

Third Quarter 2020 Monitoring Report

LRI Landfill Graham, Washington

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



SCS ENGINEERS

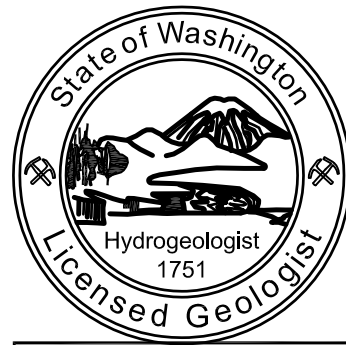
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2405 140th Avenue NE, Suite 107
Bellevue, WA 98005
425-746-4600

This document is the Third Quarter 2020 Monitoring Report for the LRI Landfill located in Graham, Washington. Activities this quarter included monitoring the volume and specific conductance of water pumped from the leak detection/collection system, quarterly groundwater monitoring, monthly landfill gas monitoring, and weekly surface water monitoring. This document was prepared by Sam Graber and Kevin Lakey of SCS Engineers and submitted to Mr. David Bosch of the Tacoma-Pierce County Health Department.



Kevin Lakey, PE, LHG,
Project Director
SCS ENGINEERS



Kevin G. Lakey



Sam Graber
Staff Scientist
SCS ENGINEERS

Attachments: Attachment A: Groundwater Flow Map
Attachment B: Groundwater Data Summary Tables
Attachment C: Field Sampling Documentation
Attachment D: Statistical Calculations
Attachment E: Trilinear Diagrams
Attachment F: Analytical Data Validation Report
Attachment G: Groundwater and LDCS Time Trend Plots
Attachment H: LDCS & Leachate Pumping Records and Conductivity Measurements
Attachment I: Surface Water Data
Attachment J: Landfill Gas Data

cc: Peter Lyon, Ecology (email)
Eugene Radcliff, Ecology (email and hard copy)
George Duvendack, LRI (email and hard copy)
Kevin Green, LRI (email)
Jody Snyder, LRI (email)
Olivier Moi, LRI (email)
Ryan Roth, LRI (email)
Maria Finley, LRI (email and CD)

GROUNDWATER MONITORING

Third Quarter 2020 groundwater samples were collected between September 21 and September 24, 2020. Water level elevations were measured on September 24, 2020. Nine monitoring wells (MW-1A, MW-2A, MW-3, MW-4, MW-5A, MW-6, MW-7, MW-9, and MW-10) were sampled during this monitoring period. Field quality control samples consisted of one field blank and one duplicate sample collected at MW-5A. Sampling procedures followed the LRI Landfill Groundwater Monitoring Plan (GWMP), dated March 10, 2014.

Groundwater samples were obtained using low-flow purging and sampling techniques with dedicated pumps at all monitoring wells except MW-4, where a non-dedicated QED Sample Pro pump was deployed. Samples for laboratory analyses were submitted to TestAmerica, Inc. of Denver, Colorado for the parameters listed in Appendix I and II of WAC 173-351-990. The groundwater sampling locations are shown on Figure 1.

A groundwater surface elevation map for the Third Quarter monitoring event is included as Figure 1 in Attachment A. The average groundwater gradients and flow directions calculated for the quarter remain similar to those previously reported at the facility, with a flow rate of about 45 feet per year towards the northwest for horizontal groundwater movement within the uppermost aquifer (assuming a horizontal hydraulic conductivity of 1×10^{-3} centimeters per second and an effective porosity of 30 percent).

Field measurements and analytical results for groundwater, leak detection/collection system (LDCS), and quality control samples are summarized on the following tables included in Attachment B: Groundwater Level Elevations, Field Parameters, Inorganic Parameters, Appendix I Metals, Appendix II Metals, Volatile Organic Compounds, Cation-Anion Balance, and Duplicate Sample Results.

Copies of the Field Sampling Data Sheets are included in Attachment C. Statistical calculations are provided in Attachment D. Trilinear (Piper) plots of groundwater and LDCS sample results are included in Attachment E. Data validation results are summarized in Attachment F.

Groundwater results were reviewed and validated (see attached Data Validation Report). Field measurements and analytical data were uploaded into the Washington State Department of Ecology (Ecology) Environmental Information Management (EIM) System. Laboratory reports were provided to the Tacoma-Pierce County Health Department (TPCHD) and the Washington Department of Ecology (Ecology) and under separate cover.

A nonparametric inter-well prediction limit approach was used to evaluate the water quality results for Appendix I parameters listed in WAC 173-351-990 (15 total metals and nitrate). Prediction limits were generated using background data for nitrate and eight rounds of quarterly sampling conducted in 2014 and 2015 for fifteen (15) total metals. Using this procedure, the highest concentration of each parameter in the data set was selected as the prediction limit for that parameter. In addition, the prediction limit data set includes ongoing water quality results from background (upgradient) wells MW-9 and MW-10. Appendix I total metal and nitrate concentrations measured at the downgradient monitoring wells were less than or equal to prediction limit values at all of the monitoring wells this quarter.

Groundwater time-trend plots for inorganic parameters and metals are included in Attachment G. The following four plots are provided for each monitoring well:

- Plot 1 — ammonia, nitrate, chloride, TOC
- Plot 2 — alkalinity, sulfate, TDS
- Plot 3 — calcium, magnesium, sodium, potassium
- Plot 4 — iron, manganese, zinc, arsenic

Time trend plots show that concentrations of metals and inorganic parameters remained generally consistent with previously observed values during the Third Quarter. The highest concentrations of chloride and nitrate in the uppermost aquifer continue to be observed in background well MW-10.

Reported detections of inorganic parameters and metals measured at downgradient monitoring wells during the Third Quarter were less than or equal to the groundwater quality criteria listed in WAC 173-200-040, with the exceptions shown in Exhibit 1.

Exhibit 1. Groundwater Results Greater Than WAC 173-200-040 Criteria

Parameter	Groundwater Quality Criteria	MW-1A	MW-2A	MW-3	MW-4	MW-5A	MW-6	MW-7
Arsenic, Total	0.00005	**	**	**	0.0110	**	0.0064	0.0055
Iron, Dissolved	0.30	1.5	0.50	*	*	*	*	*
Manganese, Dissolved	0.05	0.23	0.30	0.26	0.18	0.14	0.21	0.21
Notes: Concentrations listed as mg/L = milligrams per liter ** = Not detected above the method reporting limit (MRL), but MRL exceeded WAC 173-200-040 GW Quality Criteria * = Reported value was less than WAC 173-200-040 Groundwater Quality Criteria								

The values listed in Exhibit 1 are typical of previous results (see time-trend plots in Attachment G), are interpreted to be within natural background variation, and in the case of total arsenic, are less than or equal to the background level used to establish the prediction limit (prediction limits are not applicable for dissolved iron or manganese). The method reporting limit (MRL) for arsenic is 0.005 milligrams per liter (mg/L), which is greater than the WAC 173-200-040 criteria of 0.00005 mg/L. Therefore, arsenic results reported as non-detect are considered to be greater than the WAC 173-200-040 criterion.

The measured value for pH at background well MW-10 (6.40 SU) was below the WAC 173-200-040 criteria of 6.5 during the Third Quarter. Since MW-10 is a background (upgradient) monitoring well, the low pH value is interpreted to be representative of natural groundwater quality.

Low-level detections of ammonia (up to 0.20 mg/L) were reported at each downgradient monitoring well, except MW-1A and MW-2A, during the Third Quarter. Similar low-level ammonia detections have been reported in the past; including at background well MW-10 during the Second Quarter 2018 monitoring event. Therefore, the low-level ammonia concentrations appear to be due to site-wide aquifer chemistry, which has also affected water quality within the LDCS.

The cation-anion balance evaluates the difference in the sum of cations and anions (in milliequivalents per liter [meq/L]) within a water sample to determine if it is electroneutral (balanced cation and anion charges). Consistent with WAC 173-350-430(5), a threshold of ten percent difference is used if the total cation-anion sum is less than 5.0 meq/L, and a threshold of five percent difference is used if the total cation-anion sum is greater than or equal to 5.0 meq/L. Cation-anion balance evaluations were below the appropriate threshold for all of the monitoring wells this quarter.

Graphical plots of the current monitoring well water quality results are presented on trilinear (piper) diagrams in Attachment E. These plots demonstrate the inherent water quality differences between groundwater from the monitoring wells, shallow groundwater from the LDCS, and leachate (collected annually in December).

No VOCs were reported in samples collected from the monitoring wells during the Third Quarter.

LEAK DETECTION/COLLECTION SYSTEM (LDCS) MONITORING

LDCS Maintenance. The sampling pump from LDCS-5 was removed on March 5, 2020. The sample tubing attached to the pump was found to be damaged. The pump discharge tubing was replaced and LRI attempted to redeploy the pump in September. However, the attempt was not successful. Therefore, the Third Quarter sample was collected from the discharge pipe of the dewatering pump.

LDCS Daily Monitoring. Daily monitoring of the LDCS sumps for volume of water pumped, liquid level, and specific conductance (conductivity) was performed by using a programmable logic controller (PLC) and through direct measurements by LRI site personnel. Rainfall data were recorded manually using an on-site rain gauge. The combined field and PLC data, as well as time series plots of the data, are included in Attachment H.

