
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas		X	
Culvert Obstructions		X	
Catch Basin Debris or Silt Accumulation		X	
Stormwater Basin Debris or Silt		X	
Cover Erosion			
Gullies and/or Erosion Scars		X	
Presence of Seeps		X	
Vector Control			
Evidence of Ground Burrows		X	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues	X		See Condensate Measurement Form
Pump or Meter Issues		X	
Foaming at Pump		X	

Other Remarks:

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Travis Berndahl Date: 5-20-23

Signature: [signature] Weather: Cloudy

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		X	
Cracking of Cover Soils		X	
Inadequate Cover Soil or Rock		X	
Standing Water		X	
Vegetation			
Bare or Sparsely Vegetated Areas		X	
Areas of Dying Vegetation		X	
Large Root Vegetation (ex. Bushes)	X		North side of landfill, large roots growing
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas		X	
Culvert Obstructions		X	
Catch Basin Debris or Silt Accumulation		X	
Stormwater Basin Debris or Silt		X	
Cover Erosion			
Gullies and/or Erosion Scars		X	
Presence of Seeps		X	
Vector Control			
Evidence of Ground Burrows		X	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues		X	
Pump or Meter Issues		X	
Foaming at Pump		X	

Other Remarks:

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Travis B. and Andrea L. Date: 9-25-20

Signature: [signature] Weather: Raining

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		X	
Cracking of Cover Soils		X	
Inadequate Cover Soil or Rock		X	
Standing Water		X	
Vegetation			
Bare or Sparsely Vegetated Areas		X	
Areas of Dying Vegetation		X	
Large Root Vegetation (ex. Bushes)		X	
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas		X	
Culvert Obstructions		X	
Catch Basin Debris or Silt Accumulation		X	
Stormwater Basin Debris or Silt		X	
Cover Erosion			
Gullies and/or Erosion Scars		X	
Presence of Seeps		X	
Vector Control			
Evidence of Ground Burrows		X	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues	X		See Condensate measurement form
Pump or Meter Issues		X	
Foaming at Pump		X	

Other Remarks:

Facility Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Andres Lopez

Signature:

Date: 12/21/20

Weather: Overcast

Items	Yes	No	Comments
Cover System			
Settlement Depressions (sinkholes)		✓	
Cracking of Cover Soils		✓	
Inadequate Cover Soil or Rock		✓	
Standing Water		✓	
Vegetation			
Bare or Sparsely Vegetated Areas		✓	
Areas of Dying Vegetation		✓	
Large Root Vegetation (ex. Bushes)	✓		Small patch on right side hill when entering
Stormwater Conveyance System			
Ditch Obstructions or Flat Areas		✓	
Culvert Obstructions		✓	
Catch Basin Debris or Silt Accumulation		✓	
Stormwater Basin Debris or Silt		✓	
Cover Erosion			
Gullies and/or Erosion Scars		✓	
Presence of Seeps		✓	
Vector Control			
Evidence of Ground Burrows		✓	
Leachate Collection & Leak Detection Systems			
Piping or Valve Issues		✓	
Pump or Meter Issues		✓	
Foaming at Pump		✓	

Other Remarks:

Appendix I

LANDFILL GAS SYSTEM O&M REPORTS

Hidden Valley Landfill
LFG System Monitoring & Maintenance
January 15th and 31st, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on January 15th and 31st, 2020

LANDFILL FLARE STATION

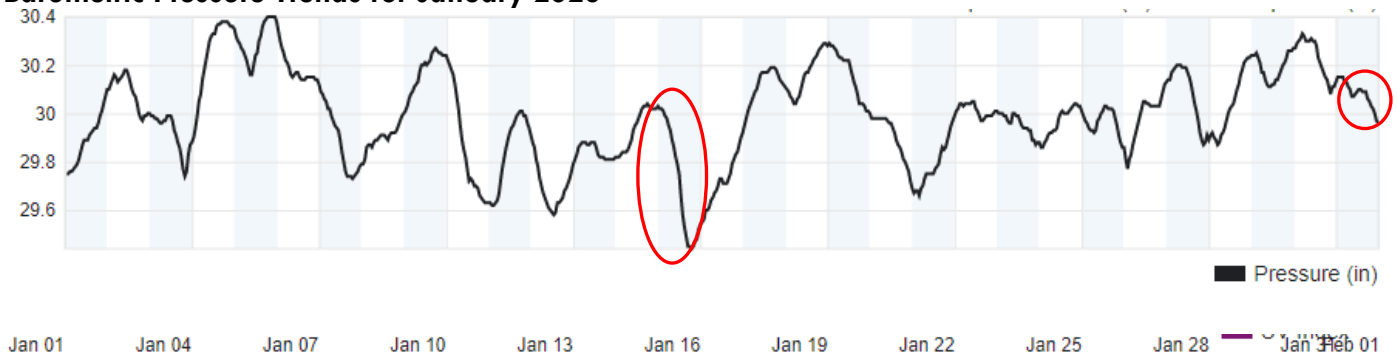
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
1/15/2020 7:33	33.5	22.3	3.1	41.1	164	164	29.25
1/31/2020 9:54	29.9	21.3	1.3	47.5	244	244	29.49

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
1/15/2020 12:39	37.1	23.7	1.1	38.1	276	276	29.00
1/31/2020 12:00	29.8	21.6	1.1	47.5	244	244	29.48

Barometric Pressure Trends for January 2020



Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-01-22/2020-01-22/monthly

Hidden Valley Landfill
LFG System Monitoring & Maintenance
February 5th and 6th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on February 5th and 6th, 2020

LANDFILL FLARE STATION

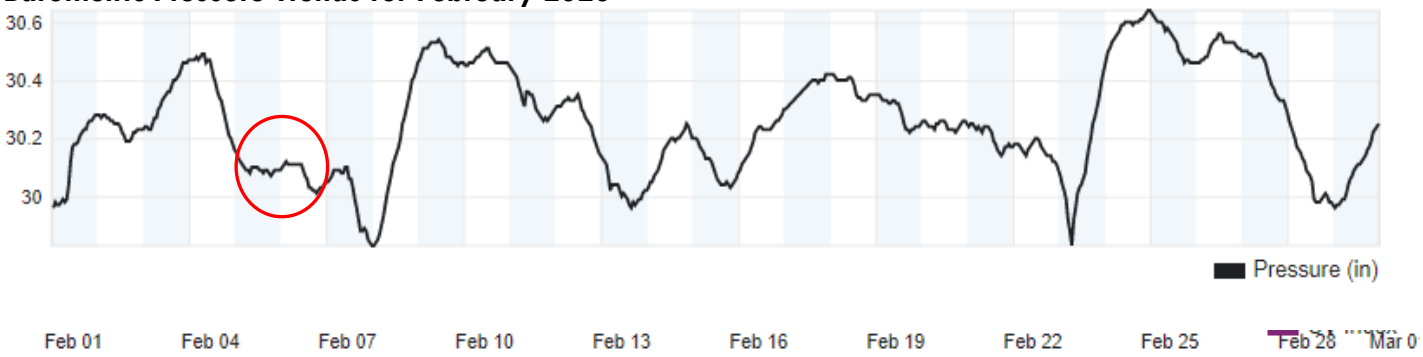
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
2/5/2020 9:35	29.5	21.6	1.5	47.4	237	237	29.45
2/6/2020 7:40	30.5	21.1	1.4	47.0	223	223	29.53

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
2/5/2020 15:30	30.5	21.9	1.6	46.0	230	230	29.53
2/6/2020 10:21	31.8	21.5	1.1	45.6	207	207	29.52

Barometric Pressure Trends for February 2020



Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-02-22/2020-02-22/monthly

Hidden Valley Landfill
LFG System Monitoring & Maintenance
March 19th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on March 19th

LANDFILL FLARE STATION

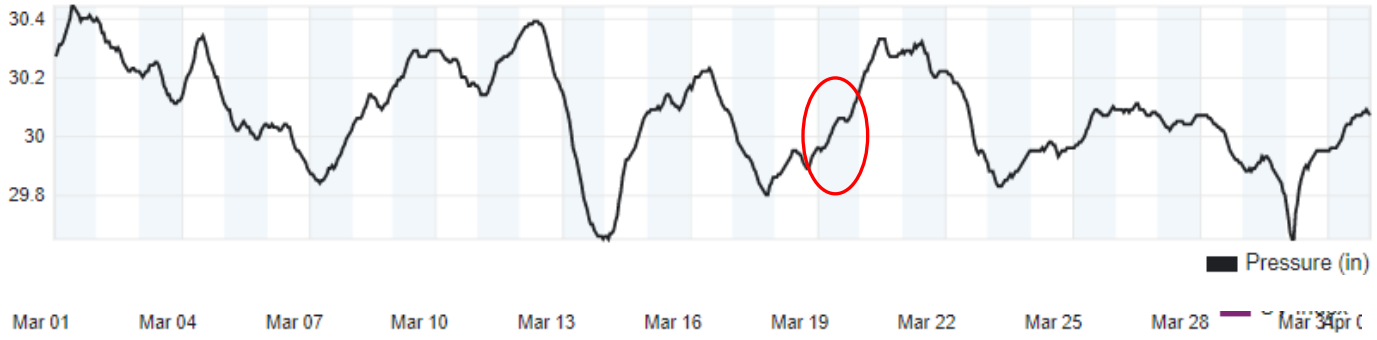
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
3/19/2020 9:17	33.3	24	5.2	37.5	368	368	29.48
3/19/2020 10:05	27	20.8	3.2	49	350	350	29.52

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
3/19/2020 13:46	31.8	21	2.3	44.9	186	186	29.41

Barometric Pressure Trends for March 2020



Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-03-22/2020-03-22/monthly

Hidden Valley Landfill
LFG System Monitoring & Maintenance
April 8th, 9th, 24th, and 29th 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Completed routine LFG collection system inspection on April 8th.
- Repaired a 12"x3" Tee at N-12 on April 8th.
- Performed monthly extraction well monitoring on April 9th, 24th, and 29th.