Conductivity levels at LDCS-1 have displayed a gradual increase since July. There has been a corresponding decrease in the volume of groundwater pumped from Cell 1 during the same time period. This decrease in volume pumped from the cell is the result of less precipitation occurring at the site during the dry season. A similar trend was observed in 2019, indicating that the gradual increase in conductivity levels at LDCS-1 may be related to reduced groundwater pumping volumes that occur during the summer months.

Conductivity levels at LDCS-2B have displayed a gradual increase from approximately 700 $\mu\text{S}/\text{cm}$ in June of 2020 to nearly 900 $\mu\text{S}/\text{cm}$ in September of 2020. SCS will coordinate with LRI to recalibrate this conductivity probe to ensure it is providing accurate data. A discussion of the Third Quarter chemical analysis results from LDCS-2B is included below.

The conductivity probe at LDCS-3A was recalibrated on April 24, 2020. Following recalibration, the conductivity values have decreased to levels more consistent with historic data and readings measured in the field.

The conductivity probe at LDCS-5 malfunctioned beginning on October 4, 2019. LRI is currently addressing the cause of inaccurate data at this location. Beginning on April 1, 2020, LRI staff has been manually recording conductivity levels at LDCS-5 using a portable conductivity meter.

Conductivity levels measured at LDCS-7 increased between September 25 and October 2 (up to 1,951 $\mu\text{S}/\text{cm}$) and between October 10 and October 16 (up to 1,560 $\mu\text{S}/\text{cm}$). Since then, conductivity values have decreased to levels more consistent with previous data. Large rainfall

events (1.7 inches on September 25, and 2.19 inches between October 10 and October 14) correspond to the time frames of the conductivity increases.

Conductivity data from the remaining LDCS sumps trended within typical historical ranges during the Third Quarter of 2020.

LDCS Quarterly Monitoring. Samples were collected from the leak detection sumps with disposable bailers at LDCS-1, LDCS-2A, and LDCS-2B, and with dedicated QED Sleeper Pumps at LDCS-3A, LDCS-4A, LDCS-4B, LDCS-6, and LDCS-7. The sample from LDCS-5 was collected as a grab sample from the discharge pipe of the dewatering pump. Samples from LDCS-8A were collected as a grab sample from the LDCS pipe on August 31, 2020 and from the temporary HDPE sump with a peristaltic pump on September 21. Samples for laboratory testing were submitted to TestAmerica of Denver, Colorado. Field and laboratory data results are included on the groundwater summary tables in Attachment B.

LDCS time trend plots for inorganic parameters and dissolved metals are included in Attachment G. The following four plots are provided for each leak detection sump:

- Plot 1 — ammonia, nitrate, chloride, TOC
- Plot 2 — alkalinity, sulfate, TDS
- Plot 3 — calcium, magnesium, sodium, potassium
- Plot 4 — iron, manganese, zinc, arsenic

Elevated concentrations of dissolved iron were reported at LDCS-2B and LDCS-3 and elevated concentrations of dissolved manganese were reported at LDCS-1, LDCS-2A, LDCS-2B, and LDCS-3 this quarter (see Attachment B, Table 5). In addition, acetone (a primary leachate indicator parameter) was reported present in the samples collected from LDCS-2A and LDCS-2B (see Attachment B, Table 6). However, at all four locations, the primary leachate indicator 2-butanone was not detected and secondary leachate indicator parameters, ammonia and chloride, remained low. Therefore, the elevated concentrations of iron and manganese measured at these locations does not appear to be related to leachate. The elevated concentrations of iron and manganese could be related to a change in background water quality or to bacteriological growth.

Chloride results from LDCS-4A continue to display a slowly increasing trend (see Attachment G). However, the primary leachate indicator parameters, acetone and 2-butanone, were non-detect, and the overall water quality results do not indicate a leachate impact (see the summary tables in Attachment B and the piper plots in Attachment E).

Chloride results from LDCS-4B also continue to display a slowly increasing trend (see Attachment G). However, similar to LDCS-4A, primary leachate indicator parameters, acetone and 2-butanone, were non-detect, and the overall water quality results do not indicate a leachate impact (see the summary tables in Attachment B and the piper plots in Attachment E). As a precautionary measure, water from LDCS-4B has been discharged into the leachate collection system since July of 2019 and is not being discharged through the concrete channel.

Water quality at LDCS-5 continues to display fluctuating, but elevated, concentrations of secondary leachate indicator parameters ammonia and chloride, as well as alkalinity, iron, manganese, sodium, potassium, TDS, and TOC (see summary tables in Attachment B and time trend plots in Attachment G). Primary leachate indicator parameters acetone and 2-butanone have not been

detected at LDCS-5 since 2018. However, elevated concentrations of the inorganic parameters and metals listed above are indicative of a potential leachate leak.

As discussed in the Second Quarter 2020) monitoring report, recent pressure testing of the leachate forcemains adjacent to Cell 5 indicate that the forcemain piping is not leaking. Additional improvements to prevent a potential leak at Cell 5 included replacement of the stormwater flap along the concrete channel and replacement of the geomembrane boot surrounding the three leachate riser pipes. This work was completed in September (see Documentation Report of Soil Placement within the Future Phase V Closure Area, dated December 4, 2020). Groundwater withdrawn from LDCS-5 continues to be directed to the leachate collection system, as it has been since May of 2016, and is not being discharged through the concrete channel.

An elevated concentration of TDS (920 mg/L) was reported in the sample collected from LDCS-6 during the Third Quarter. However, primary indicator parameters were non-detect and secondary indicator parameters remained low. Therefore, the elevated TDS concentration does not appear to be the result of leachate.

As reported in the 2019 Annual Monitoring Report, the background water quality at LDCS-7 includes detections of VOC's and elevated concentrations of inorganic parameters and metals. Similar to previous monitoring events, benzene and carbon disulfide were reported in the sample collected from LDCS-7 this quarter. In addition, relatively elevated concentrations continue to be reported for alkalinity, chloride, ammonia, sulfate, TDS, total organic carbon, dissolved calcium, manganese, magnesium, and sodium. Since carbon disulfide, toluene, and elevated concentrations of general chemistry parameters were detected at LDCS-7 prior to the placement of refuse in the cell, the reported detections appear to be related to background water quality. No detections of the primary leachate indicator parameters acetone and 2-butanone have been detected at this location.

Two of four background water quality samples were collected from the temporary leak detection sump at Cell 8A (LDCS-8A) during the Third Quarter to establish background water quality prior to the placement of refuse in the newly constructed cell. Background sampling results from LDCS-8A are typical of water quality at the other leak detection locations. No VOC's were detected. Vanadium was reported at low concentrations. However, vanadium is also present at background well MW-9. The analytical results from the first two background samples are included on the tables in Attachment B. A summary the four background water quality sample results from LDCS-8A will be included in the 2020 Annual Report.

Graphical plots of the LDCS water quality results are presented on trilinear (piper) diagrams in Attachment D. These plots demonstrate the inherent water quality differences between groundwater from the monitoring wells, shallow groundwater from the LDCS, and leachate (collected annually in December).

SURFACE WATER MONITORING

Surface water monitoring was performed per the requirements of NPDES Construction Stormwater General Permit (CSWGP) WAR 002603C and NPDES Industrial Stormwater General Permit (ISGP) WAR 002557. Construction stormwater treatment using Chitosan Sand Enhanced Filtration (CESF) was utilized for six days (September 23 through September 28) during the Third Quarter. No other construction stormwater discharges occurred this quarter.

Industrial stormwater treatment using CESF was utilized for one day (September 28) during the Third Quarter. No other industrial stormwater discharges occurred this quarter.

Discharge Monitoring Reports (DMR's) were submitted to Ecology on a monthly (Construction Permit) and quarterly (Industrial Permit) basis. Copies of the Third Quarter 2020 DMR's are included in Attachment I. No surface water benchmarks or water quality effluent limits were exceeded this quarter.

LEACHATE MONITORING

Leachate volumes were monitored using the automated PLC system and through direct measurements by LRI site personnel. A summary of daily volumes pumped and leachate sump level data is provided in Attachment H.

Collected leachate was truck-hauled to the pretreatment facility at the Hidden Valley Landfill where it was discharged to the Pierce County sewer system in accordance with Pierce County Utilities Department Industrial Discharge Permit Number PC03096, and to the City of Tacoma and City of Salem Wastewater Treatment Plants for proper disposal. A summary of year to date leachate volume data based on volumes truck-hauled off site is provided on Exhibit 2.

Exhibit 2. 2020 Leachate Volume Data

Month	Leachate Trucked Offsite for Proper Disposal (gallons)	Monthly Rainfall (inches)
January	3,876,603	8.04
February	4,125,075	3.73
March	3,388,407	5.13
April	3,145,820	1.55
May	2,569,708	3.54
June	2,489,078	4.01
July	1,949,077	0.04
August	2,108,396	0.56
September	2,253,493	2.55
Totals	25,905,657	29.15
Notes: Leachate was trucked off-site for proper disposal. Leachate volumes were determined by trucking records kept on a daily basis.		

LANDFILL GAS MONITORING

Monthly monitoring of the landfill gas performance probes was conducted on July 30, August 27, and September 29 using a Landtec GEM2000 portable gas monitor. Gas probe GP-10P could not be monitored during the Third Quarter because the quick connect attachment on the probe was broken. However, the quick connect was repaired by SCS on October 23, 2020. Methane measurements were less than the lower explosive limit (LEL) of five percent by volume during the Third Quarter except at performance probes GP-1, GP-2, and GP-12 (see Exhibit 3). Previous barhole monitoring surveys, such as the survey conducted on December 18, 2019 along the base of the perimeter berm adjacent to gas probe GP-2, have shown that similar methane levels at these probes do not result in the migration of landfill gas to the property line.