LANDFILL FLARE STATION

Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
4/9/2020 8:38	29.9	21	2.9	46.2	246	246	29.61
4/24/2020 8:17	28	20.7	2.9	48.4	230	230	29.64
4/29/2020 8:05	35.6	22.6	1.5	40.3	211	211	29.37

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
4/9/2020 11:12	30.8	21.4	2	45.8	234	234	29.52
4/24/2020 10:47	32.8	21.7	2.2	43.3	228	228	29.55
4/29/2020 12:21	37.1	25.7	1.5	35.7	156	156	29.27

Barometric Pressure Trends for April 2020

Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-04-22/2020-04-22/monthly

Photo Log

N-12 prior to 12”x3” Tee Replacement

N-12 after 12”x3” Tee Replacement

N-12 after 12”x3” Tee Replacement

Hidden Valley Landfill
LFG System Monitoring & Maintenance
May 20th, 21st, and 22nd, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on May 20th, 21st, and 22nd.

LANDFILL FLARE STATION

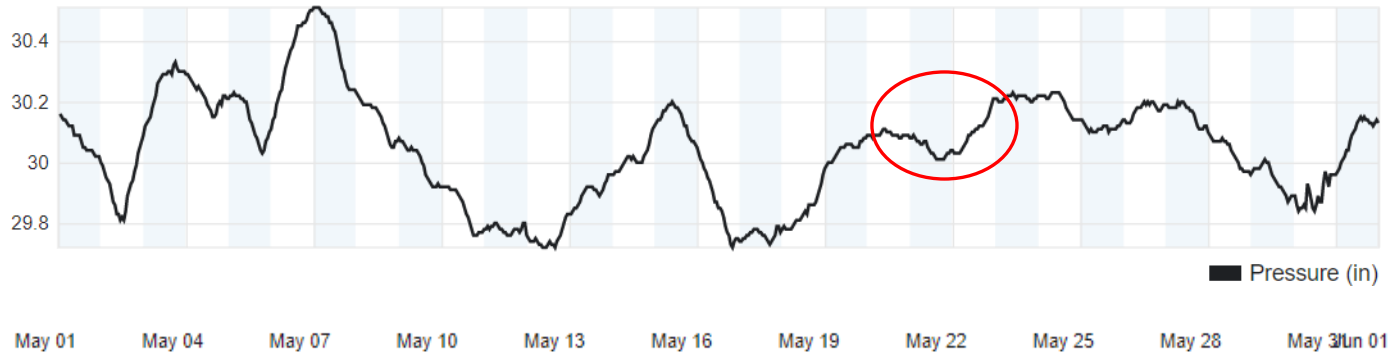
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
5/20/2020 14:49	34.8	24.6	1.8	38.8	156	156	29.49
5/21/2020 7:13	33.2	22.9	2.4	41.5	157	157	29.44
5/22/2020 6:23	34.4	21.3	2.6	41.7	145	145	29.47

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
5/20/2020 16:23	34.5	24.5	1.8	39.2	156	156	29.48
5/21/2020 14:46	36.1	22.6	1.7	39.6	142	142	29.38
5/22/2020 8:17	34.1	22.3	2.1	41.5	144	144	29.49

Barometric Pressure Trends for May 2020



Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-05-22/2020-05-22/monthly

Hidden Valley Landfill
LFG System Monitoring & Maintenance
June 10th and 11th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on June 10th and 11th.