Exhibit 3. 2020 Landfill Gas Probe Monitoring Summary (Percent Methane)

Monitoring Date	GP-1	GP-2	GP-3	GP-4	GP-9	GP-10	GP-10P	GP-11	GP-12	GP-13	GP-14	GP-15	GP-16
January 23	5.0	17.7	0.0	0.0	0.0	0.0	21.2	0.0	19.1	0.6	0.0	0.0	0.0
February 10	1.5	16.6	0.1	0.1	0.1	0.1	21.5	0.0	0.1	0.8	0.1	0.1	0.1
March 19	0.7	15.3	0.0	0.0	0.0	0.9	18.8	0.0	0.1	0.8	0.0	0.0	0.0
April 17	0.8	14.8	0.0	0.0	0.0	5.2	8.0	0.1	12.8	1.4	0.0	0.0	0.0
May 27	2.8	16.4	0.0	0.0	0.0	2.0	21.3	0.0	29.6	1.2	0.0	0.0	0.0
June 17	2.0	16.2	0.0	0.0	0.0	8.3	25.9	0.0	31.7	0.9	0.0	0.0	0.0
July 30	2.5	6.0	0.0	0.0	0.0	0.1	--	0.0	28.9	0.0	0.0	0.0	0.0
August 27	5.3	0.1	0.0	0.0	0.0	1.0	--	0.0	25.3	0.5	0.0	0.0	0.1
September 29	10.0	0.3	0.0	0.0	0.0	1.5	--	0.0	25.7	0.7	0.1	0.0	0.0
Notes: All values are reported as percent methane by volume. Methane measurements at or above the lower explosive limit of 5.0% by volume are shown in bold . -- = quick connect broken. Could not monitor.													

Indoor air was tested for the presence of methane on September 29. The office, maintenance building, scale house, and work shed located next to the stormwater treatment ponds were tested with a portable flame ionization detector (MicroFID). Low levels of methane were indicated, but attributed to air fresheners and/or cleaners.

Field records for gas probe and indoor air monitoring are included in Attachment J.

LANDFILL GAS EXTRACTION WELL CONSTRUCTION

Seventeen (17) new landfill gas extraction wells were installed between September 14 and September 28, 2020. A separate letter report describing the well installation activities will be provided.

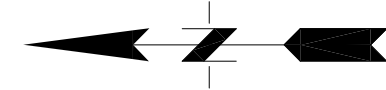
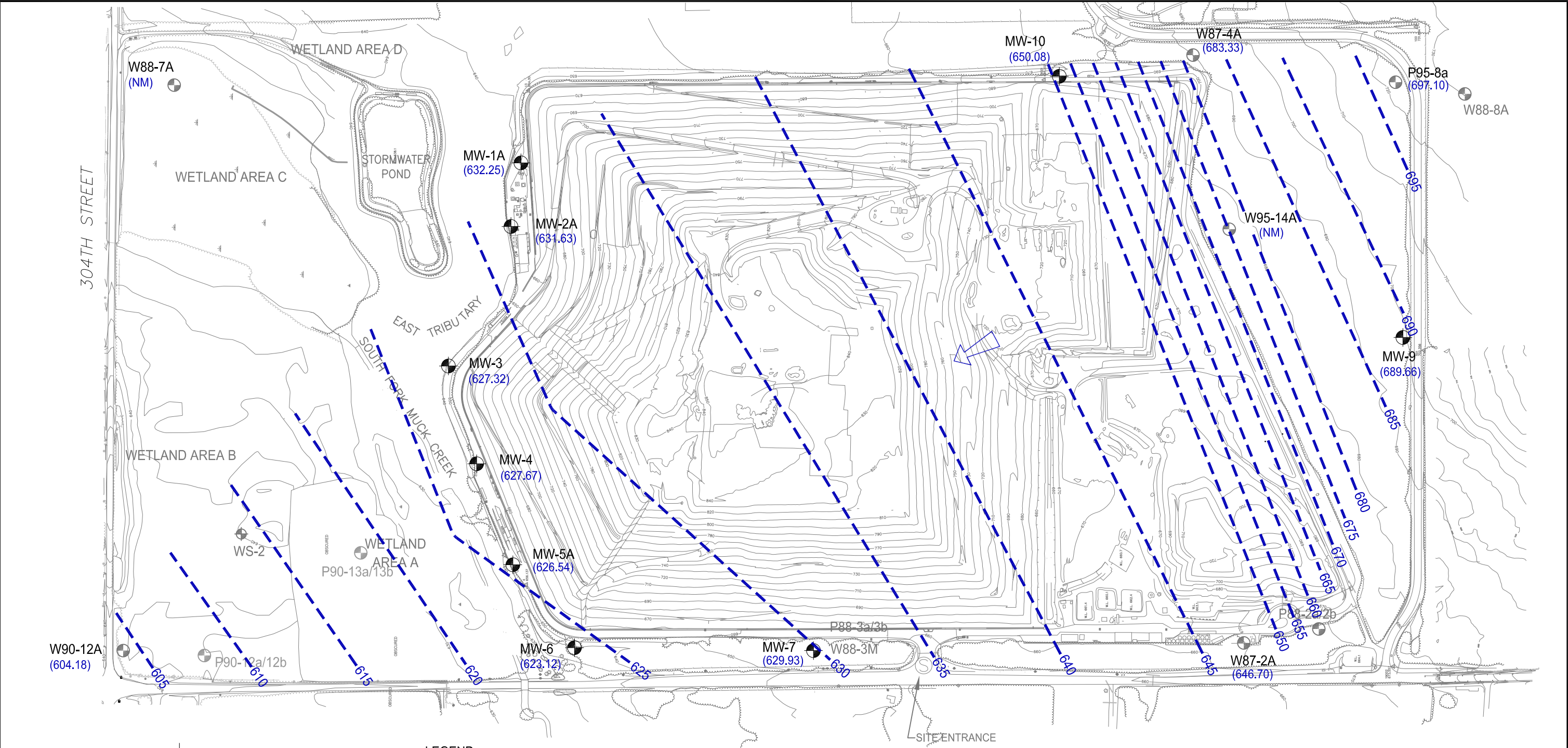
No other construction activity related to the landfill gas extraction wells was performed during this quarter.

GROUNDWATER MONITORING WELL CONSTRUCTION AND MAINTENANCE

No well construction or significant well maintenance activities were performed this quarter.

Attachment A

Groundwater Flow Map



NOTES:

VERTICAL DATUM - BASED ON
PIERCE COUNTY BENCH NO. 112-28,
ELEVATION 660.29 NGVD29

LEGEND:

- MW-1A MONITORING WELL
- W87-2A CHARACTERIZATION WELL/ PIEZOMETER
- (646.70) GROUNDWATER ELEVATION (IN FEET ABOVE MSL)
- INFERRED GROUNDWATER FLOW DIRECTION
- (NM) NOT MEASURED



SCALE (ft)

SCS ENGINEERS

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

PROJECT NO.	04220001.02	DES BY	SG
SCALE	AS SHOWN	CHK BY	KGL
CAD FILE	FIGURE 1	APP BY	KGL

POTENTIOMETRIC SURFACE CONTOUR MAP
SEPTEMBER 24, 2020
LRI LANDFILL
30919 MERIDIAN STREET E.
GRAHAM, WASHINGTON

DATE
NOVEMBER 2020

FIGURE
1

Attachment B

Groundwater Data Summary Tables

**Table 1. Groundwater Level Elevations
September 24, 2020
LRI Landfill, Pierce County, Washington**

Location	Well Casing Elevation (ft)	Depth to Water (ft)	Water Level Elevation (ft, NGVD29)
Wells			
W87-2A	664.01	17.31	646.70
W87-4A	693.29	9.96	683.33
W88-3M	658.11	17.09	641.02
W88-7A	632.51	NM*	--
W88-8M	721.05	41.02	680.03
W90-12A	640.84	36.66	604.18
W95-14A	680.49	NM**	--
MW-1A	652.57	20.32	632.25
MW-2A	651.93	20.30	631.63
MW-3	637.41	10.09	627.32
MW-4	652.37	24.70	627.67
MW-5A	655.55	29.01	626.54
MW-6	635.71	12.59	623.12
MW-7	656.03	26.10	629.93
MW-9	701.77	12.11	689.66
MW-10	678.37	28.29	650.08
Piezometers			
P13-14A	665.96	24.91	641.05
P88-2A	663.96	NM*	--
P88-2B	663.48	NM*	--
P88-3A	656.20	19.74	636.46
P88-3B	655.98	22.23	633.75
P95-8A	722.07	24.97	697.10
P90-12A	640.79	9.55	631.24
P90-12B	640.73	6.55	634.18
P90-13A	645.19	NM*	--
P90-13B	643.63	NM*	--
GP-1P ^b	652.00	18.44	633.56
GP-2P ^b	658.61	17.73	640.88
GP-3P ^b	658.51	10.25	648.26
GP-4P ^b	662.01	14.13	647.88
GP-9P ^b	674.03	12.40	661.63
GP-16 ^b	689.51	16.78	672.73
South Creek			
SWSC-1	632.68	2.50	630.18
SWSC-2	629.98	Dry	--
Leak Detection System			
LDCS-1 ^a	657.26	27.95	629.31
LDCS-2A ^a	659.24	29.19	630.05
LDCS-2B ^a	661.70	27.90	633.80