LANDFILL FLARE STATION

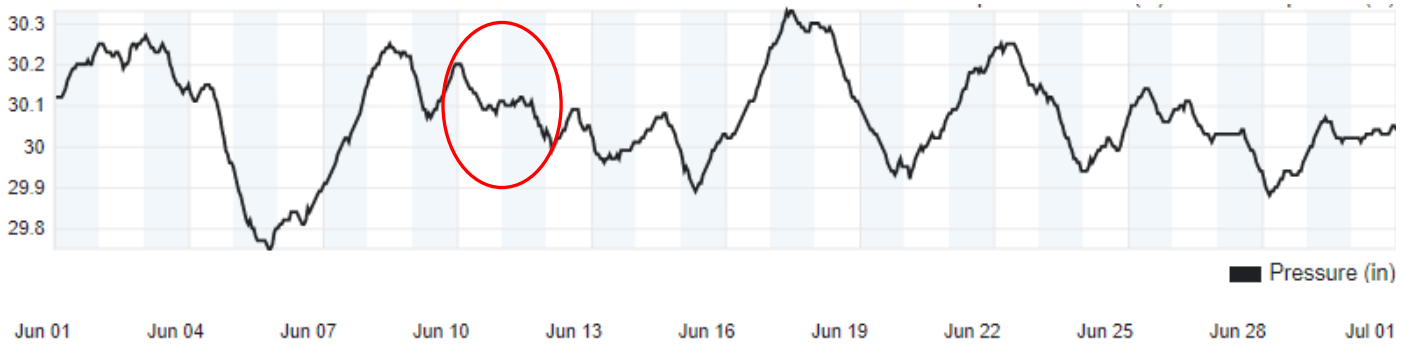
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
6/10/2020 10:33	34.4	20.8	3.6	41.2	135	135	29.51
6/11/2020 8:11	31.5	20.2	3.1	45.2	159	159	29.49

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
6/10/2020 15:33	32.5	20.8	2.4	44.3	158	158	29.39
6/11/2020 10:07	36.1	24.1	1.8	38	159	159	29.46

Barometric Pressure Trends for June 2020



Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-06-22/2020-06-22/monthly

Hidden Valley Landfill
LFG System Monitoring & Maintenance
July 1st, 2nd, and 17th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on July 1st, 2nd, and 17th.

LANDFILL FLARE STATION

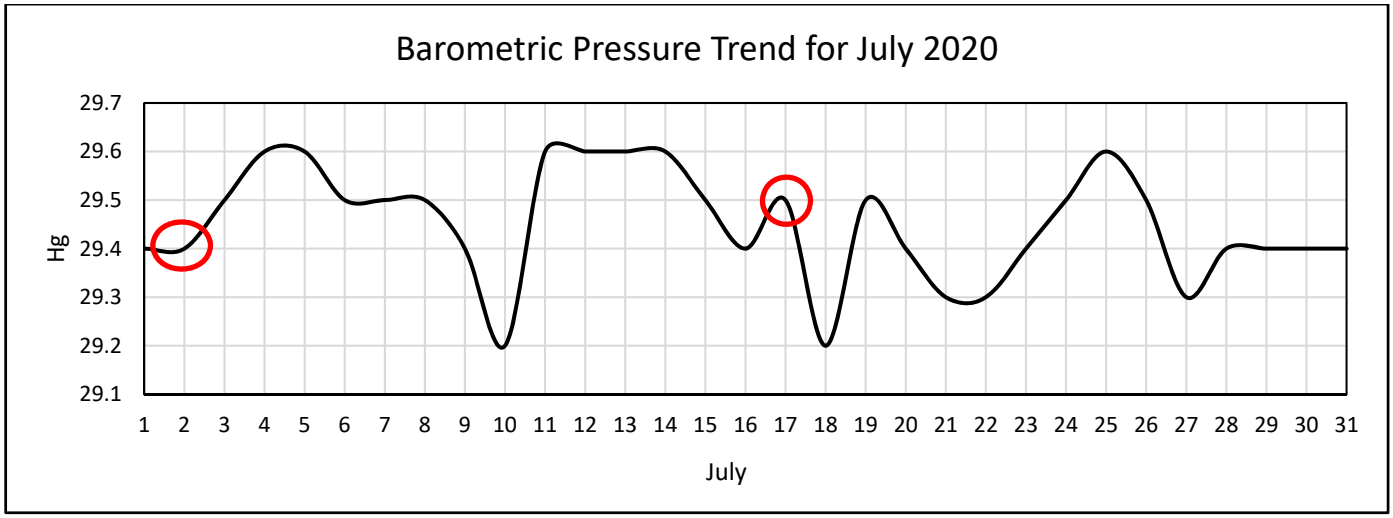
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
7/1/2020 10:14	34.7	22.5	2.3	40.5	149	149	29.42
7/2/2020 8:21	34.7	21.4	3.1	40.8	133	133	29.45
7/17/2020 6:49	34.4	21.3	3.4	40.9	137	137	29.47

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
7/1/2020 16:21	36.8	22.6	1.9	38.7	129	129	29.29
7/17/2020 8:35	35.7	21.6	2.6	40.1	147	147	29.45

Barometric Pressure Trends for July 2020



Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-7

Hidden Valley Landfill
LFG System Monitoring & Maintenance
August 13th, 14th, and 20th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on August 13th, 14th, and 20th.
- Repaired wells E-23 and E-19A on August 20th.