Notes:

NM= not measured

-- = not applicable

Measurements taken on 9/24/2020 unless otherwise noted

a = LDCS measurements taken on 9/22/2020

b = Gas probe measurements taken on 9/29/2020

* = Water level wells W88-7A, P88-2A, P88-2B, P90-13A, and P90-13B cannot be located

** = Could not access well during monitoring event

Table 2. Field Parameters
Third Quarter 2020
LRI Landfill, Pierce County, Washington

Location	Sample Number	Sample Date	Sampling Method	pH	Conductivity	Temperature
Units				(SU)	(μS/cm)	(°C)
WAC 173-200 Criteria				6.5-8.5	700 ^b	—
Monitoring Wells						
MW-1A	304-092120-02	9/21/2020	DP	6.96	179	13.1
MW-2A	304-092120-03	9/21/2020	DP	6.99	284	12.7
MW-3	304-092120-04	9/21/2020	DP	7.34	346	10.3
MW-4	304-092420-19	9/24/2020	SP	7.21	319	13.9
MW-5A	304-092120-05	9/21/2020	DP	7.42	291	12.5
MW-6	304-092120-07	9/21/2020	DP	7.46	311	10.5
MW-7	304-092220-09	9/22/2020	DP	7.46	368	10.3
MW-9	304-092220-08	9/22/2020	DP	6.63	139	10.7
MW-10	304-092220-10	9/22/2020	DP	6.40	266	10.9
Leak Detection System						
LDCS-1	304-092220-14	9/22/2020	DB	6.12	615	24.4
LDCS-2A	304-092220-13	9/22/2020	DB	6.57	920	24.0
LDCS-2B	304-092220-12	9/22/2020	DB	6.21	809	23.8
LDCS-3A	304-092220-11	9/22/2020	DP	6.21	871	20.0
LDCS-4A	304-092320-15	9/23/2020	DP	6.18	855	20.5
LDCS-4B	304-092320-16	9/23/2020	DP	6.35	946	21.1
LDCS-5	304-092420-21	9/24/2020	GB*	6.24	920	29.7
LDCS-6	304-092320-17	9/23/2020	DP	7.59	815	15.7
LDCS-7	304-092320-18	9/23/2020	DP	6.82	1,337	16.2
LDCS-8A^ (8/31/20)	304-083120-01	8/31/2020	GB	7.81	993	18.1
LDCS-8A^ (9/21/20)	304-092120-01	9/21/2020	PP	7.04	1,295	17.0

Notes:

Groundwater (monitoring well) concentrations greater than the WAC 173-200 criteria are shown in **bold**

b = Secondary Drinking Water Standard

°C = degrees celcius

DB = disposable bailer

DP = dedicated pump

GB = grab sample

PP = peristaltic pump

SP = submersible pump

SU = standard units

μS/cm = microsiemens per centimeter

* = Sample from LDCS-5 collected as a grab sample because the pump was not operational during the monitoring event

^ = Samples collected from LDCS-8A serve as background water quality data

**Table 3. Inorganic Parameters
Third Quarter 2020
LRI Landfill, Pierce County, Washington**

Parameter	Alkalinity, Total	Ammonia	Chloride	Nitrate	Sulfate	Total Dissolved Solids	Total Organic Carbon	Total Suspended Solids
MRL	10	0.10	0.2-1.2	0.50	0.2-1.0	10	1.0	4.0
WAC 173-200 Criteria	—	—	250	10	250	500	—	—
Prediction Limit	—	—	—	6.4	—	—	—	—
Monitoring Wells								
MW-1A	95	*	2.0	*	3.2	160	*	*
MW-2A	130	*	3.4	*	14	190	*	*
MW-3	130	0.11	3.6	*	30	220	*	*
MW-4	150	0.12	2.8	*	7.8	190	1.0	*
MW-5A	130	0.10	2.2	*	5.1	210	*	*
MW-6	140	0.12	4.9	*	7.0	210	*	*
MW-7	170	0.20	2.9	*	3.8	220	*	*
(BG) MW-9	56	*	1.6	*	1.6	150	*	*
(BG) MW-10	100	*	7.0	3.4	6.6	220	*	11
Leak Detection System								
LDCS-1	260	0.22	4.1	*	7.4	360	6.3	—
LDCS-2A	400	0.16	4.0	*	20	530	3.6	—
LDCS-2B	340	0.20	6.4	*	48	320	2.7	—
LDCS-3A	350	0.14	4.9	*	66	540	1.7	—
LDCS-4A	310	0.48	20	*	72	230	4.8	—
LDCS-4B	340	0.47	22	*	110	610	4.0	—
LDCS-5	370	4.9	27	*	43	580	8.3	—
LDCS-6	410	*	6.1	* H	71	920	2.9	—
LDCS-7	470	0.47	54	*	90	660	32	—
LDCS-8A^ (8/31/20)	360	*	44	1.1	97	680	11	—
LDCS-8A^ (9/21/20)	490	*	43	1.5	170	870	13	—

Notes:

All sample units are milligrams per liter (mg/L)

Groundwater (monitoring well) concentrations greater than prediction limits or WAC 173-200 criteria are shown in **bold**

Analyses performed by TestAmerica of Denver, Colorado

Method Reporting Limit (MRL) is typical and may be elevated for some samples

^ = Samples collected from LDCS-8A serve as background water quality data

* = Sample result was not reported at or above the MRL

— = Not applicable or not performed

BG = Background

H = Sample was prepped or analyzed beyond the specified holding time

Table 4. WAC 173-351 Appendix I Metals
Third Quarter 2020
LRI Landfill, Pierce County, Washington

Parameter	Antimony-D	Antimony-T	Arsenic-D	Arsenic-T	Barium-D	Barium-T	Beryllium-D	Beryllium-T	Cadmium-D	Cadmium-T	Chromium-D	Chromium-T	Cobalt-D	Cobalt-T	Copper-D	Copper-T	Lead-D	Lead-T	Nickel-D	Nickel-T	Selenium-D	Selenium-T	Silver-D	Silver-T	Thallium-D	Thallium-T	Vanadium-D	Vanadium-T	Zinc-D	Zinc-T	
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
MRL	0.05	0.05	0.005	0.005	0.005	0.005	0.001	0.001	0.001	0.001	0.005	0.005	0.001	0.001	0.01	0.01	0.002	0.002	0.02	0.02	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.005	0.01	0.01	
WAC 173-200 Criteria	—	—	—	0.00005	—	1.0	—	—	—	0.01	—	0.05	—	—	—	1.0	—	0.05	—	—	—	0.01	—	0.05	—	—	—	—	—	5.0	
Prediction Limit	—	0.05	—	0.011	—	0.091	—	0.005	—	0.005	—	0.011	—	0.01	—	0.063	—	0.042	—	0.020	—	0.005	—	0.01	—	0.005	—	0.016	—	0.290	
Monitoring Wells																															
MW-1A	—	*	—	*	—	0.019	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	
MW-2A	—	*	—	*	—	0.013	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	
MW-3	—	*	—	*	—	0.011	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	
MW-4	—	*	—	0.0110	—	0.018	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.052	
MW-5A	—	*	—	*	—	0.0093	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	
MW-6	—	*	—	0.0064	—	0.0099	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	
MW-7	—	*	—	0.0055	—	0.016	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	
(BG) MW-9	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.016	—	*	
(BG) MW-10	—	*	—	*	—	0.015	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.011	
Leak Detection System																															
LDCS-1	*	—	0.0110	—	0.029	—	—	—	—	—	*	—	*	—	*	—	*	—	*	—	—	—	—	—	—	—	—	*	—	*	—
LDCS-2A	*	—	0.0120	—	0.054	—	—	—	—	—	*	—	0.0035	—	*	—	*	—	*	—	—	—	—	—	—	—	—	*	—	*	—
LDCS-2B	*	—	0.0350	—	0.075	—	—	—	—	—	*	—	0.010	—	*	—	*	—	*	—	—	—	—	—	—	—	—	*	—	*	—
LDCS-3A	*	—	0.0110	—	0.026	—	—	—	—	—	*	—	0.0027	—	*	—	*	—	*	—	—	—	—	—	—	—	—	*	—	*	—
LDCS-4A	*	—	0.0110	—	0.036	—	—	—	—	—	*	—	0.0033	—	*	—	*	—	*	—	—	—	—	—	—	—	—	*	—	*	—
LDCS-4B	*	—	0.0056	—	0.043	—	—	—	—	—	*	—	*	—	*	—	*	—	*	—	—	—	—	—	—	—	—	*	—	*	—
LDCS-5	*	—	0.0098	—	0.062	—	*	—	*	—	0.0053	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDCS-6	*	—	*	—	0.013	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDCS-7	*	—	*	—	0.036	—	*	—	*	—	*	—	0.0042	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDCS-8A^ (8/31/20)	*	—	*	—	0.028	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.014	—	*	—	*
LDCS-8A^ (9/21/20)	*	—	*	—	0.050	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.015	—	*	—	*

Notes:

All sample units are milligrams per liter (mg/L)

WAC 173-200-040 Table 1 Groundwater Quality Criteria are for total metals

Groundwater (monitoring well) concentrations greater than prediction limits or WAC 173-200 criteria are shown in **bold**

Parameter concentrations for monitoring wells are total (T) metals

Parameter concentrations for LDCS sumps are dissolved (D) metals

Analyses performed by TestAmerica of Denver, Colorado

Method Reporting Limit (MRL) is typical and may be elevated for some samples

^ = Samples collected from LDCS-8A serve as background water quality data

* = sample result was not reported at or above the MRL

— = not applicable or not performed

BG = Background

Table 5. WAC 173-351 Appendix II Metals (Dissolved)
Third Quarter 2020
LRI Landfill, Pierce County, Washington

Parameter	Calcium	Iron	Magnesium	Manganese	Potassium	Sodium
Units	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MRL	0.20	0.10	0.10	0.005	2.0	1.0
WAC 173-200 Criteria	—	0.30	—	0.050	—	—
Monitoring Wells						
MW-1A	14	1.5	8.6	0.23	3.3	13
MW-2A	23	0.50	12	0.30	3.2	17
MW-3	33	*	14	0.26	3.5	13
MW-4	29	0.14	15	0.18	5.8	13
MW-5A	25	*	11	0.14	3.6	18
MW-6	30	*	13	0.21	4.5	10
MW-7	30	0.20	20	0.21	4.9	12
(BG) MW-9	9.7	*	6.4	*	*	6.5
(BG) MW-10	24	*	10	*	*	11
Leak Detection System						
LDCS-1	59	0.24	25	2.3	5.7	18
LDCS-2A	98	0.23	36	6.1	9.2	28
LDCS-2B	91	10	33	7.7	7.1	18
LDCS-3A	97	1.2	40	3.1	6.3	22
LDCS-4A	79	1.5	44	2.1	7.8	32
LDCS-4B	91	0.71	51	1.4	8.2	34
LDCS-5	79	1.1	46	1.8	12	44
LDCS-6	110	*	48	0.08	4.3	24
LDCS-7	140	0.18	46	2.3	3.5	38
LDCS-8A^ (8/31/20)	92	*	52	0.05	4.7	50
LDCS-8A^ (9/21/20)	130	*	65	0.35	6.6	64

Notes:

All sample units are milligrams per liter (mg/L)

WAC 173-200-040 Table 1 Groundwater Quality Criteria are for total metals

Groundwater (monitoring well) concentrations greater than WAC 173-200 criteria are shown in **bold**

Analyses performed by TestAmerica of Denver, Colorado

^ = Samples collected from LDCS-8A serve as background water quality data

* = sample result was not reported at or above the MRL

— = not applicable or not performed

BG = Background

Table 6. Volatile Organic Compounds (µg/L)
Third Quarter 2020
LRI Landfill, Pierce County, Washington

Parameter	Acetone	Benzene	Carbon Disulfide
Units	µg/L	µg/L	µg/L
MRL	10	0.5	0.5
WAC 173-200 Criteria	—	1.0	—
Monitoring Wells			
MW-1A	*	*	*
MW-2A	*	*	*
MW-3	*	*	*
MW-4	*	*	*
MW-5A	*	*	*
MW-6	*	*	*
MW-7	*	*	*
(BG) MW-9	*	*	*
(BG) MW-10	*	*	*
Leak Detection System			
LDCS-1	*	*	*
LDCS-2A	26	*	*
LDCS-2B	30	*	*
LDCS-3A	*	*	*
LDCS-4A	*	*	*
LDCS-4B	*	*	*
LDCS-5	*	*	*
LDCS-6	*	*	*
LDCS-7	*	0.61	18
LDCS-8A^ (8/31/20)	*	*	*
LDCS-8A^ (9/21/20)	*	*	*
Quality Control Samples			
Field Blank	*	*	*

Notes:

All sample units are milligrams per liter (µg/L)

Analyses performed by TestAmerica of Denver, Colorado

^ = Samples collected from LDCS-8A serve as background water quality data

* = sample result was not reported at or above the MRL

— = not applicable or not performed

BG = Background

Table 7. Cation-Anion Balance
Third Quarter 2020
LRI 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-1A	14	8.6	3.3	13	38.9	0.70	0.71	0.07	0.57	2.05	31	34	35
MW-2A	23	12	3.2	17	55.2	1.15	0.99	0.07	0.74	2.95	28	39	34
MW-3	33	14	3.5	13	63.5	1.65	1.15	0.08	0.57	3.44	19	48	33
MW-4	29	15	5.8	13	62.8	1.45	1.23	0.13	0.57	3.38	21	43	37
MW-5A	25	11	3.6	18	57.6	1.25	0.91	0.08	0.78	3.02	29	41	30
MW-6	30	13	4.5	10	57.5	1.50	1.07	0.10	0.44	3.10	17	48	34
MW-7	30	20	4.9	12	66.9	1.50	1.65	0.11	0.52	3.78	17	40	44
MW-9	9.7	6.4	2.0	6.5	24.6	0.48	0.53	0.05	0.28	1.34	24	36	39
MW-10	24	10	2.0	11	47.0	1.20	0.82	0.05	0.48	2.54	21	47	32
LDCS-1	59	25	5.7	18	107.7	2.94	2.06	0.13	0.78	5.91	15	50	35
LDCS-2A	98	36	9.2	28	171.2	4.89	2.96	0.21	1.22	9.28	15	53	32
LDCS-2B	91	33	7.1	18	149.1	4.54	2.72	0.16	0.78	8.20	12	55	33
LDCS-3A	97	40	6.3	22	165.3	4.84	3.29	0.14	0.96	9.23	12	52	36
LDCS-4A	79	44	7.8	32	162.8	3.94	3.62	0.18	1.39	9.13	17	43	40
LDCS-4B	91	51	8.2	34	184.2	4.54	4.20	0.19	1.48	10.40	16	44	40
LDCS-5	79	46	12	44	181.0	3.94	3.79	0.27	1.91	9.91	22	40	38
LDCS-6	110	48	4.3	24	186.3	5.49	3.95	0.10	1.04	10.58	11	52	37
LDCS-7	140	46	3.5	38	227.5	6.99	3.79	0.08	1.65	12.50	14	56	30
LDCS-8A^ (8/31/20)	92	52	4.7	50	198.7	4.59	4.28	0.11	2.18	11.15	20	41	38
LDCS-8A^ (9/21/20)	130	65	6.6	64	265.6	6.49	5.35	0.15	2.78	14.77	20	44	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-1A	114	2.0	0.5	3.2	119.7	1.87	0.06	0.008	0.07	2.00	3	93	3	4.05	1.1	10	O
MW-2A	156	3.4	0.5	14	173.9	2.56	0.10	0.008	0.29	2.95	3	87	10	5.90	0.1	5	O
MW-3	156	3.6	0.5	30	190.1	2.56	0.10	0.008	0.62	3.29	3	78	19	6.74	2.2	5	O
MW-4	180	2.8	0.5	7.8	191.1	2.95	0.08	0.008	0.16	3.20	2	92	5	6.58	2.7	5	O
MW-5A	156	2.2	0.5	5.1	163.8	2.56	0.06	0.008	0.11	2.73	2	94	4	5.75	4.9	5	O
MW-6	168	4.9	0.5	7.0	180.4	2.76	0.14	0.008	0.15	3.05	5	90	5	6.15	0.9	5	O
MW-7	204	2.9	0.5	3.8	211.2	3.35	0.08	0.008	0.08	3.51	2	95	2	7.29	3.6	5	O
MW-9	67.2	1.6	0.5	1.6	70.9	1.10	0.05	0.008	0.03	1.19	4	93	3	2.53	5.9	10	O
MW-10	120	7.0	3.4	6.6	137	1.97	0.20	0.055	0.14	2.36	8	83	6	4.90	3.8	10	O
LDCS-1	312	4.1	0.5	7.4	324	5.12	0.12	0.008	0.15	5.39	2	95	3	11.31	4.6	5	O
LDCS-2A	480	4.0	0.5	20	504.5	7.87	0.11	0.008	0.42	8.41	1	94	5	17.69	4.9	5	O
LDCS-2B	408	6.4	0.5	48	462.9	6.69	0.18	0.008	1.00	7.88	2	85	13	16.08	2.0	5	O
LDCS-3A	420	4.9	0.5	66	491.4	6.89	0.14	0.008	1.37	8.41	2	82	16	17.64	4.7	5	O
LDCS-4A	372	20	0.5	72	464.5	6.10	0.56	0.008	1.50	8.17	7	75	18	17.30	5.6	5	Exceeds
LDCS-4B	408	22	0.5	110	541	6.69	0.62	0.008	2.29	9.61	6	70	24	20.01	4.0	5	O
LDCS-5	444	27	0.5	43	515	7.28	0.76	0.008	0.89	8.95	9	81	10	18.86	5.1	5	Exceeds
LDCS-6	492	6.1	0.5	71	570	8.07	0.17	0.008	1.48	9.73	2	83	15	20.31	4.2	5	O
LDCS-7	564	54	0.5	90	709	9.25	1.52	0.008	1.87	12.65	12	73	15	25.16	0.6	5	O
LDCS-8A^ (8/31/20)	432	44	1.1	97	574	7.08	1.24	0.018	2.02	10.36	12	68	19	21.51	3.7	5	O
LDCS-8A^ (9/21/20)	588	43	1.5	170	803	9.64	1.21	0.024	3.54	14.42	8	67	25	29.19	1.2	5	O

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].