LANDFILL FLARE STATION

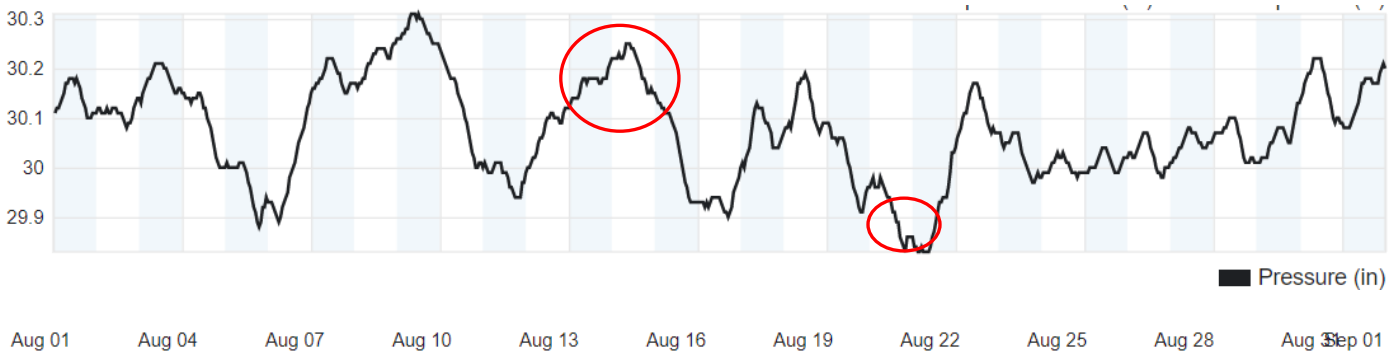
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
8/13/2020 12:47	33.0	20.8	3.2	43.0	141	141	29.56
8/14/2020 7:26	35.0	22.0	3.5	39.5	171	171	29.64
8/20/2020 8:41	36.6	22.9	2.6	37.9	164	164	29.33

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
8/13/2020 16:41	38.2	23.2	1.5	37.1	167	167	29.46
8/14/2020 10:28	38.3	23.7	2.0	36.0	153	153	29.58
8/20/2020 11:48	37.5	23.4	1.4	37.7	174	174	29.20

Barometric Pressure Trends for August 2020



Data Source: https://www.wunderground.com/dashboard/pws/KWAPUYAL102/graph/2020-08-22/2020-08-22/monthly

Repair at E-19A

Hidden Valley Landfill
LFG System Monitoring & Maintenance
September 23rd, and 24th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on September 23rd, and 24th.
- Extraction wells E6B, E14, and E23 were not monitored due to being damaged and undergoing repair.

LANDFILL FLARE STATION

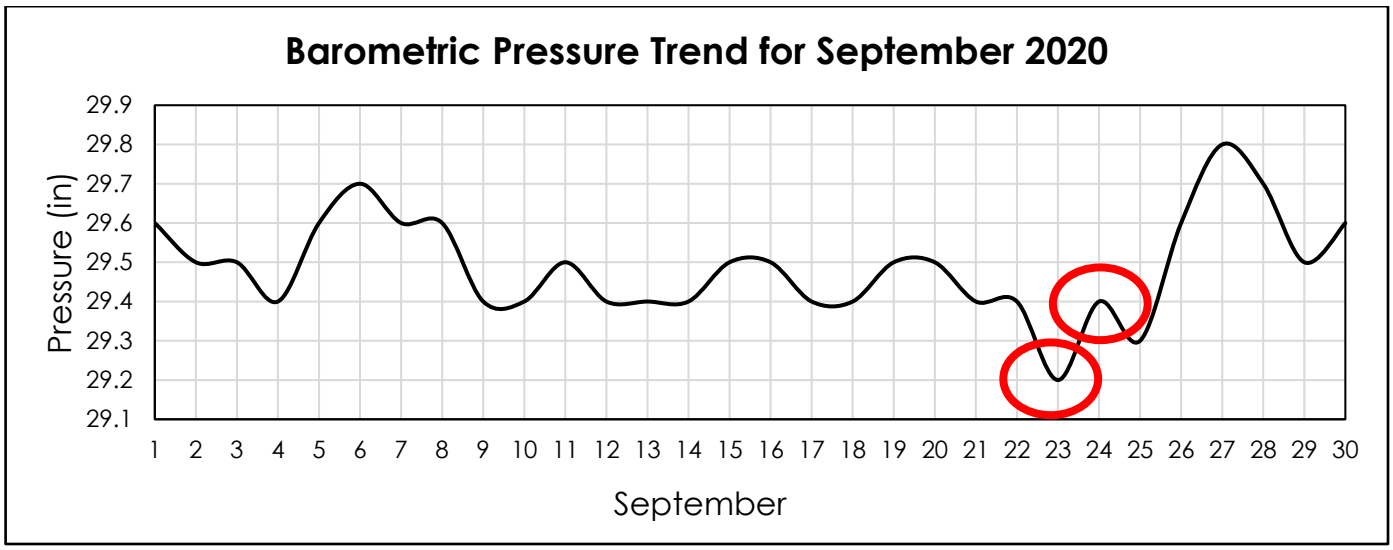
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
9/23/2020 11:28	31.7	22.8	2.3	43.2	197	197	29.18
9/24/2020 07:45	33.2	22.6	2.9	41.3	210	210	29.36