^ = Samples collected from LDCS-8A serve as background water quality data

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 8. Duplicate Sample Results
Third Quarter 2020 Monitoring Report
LRI Landfill, Pierce County, Washington

Parameter	MRL	MW-5A	MW-5A (Duplicate)	RPD (%)
Volatile Organic Compounds (µg/L)				
No Detections	-	-	-	-
Inorganic Parameters (mg/L)				
Alkalinity	10	130	140	7.4
Ammonia	0.1	0.10	0.10	0.0
Chloride	0.2	2.2	2.2	0.0
Sulfate	0.2	5.1	5.1	0.0
Total Dissolved Solids	10	210	180	15.4
Total Organic Carbon	1.0	*	1.1	9.5
Dissolved Metals (mg/L)				
Calcium	0.2	25	26	3.9
Magnesium	0.1	11	11	0.0
Manganese	0.005	0.14	0.14	0.0
Potassium	2.0	3.6	3.7	2.7
Sodium	1.0	18	18	0.0
Total Metals (mg/L)				
Barium	0.005	0.0093	0.01	7.3

Notes:

Analyses performed by TestAmerica of Denver, Colorado

Parameters not listed were not present at concentrations exceeding the Method Reporting Limit (MRL)

RPD = relative percent difference

µg/L = micrograms per liter

mg/L = milligrams per liter

* = sample result was not reported at or above the MRL

The MRL was used to calculate the RPD for analytes where one sample was non-detect

Attachment C

Field Sampling Documentation

October 21, 2020
File No. 04220001.02

Subject: **Third Quarter 2020 Groundwater Monitoring Event**
LRI Landfill, Pierce County, Washington

NOTES/SAMPLE DECODING:

Event Dates: September 21-24, 2020
Field Staff: Sam Graber

- Dedicated pumps were used for purging and sampling wells MW-1A, MW-2A, MW-3, MW-5A, MW-6, MW-7, MW-9, MW-10, and leak detection/collection system points LDCS-3A, LDCS-4A, LDCS-4B, LDCS-6, and LDCS-7.
- Disposable bailers were used to sample leak detection/collection system points LDCS-1, LDCS-2A, and LDCS-2B.
- A non-dedicated Sample Pro pump was used for purging and sampling well MW-4.
- The third quarter sample from LDCS-5 was collected as a grab sample from the channel discharge spigot. The sampling pump was not operational during the monitoring event.
- The first baseline sample from LDCS-8 was collected as a grab sample from the horizontal riser pipe on 8/31/20. The second baseline sample from LDCS-8 was collected using a peristaltic pump from the LDCS sump on 9/21/20.
- A round of water level measurements was completed on September 24, 2020.
- SCS was unable to collect a leachate sample from Cell 7 during the third quarter because the sample port was not operational.
- Multiparameter field meters were calibrated daily, prior to sampling.
- Source water for the field blank was lab-grade deionized water (VOC-free) provided by TestAmerica in Tacoma, Washington.

Sample Number	Well Number
304-092120-01	LDCS-8A
304-092120-02	MW-1A
304-092120-03	MW-2A
304-092120-04	MW-3
304-092120-05	MW-5A
304-092120-06	MW-5A (Dupl.)
304-092120-07	MW-6
304-092220-08	MW-9
304-092220-09	MW-7
304-092220-10	MW-10
304-092220-11	LDCS-3
304-092220-12	LDCS-2B
304-092220-13	LDCS-2A
304-092220-14	LDCS-1
304-092320-15	LDCS-4A

304-092320-16	LDCS-4B
304-092320-17	LDCS-6
304-092320-18	LDCS-7
304-092420-19	MW-4
304-092420-20	Field Blank
304-092420-21	LDCS-5

Additional Sample

Sample Number	Well Number
304-083120-01	LDCS-8A^

Notes:

^ = Additional sample collected to establish background water quality trends

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02

Site: LRI 304th

Well ID: LDCS-8

Sample ID: 304-0921 20-01

Date: 9/21/20

Weather: cloudy

Filtered? ☒ Y ☐ N

Sample Containers:

Locked? Y ☐ N ☒ NA

1000 ml Poly

500 ml HNO3 x2

125 ml NaOH

Water in Protector? Y ☐ N ☒ NA

500 ml Poly

500 ml H2SO4 x2

Damage? Y ☐ N ☒ NA

250 ml Poly

40 ml VOA x3 x6

125 ml Poly

1000 ml Amber

Sampling Method:

Dedicated

1.75" QED SamplePro

Bail

☒ Peristaltic

Grab

Other

Meter:

CONTROL SETTINGS:

MP-20

☒ YSI

Refill

Discharge

Pressure

Flow

1 ft water = 0.62L

1L = 0.26 gallons

One Well Volume (liters)

Other:

Flow

Setting:

Total Volume Bailed (liters)

Notes / Observations (color, odor, anomalies, etc):

~ 5' of water in sump. pumped in.

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
------	-----	-------	----------	----	----	----	-----------	----------

930		16.99	1295	3.12	7.04	222.5	16.0	
-----	--	-------	------	------	------	-------	------	--

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name

Sam Graber

Signature

[Signature]

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02

Site: LRI 304th

Well ID: MW-1A

Sample ID: 304-09 21 20-02

Date: 9/21/20

Weather: cloudy

Filtered? ☒ N

Locked? Y ☒ N

Water in Protector? ☒ N

Damage? Y ☒ N

Sample Containers:

1000 ml Poly

500 ml Poly

250 ml Poly

125 ml Poly

500 ml HNO3 x2

500 ml H2SO4 x2

40 ml VOA x3 x6

1000 ml Amber

125 ml NaOH

Sampling Method:

Dedicated

1.75" QED SamplePro

Bail

Peristaltic

Grab

Other

Meter:

CONTROL SETTINGS:

MP-20

YSI

Refill

Discharge

Pressure

Flow

1 ft water = 0.62L

1L = 0.26 gallons

One Well Volume (liters)

Total Volume Bailed (liters)

Other:

Flow

Setting:



20.41

DTW

TOS

Intake

BOS

Total Depth

Notes / Observations (color, odor, anomalies, etc):

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1020		14.83	201	7.51	7.96	171.0		
1025		13.91	162	3.00	6.99	180.8		
1028		13.04	172	1.26	6.82	188.9		
1031		13.04	156	1.29	6.85	60.0		
1034		12.96	168	1.07	6.92	8.3		
1037		13.02	172	0.90	6.94	-1.2		
1040		13.10	179	0.71	6.96	-10.0	2.61	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW	Meter: CONTROL SETTINGS:	1 ft water = 0.62L		1L = 0.26 gallons			
Well ID: RAW-2A		TOS	MP-20	Refill: 9	One Well Volume		Other:		
Sample ID: 304-09 21 20-03		Intake	YSI	Discharge: 6	(liters)		Flow		
Date: 9/21/20		BOS		Pressure: 35	Total Volume Bailed		Setting:		
Weather: Cloudy		Total Depth		Flow: 300 mL/min	(liters)				
Filtered? ☒ N	Locked? Y ☒ N	Water in Protector? Y ☒ N	Damage? Y ☒ N						
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly	Notes / Observations (color, odor, anomalies, etc):				
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1105		14.19	264	5.02	7.23	79.8		
1110		12.80	282	0.56	6.79	28.5		
1113		12.75	283	0.38	6.95	2.9		
1116		12.67	284	0.29	7.03	-8.8		
1119		12.68	283	0.25	7.05	-14.7		
1122		12.70	284	0.23	7.01	-15.9		
1125		12.71	284	0.23	6.99	-16.5	0.96	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Graber
Printed Name

Signature _____

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Project #:	04220001.02			Sampling Method:	Dedicated		1.75" QED SamplePro	Bail	Peristaltic	Grab	Other			
Site	LRI 304th			Meter:	CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons					
Well ID:	MW-3			MP-20	Refill	9	One Well Volume		Other:					
Sample ID:	304-0921 20-04			YSI	Discharge	6	(liters)		Flow					
Date:	9/21/20				Pressure	30	Total Volume Bailed		Setting:					
Weather:	cloudy				Flow	300 mL/min	(liters)							
Filtered?	Y N			Locked?	Y N			Water in Protector? Y N				Damage?	Y N	
Sample Containers:	1000 ml Poly			500 ml Poly		250 ml Poly		125 ml Poly						
	500 ml HNO3 x2			500 ml H2SO4 x2		40 ml VOA x3 x6		1000 ml Amber						
	125 ml NaOH													
Notes / Observations (color, odor, anomalies, etc):														

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1205		11.39	398	2.5	7.47	106.7		
1210		10.31	354	1.26	6.60	140.7		
1213		10.29	347	0.54	6.85	125.7		
1216		10.26	346	0.40	7.15	106.6		
1219		10.24	346	0.34	7.26	90.3		
1222		10.31	346	0.32	7.31	79.5		
1225		10.29	346	0.30	7.34	71.7	0.83	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Gruber
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02			Sampling Method :	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LRI 304th			DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L 1L = 0.26 gallons			
Well ID:	Mw-5			TOS	MP-20	Refill	9	One Well Volume	Other :		
Sample ID:	304-0921 20-05			Intake	YSI	Discharge	6	(liters)	Flow		
Date:	9/21/20			BOS		Pressure	40	Total Volume Bailed	Setting :		
Weather:	cloudy			Total Depth		Flow	300 mL/min	(liters)			
Filtered?	Y	N		Locked?	Y	N		Notes / Observations (color, odor, anomalies, etc):			
Sample Containers:	1000 ml Poly			Water in Protector?	Y	N					
	500 ml HNO3 x2				500 ml Poly	250 ml Poly	125 ml Poly				
	500 ml H2SO4 x2				40 ml VOA	x3 x6	1000 ml Amber				
	125 ml NaOH										

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1300		12.23	320	2.63	7.56	99.6		
1305		12.41	241	0.84	7.31	92.4		
1308		12.37	241	0.65	7.36	76.5		
1311		12.39	241	0.54	7.39	64.3		
1314		12.44	241	0.43	7.41	46.4		
1317		12.48	241	0.37	7.43	33.0		
1320		12.53	241	0.34	7.42	26.6	2.14	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name _____

Signature

Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02		Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	MW-9		TOS	MP-20	Refill	9	One Well Volume	Other:		
Sample ID:	304-09 22 20- 08		Intake	YSL	Discharge	6	(liters)	Flow		
Date:	9/ 22 /20		BOS		Pressure	40	Total Volume Bailed	Setting:		
Weather:	Sunny	Total Depth		Flow	250 mL/min	(liters)				
Filtered? ☒ N	Locked? ☒ N	Water in Protector? Y ☒ N	Damage? ☒ N *							
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly	Notes / Observations (color, odor, anomalies, etc): * repair cap line cap fitting					
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber						
	125 ml NaOH									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
945		11.07	141	7.16	5.45	282.6		
950		11.00	141	5.22	5.81	250.8		
953		10.85	140	4.51	6.22	222.7		
956		10.77	139	4.05	6.42	209.6		
959		10.76	139	4.00	6.51	194.0		
1002		10.41	138	4.03	6.61	177.4		
1005		10.71	139	4.04	6.63	172.0	0.39	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Graber
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #: 04220001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons	
Well ID: MW-7		TOS		MP-20		One Well Volume (liters)		Other:	
Sample ID: 304-0922 20-09		Intake		YSI		Discharge		Flow	
Date: 9/22/20		BOS				Pressure		Total Volume Bailed (liters)	
Weather: partly sunny		Total Depth				Flow			
Filtered? ☒ Y ☐ N	Locked? ☒ Y ☐ N	Water in Protector? ☒ Y ☐ N		Damage? ☒ Y ☐ N					
Sample Containers:		1000 ml Poly		500 ml Poly		250 ml Poly		125 ml Poly	
500 ml HNO3 x2		500 ml H2SO4 x2		40 ml VOA x3		x6		1000 ml Amber	
125 ml NaOH									
Notes / Observations (color, odor, anomalies, etc):									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1055		10.38	390	3.83	6.34	143.8		
1100		10.31	381	1.11	6.89	62.7		
1103		10.24	370	0.40	7.28	11.4		
1106		10.21	369	0.47	7.42	-16.5		
1109		10.21	368	0.73	7.44	-21.9		
1112		10.20	368	0.79	7.45	-24.2		
1115		10.25	368	0.76	7.46	-26.0	1.31	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Gruber
Printed Name

Signature 

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site: LRI 304th		DTW		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons	
Well ID: MW-10		TOS		MP-20		Refill 9		One Well Volume (liters)	
Sample ID: 304-0922 20-10		Intake		YSI		Discharge 6		Other:	
Date: 9/22/20		BOS		Pressure 40		Flow 300 mL/min		Flow Setting:	
Weather: Sunny		Total Depth		Total Volume Bailed (liters)					
Filtered? Y	Locked? Y	Water in Protector? Y	Damage? Y						
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly					
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								
Notes / Observations (color, odor, anomalies, etc):									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1155		12.39	271	5.57	7.15	118.2		
1200		11.34	271	0.80	6.03	158.9		
1203		11.19	268	0.37	6.15	160.2		
1206		11.09	271	0.32	6.19	159.8		
1209		10.89	270	0.35	6.30	154.6		
1212		10.78	268	0.41	6.40	151.0		
1215		10.94	266	0.45	6.40	152.3	6.12	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Greber
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02			Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LRI 304th			Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons			
Well ID:	LDCRS-3			MP-20	Refill	12	One Well Volume	Other:			
Sample ID:	304-0922 20-11			YSI	Discharge	3	(liters)	Flow			
Date:	9/22/20			BOS	Pressure	40	Total Volume Bailed	Setting:			
Weather:	Sunny			Total Depth	Flow	100 mL/min	(liters)				
Filtered?	Y	N		Locked?	Y	N		Water in Protector?			
Sample Containers:	1000 ml Poly			500 ml Poly			250 ml Poly		125 ml Poly		
	500 ml HNO3 x2			500 ml H2SO4 x2			40 ml VOA x3 x6		1000 ml Amber		
	125 ml NaOH										
Notes / Observations (color, odor, anomalies, etc):											

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q/Vol.
1255		21.29	859	8.5	6.61	171.7		
1300		19.81	839	0.61	6.30	172.8		
1303		19.70	842	0.44	6.22	174.0		
1306		19.60	847	0.30	6.16	177.4		
1309		19.88	853	0.29	6.09	136.0		
1312		20.19	856	0.26	6.12	96.0		
1315		20.04	871	0.25	6.21	66.5	1.28	765

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name _____

Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02		Sampling Method:	Dedicated	1.75" QED SamplePro	<u>Bail</u>	Peristaltic	Grab	Other	
Site	LRI 304th		DTW	Meter:	<u>CONTROL SETTINGS:</u>		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	<u>LDCRS-2B</u>		TOS	MP-20	Refill	_____	One Well Volume	_____	Other:	_____
Sample ID:	<u>304-0922 20-12</u>		Intake	<u>YSI</u>	Discharge	_____	(liters)	_____	Flow	_____
Date:	<u>9/22/20</u>		BOS		Pressure	_____	Total Volume Bailed	_____	Setting:	_____
Weather:	<u>cloudy</u>	Total Depth		Flow	_____	(liters)				
Filtered? <u>Y</u> <u>N</u>	Locked? <u>Y</u> <u>N</u>	Water in Protector? <u>Y</u> <u>N</u> <u>NA</u>	Damage? <u>Y</u> <u>N</u>							
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly						
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber						
	125 ml NaOH									
Notes / Observations (color, odor, anomalies, etc):										

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Gaber
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02	 29.19	Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	LDCRS-2A		TOS	MP-20	Refill		One Well Volume	Other:		
Sample ID:	304-0922 20- 13		Intake	YSI	Discharge		(liters)	Flow		
Date:	9/22/20		BOS		Pressure		Total Volume Bailed	Setting:		
Weather:	Partly Sunny	Total Depth		Flow		(liters)				
Filtered?	Y N	Locked?	Y N	Water in Protector?	Y N	Damage?	Y N			
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly						
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber						
	125 ml NaOH									
Notes / Observations (color, odor, anomalies, etc):										

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name

Signature _____

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Notes / Observations (color, odor, anomalies, etc):

Signature _____

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #:	04220001.02			Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other							
Site	LRI 304th			Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons									
Well ID:	LDCRS-4A			MP-20	Refill		One Well Volume (liters)	Other:									
Sample ID:	304-0923 20-15			YSI	Discharge			Flow									
Date:	9/23/20				Pressure		Total Volume Bailed (liters)	Setting:									
Weather:	Rainy				Flow												
Filtered?	Y	N		Locked?	Y	N		Water in Protector?			Y	N		Damage?	Y	N	
Sample Containers:	1000 ml Poly			500 ml Poly			250 ml Poly			125 ml Poly			Notes / Observations (color, odor, anomalies, etc):				
	500 ml HNO3 x2			500 ml H2SO4 x2			40 ml VOA x3 x6			1000 ml Amber							
	125 ml NaOH																

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q/Vol.
955		19.21	734	7.74	5.73	285.4		
1000		19.27	830	1.39	6.18	253.1		
1003		19.41	835	1.21	6.17	210.8		
1006		19.86	838	1.07	6.17	176.1		
1009		20.06	845	0.91	6.22	55.4		830
1012		20.00	858	0.86	6.26	59.0		
1015		20.47	855	1.05	6.18	60.5	1.49	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Baber
Printed Name

Signature _____

Notes / Observations (color, odor, anomalies, etc):

level at 10.0, water right away.