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
9/23/2020 17:02	36.7	25.5	1.7	36.1	210	210	29.17
9/24/2020 13:45	39.3	25.1	1.7	33.9	172	172	29.41

Barometric Pressure Trends for September 2020



Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-9

Hidden Valley Landfill
LFG System Monitoring & Maintenance
October 15th, 20th, 21st, 22nd, and 27th, 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on October 15th, 20th, and 21st.
- Performed inspection on the blower flare station on October 27th.
- Repaired wells E2A, N23, and E42 on October 22nd.

LANDFILL FLARE STATION

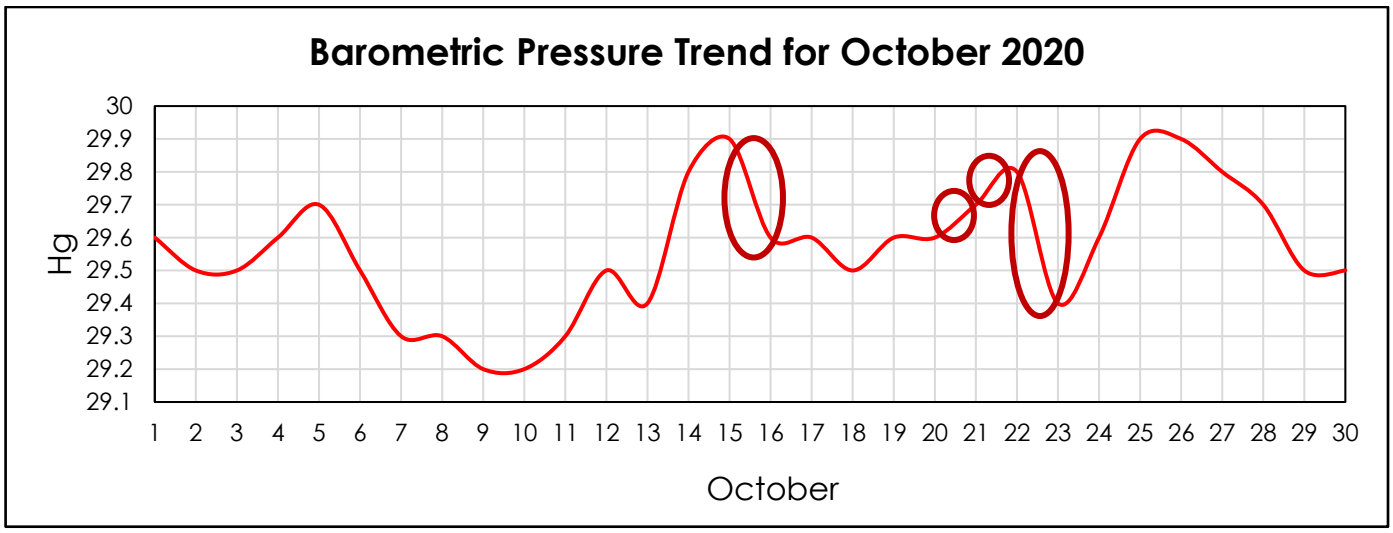
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
10/15/2020 10:59	32.4	22.4	3.4	41.8	176	176	30.02
10/20/2020 10:35	37.2	23.3	3.7	35.8	134	134	29.59
10/21/2020 7:33	34.4	21.1	5	39.5	134	134	29.49

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
10/15/2020 13:53	33.7	23	2.7	40.6	163	163	29.92
10/20/2020 15:09	39.1	23.8	3.2	33.9	129	129	29.5
10/21/2020 11:48	37.3	22.7	2.8	37.2	112	112	29.49

Barometric Pressure Trends for October 2020



Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-10

Hidden Valley Landfill
LFG System Monitoring & Maintenance
November 17th and 18th 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on November 17th and 18th.

LANDFILL FLARE STATION

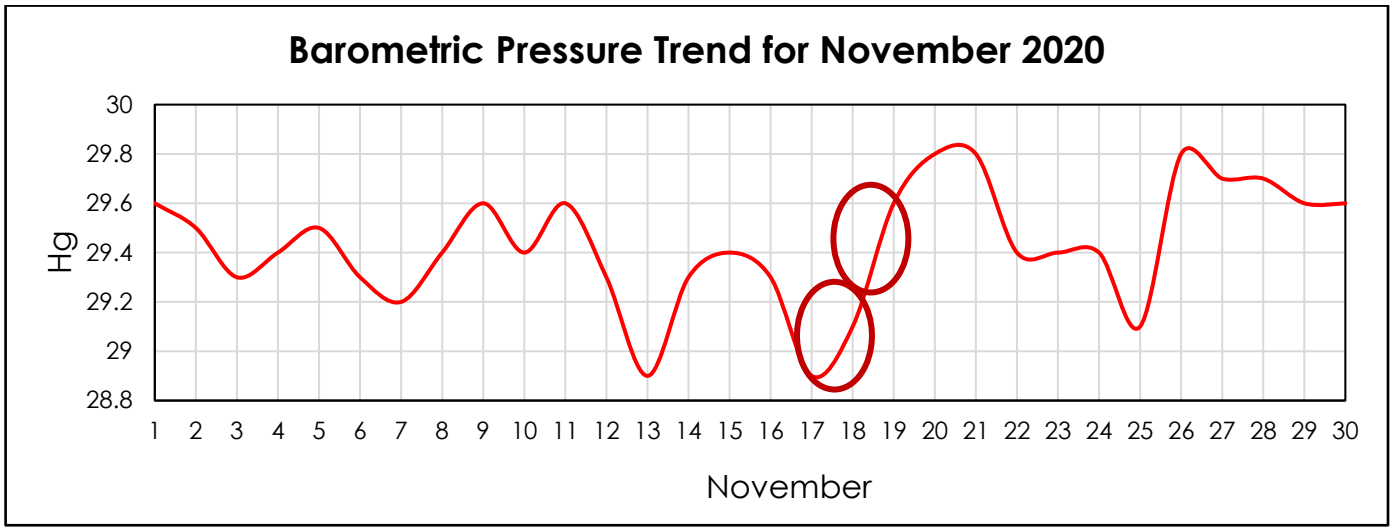
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
11/17/2020 9:57	40.5	23.6	2.9	33	143	143	28.82
11/18/2020 7:51	42.8	24.8	1.7	30.7	170	170	29.01

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
11/17/2020 15:00	43.5	26.3	1.3	28.9	134	134	28.89
11/18/2020 12:12	43.5	25.6	0.9	30	186	186	29.07

Barometric Pressure Trends for October 2020



Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-11

Hidden Valley Landfill
LFG System Monitoring & Maintenance
December 9th, 10th and 30th 2020

MAINTENANCE ITEMS COMPLETED THIS MONTH:

- Performed monthly extraction well monitoring on December 9th and 10th.
- Performed well repairs at N-41, N-19A, N58, and N-59 on December 30th.

LANDFILL FLARE STATION

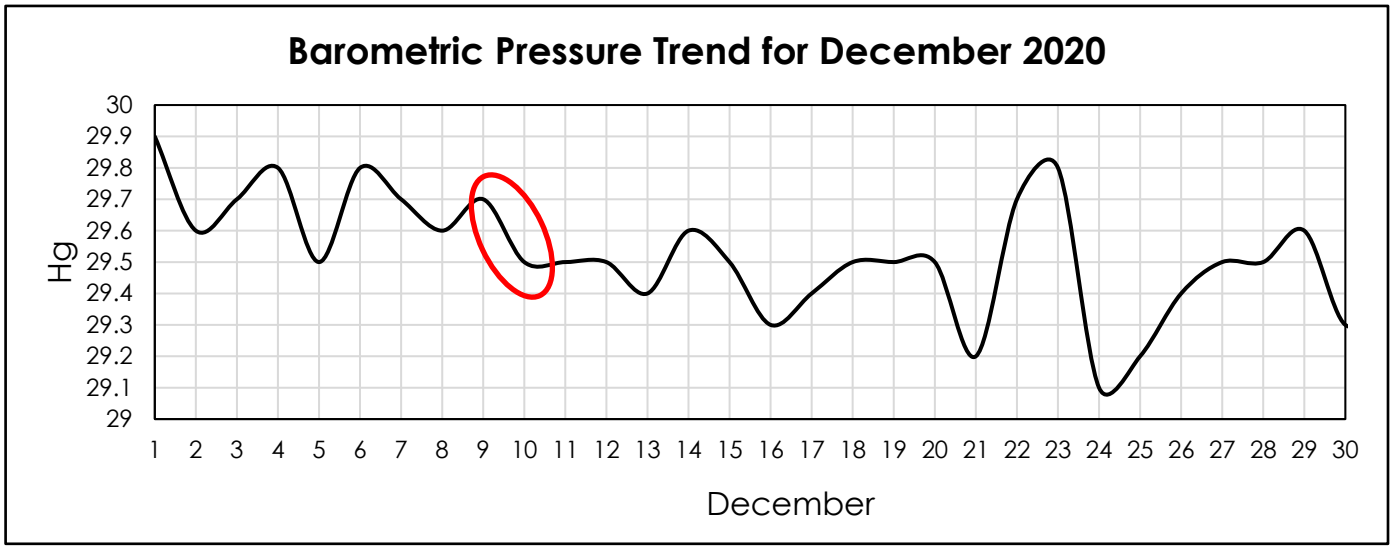
Before system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
12/9/2020 7:29	36.0	23.0	2.1	38.9	177	177	29.69
12/10/2020 7:25	34.3	21.3	4.5	39.9	148	148	29.44

After system maintenance

Date & Time	CH_4	CO_2	O_2	Balance	Init. Flow	Adj. Flow	Baro. Press.
	%	%	%	%	SCFM	SCFM	inches Hg
12/9/2020 15:37	36.3	22.8	2.6	38.3	148	148	29.76
12/10/2020 12:05	40.0	24.1	3.4	32.5	128	128	29.41

Barometric Pressure Trends for December 2020



Data Source: https://www.wunderground.com/history/monthly/us/wa/puyallup/KPLU/date/2020-12

Repair at N-41

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Travis Berndahl Date: 2/25/2020

Signature: [signature] Weather: Sunny

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1	Y	—	9.25	—	Dry
Sump No. 2	Y	—	8.26	—	Dry
Sump No. 3	Y	—	8.68	—	Dry
Sump No. 4	Y	—	8.31	—	Dry
Sump No. 5	Y	—	9.48	—	Dry
Sump No. 6	N	6.19	9.21	3.02	
Sump No. 7	Y	—	7.95	—	Dry
Sump No. 8	Y	8.52	8.93	0.41	
Sump No. 9	Y	—	9.22	—	Dry
Sump No. 10	N	—	9.30	—	Dry
Sump No. 11	Y	7.28	9.34	2.06	

Other Remarks:

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Travis Berndahl Date: 5-20-20

Signature: [signature] Weather: Cloudy

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1	Y	—	9.23	0	Dry
Sump No. 2	Y	6.38	8.21	1.83	
Sump No. 3	Y	—	8.61	—	Dry
Sump No. 4	Y	6.30	8.26	1.88	
Sump No. 5	Y	6.60	9.76	3.16	
Sump No. 6	N	6.65	9.20	2.55	
Sump No. 7	Y	—	8.94	—	
Sump No. 8	Y	7.31	8.91	1.60	
Sump No. 9	Y	8.20	9.21	1.01	
Sump No. 10	N	—	9.29	—	Dry
Sump No. 11	Y	7.21	9.28	2.07	

Other Remarks:

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Travis B. and Andres L. Date: 9-25-20

Signature: [signature] Weather: Raining

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1	Y	—	9.47	—	Dry
Sump No. 2	Y	6.42	8.60	2.18	
Sump No. 3	Y	—	8.89	—	Dry
Sump No. 4	Y	6.55	8.50	1.95	
Sump No. 5	Y	6.09	9.95	3.86	
Sump No. 6	N	—	9.35	—	Dry
Sump No. 7	Y	—	9.15	—	Dry
Sump No. 8	Y	7.62	9.22	1.60	
Sump No. 9	Y	8.11	9.44	1.33	
Sump No. 10	N	[illegible]	9.52	[illegible]	Dry
Sump No. 11	Y	7.27	9.52	2.25	

Other Remarks:

Condensate Recirculation Inspection Checklist

Hidden Valley Landfill, Pierce County, Washington

Name: Andres Lopez

Date: 12/21/20

Signature:

Weather: Raining

Instructions: Inspect each sump for pump operation and measure condensate fluid level, which should be below the overflow drainage pipe. Note any unusual observations such as soil staining or air leaks in the comments section.

Sump	Operation per Design (Y or N)	(1) Depth to Condensate (ft)	(2) Depth to Bottom (ft)	Height of Condensate (ft) = (2) – (1)	Comments
Sump No. 1	Y	—	9.36'	0.00	Dry
Sump No. 2	Y	6.40	8.50	2.10	
Sump No. 3	Y	—	8.85	0.00	Dry
Sump No. 4	Y	6.72	8.50	1.78	
Sump No. 5	Y	7.30	9.69	2.39	
Sump No. 6	N	5.95	9.46	3.51	
Sump No. 7	Y	—	9.22	0.00	
Sump No. 8	Y	7.61	9.20	1.59	
Sump No. 9	Y	8.01	9.46	1.45	Broken, Valve Snapped
Sump No. 10	N	—	9.52	0.00	Dry
Sump No. 11	Y	7.22	9.59	2.37	

Other Remarks:

Did not locate sump 5