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #:	04220001.02	Sampling Method :		Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons	
Well ID:	LDC25-4B		TOS	MP-20	Refill	11	One Well Volume	Other :	
Sample ID:	304-092320-16		Intake	YSI	Discharge	4	(liters)	Flow	
Date:	9/23/20		BOS		Pressure	40	Total Volume Bailed	Setting :	
Weather:	rainy		Total Depth		Flow	200 mL/min	(liters)		
Filtered?	Y (N)	Locked?	Y (N)	Water in Protector?	Y (N)	Damage?	Y (N)		
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly	Notes / Observations (color, odor, anomalies, etc):				
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber					
	125 ml NaOH								

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q/Vol.
1055		begin purge						
1105		18.87	640	2.23	6.65	115.1		
1110		21.40	925	0.81	6.31	49.2		
1113		21.51	933	0.42	6.31	15.2		
1116		21.67	939	0.19	6.31	3.2		
1119		21.36	934	0.33	6.33	-2.4		
1122		21.05	940	0.30	6.34	-3.2		
1125		21.13	946	0.38	6.35	0.2	1.03	933

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Butler
Printed Name

Signature

Notes / Observations (color, odor, anomalies, etc):

level at 11.0

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02

Site: LRI 304th

Well ID: LDCRS-6

Sample ID: 304-09 23 20- 17

Date: 9/ 23 /20

Weather: rainy

Filtered? ☒ N

Locked? Y ☒ N

Water in Protector? Y ☒ N

Damage? Y ☒ N

Sample Containers:

1000 ml Poly

500 ml Poly

250 ml Poly

125 ml Poly

500 ml HNO3 x2

500 ml H2SO4 x2

40 ml VOA x3 x6

1000 ml Amber

125 ml NaOH

Sampling Method:

Dedicated

1.75" QED SamplePro

Bail

Peristaltic

Grab

Other

Meter:

CONTROL SETTINGS:

1 ft water = 0.62L

1L = 0.26 gallons

MP-20

Refill

16

One Well Volume

Other:

YSI

Discharge

4

(liters)

Flow

BOS

Pressure

50

Total Volume Bailed

Setting:

Total Depth

Flow

100 mL/min

Notes / Observations (color, odor, anomalies, etc):

level at 13.0

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	spc panel alt. vol.
1210		15.61	304	7.77	7.44	51.6		
1215		15.65	305	6.03	7.56	54.8		
1218		15.68	306	6.11	7.57	55.9		
1221		15.69	307	6.22	7.58	57.1		
1224		15.65	310	6.17	7.59	59.2		
1227		15.62	313	6.12	7.59	61.4		
1230		15.66	315	6.14	7.59	64.3	1.35	947

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name

Signature

SCS ENGINEERS

2405 140th ave NE #107

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #: 04220001.02	Sampling Method: <u>Dedicated</u>	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site: LRI 304th	Meter: <u>CONTROL SETTINGS:</u>	1 ft water = 0.62L		1L = 0.26 gallons		
Well ID: <u>LDCS-7</u>	MP-20	Refill: <u>12</u>	One Well Volume (liters):	Other:		
Sample ID: <u>304-09 23 20-18</u>	<u>YSI</u>	Discharge: <u>3</u>	Total Volume Bailed (liters):	Flow Setting:		
Date: <u>9/23/20</u>	BOS	Pressure: <u>50</u>				
Weather: <u>rainy</u>	Total Depth	Flow: <u>50 µl/min</u>				
Filtered? <u>Y</u> <u>N</u>	Locked? <u>Y</u> <u>N</u>	Water in Protector? <u>Y</u> <u>N</u>	Damage? <u>Y</u> <u>N</u>			
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly		
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber		
	125 ml NaOH					

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	SpC part or Vol.
1355		16.38	1322	5.00	7.11	118.6		
1400		16.39	1346	0.50	6.93	116.3		
1403		16.28	1342	0.45	6.89	114.8		
1406		16.20	1339	0.42	6.85	113.5		
1409		16.19	1338	0.40	6.84	112.9		
1412		16.18	1338	0.39	6.84	112.2		
1415		16.23	1337	0.37	6.82	112.6	1.36	999*

Notes / Observations (color, odor, anomalies, etc):

Level at 10.0

* Oliver to call Cascade

Stabilization Parameters: pH/DO ± 0.2, SpC ± 10%, Temp ± 0.5°C, Turb. ± 10% or ≤ 5

SAMPLER: Sam Greber
Printed Name

[Signature]
Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04220001.02		Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LRI 304th		DTW	Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	MW-4		TOS	MP-20	Refill	9	One Well Volume	Other:		
Sample ID:	304-09 2420-19		Intake	YS	Discharge	6	(liters)	Flow		
Date:	9/24/20		BOS		Pressure	50	Total Volume Bailed	Setting:		
Weather:	sunny	72.75	Total Depth	Flow	250 mL/min	(liters)				
Filtered?	Y N	Locked?	Y N	Water in Protector?	Y N	Damage?	Y N			
Sample Containers:	1000 ml Poly	500 ml Poly	250 ml Poly	125 ml Poly	Notes / Observations (color, odor, anomalies, etc):					
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6	1000 ml Amber						
	125 ml NaOH									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1100		begin purge.						
1120		15.59	327	8.97	5.43	2652		
1125		13.74	320	0.31	6.67	183.5		
1128		13.73	320	0.29	6.91	138.4		
1131		13.73	320	0.27	7.04	94.8	6.14	
1134		13.79	320	0.25	7.15	65.2		
1137		13.76	319	0.24	7.19	49.1		
1140		13.85	319	0.23	7.21	38.4	5.17	

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER:

Printed Name

Signature _____

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Notes / Observations (color, odor, anomalies, etc):

Signature _____

Bellevue, WA 98005

(425) 746-4600

Groundwater Sampling Data Sheet

Project #:	04220001.02		Sampling Method :	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	<u>Grab</u>	Other
Site	LRI 304th		Meter:	CONTROL SETTINGS:					
Well ID:	LXPR-5		MP-20	1 ft water = 0.62L 1L = 0.26 gallons					
Sample ID:	304-0924 20-21		<u>XSI</u>	Refill	One Well Volume _____ Other : _____				
Date:	9/24/20			Discharge	Total Volume Bailed _____ Flow Setting : _____				
Weather:	cloudy		Pressure						
Filtered?	<u>Y</u> N		Flow						
Sample Containers:	Locked? Y N <u>NA</u>	Water in Protector? Y N <u>NA</u>	Damage? Y <u>N</u>						
	1000 ml Poly	500 ml Poly	250 ml Poly	Notes / Observations (color, odor, anomalies, etc):					
	500 ml HNO3 x2	500 ml H2SO4 x2	40 ml VOA x3 x6						
	125 ml NaOH								

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Sam Drake
Printed Name

Signature _____

**2405 140th ave NE #107
Bellevue, WA 98005**

Groundwater Sampling Data Sheet

Project #:		Site:		Well ID:		Sample ID:		Date:		Weather:		Filtered? ☒ Y ☐ N		Sample Containers:	
0422001.02		LRD 304		C0118 LDCRS		304-083120-01		8/31/20		Overcast				1000 ml Poly 500 ml HNO3 x2 125 ml NaOH	
Sampling Method:		DTW		TOS		Intake		BOS		Total Depth		Water in Protector? ☒ Y ☐ N		500 ml Poly 500 ml H2SO4 x2 40 ml VOA x3 x6	
Dedicated		Meter:		MP-20		YSI						Damage? ☒ Y ☐ N		125 ml Poly 1000 ml Amber	
1.75" QED SamplePro		CONTROL SETTINGS:		Refill		Discharge		Pressure		Flow					
Bail		1 ft water = 0.62L		1L = 0.26 gallons		One Well Volume (liters)		Total Volume Bailed (liters)				Other:		Flow Setting:	
Peristaltic		Grab		Other:											
Notes / Observations (color, odor, anomalies, etc):															

[illegible]

Stabilization Parameters: pH/DO ± 0.2 , SpC $\pm 10\%$, Temp $\pm 0.5^\circ\text{C}$, Turb. $\pm 10\%$ or ≤ 5

SAMPLER: Travis Berndahl
Printed Name

Signature _____

Notes / Observations (color, odor, anomalies, etc):

Grab sample from pipe

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	8-31-20					
Time	845					
Weather (sky or precip, temp)	Overcast					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1495	3.88	6.90	8.81		
Post Cal Reading	1413	4.01	7.00	8.50	771, 10, 20, 0.1, 0.2	
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	TAB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	LRI 304					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	9/21/20					
Time	900					
Weather (sky or precip, temp)	partly cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1414	4.02	7.02			
Post Cal Reading	1413	4.01	7.00	8.5		
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	SEG					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	LRI 304th					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	9/22/20					
Time	900					
Weather (sky or precip, temp)	cloudy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1420	3.98	7.00	8.72		
Post Cal Reading	1413	~~3.98~~ 4.01	7.00	~~8.72~~ 8.50		
Discrepancy	No					
Calib. Successful?	yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	304th					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	9/23/20					
Time	900					
Weather (sky or precip, temp)	rainy					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1440	4.11	7.05			
Post Cal Reading	1413 ~~1440~~	4.01	7.00	8.5		
Discrepancy	No					
Calib. Successful?	Yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556				MicoTPW / HACH2000	
Calibration Location	LRI 304th					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

	Conductivity	pH4	pH 7	DO	Turbidity	Comments/Exceptions
Date	9/24/20					
Time	1100					
Weather (sky or precip, temp)	partly sunny					
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.01	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, ~0.1	
Pre-Cal Reading	1395	4.01	6.98			
Post Cal Reading	1413	4.01	7.00	85		
Discrepancy	No					
Calib. Successful?	yes					
Calibration by	SEB					
Instrument Type, ID	MP20 / YSI 556			MicoTPW / HACH2000		
Calibration Location	LRI 304th					

* If Direct Reading is Unavailable, Assume pressure = 760 mm - 2.5 (altitude in ft/100)

Attachment D

Statistical Calculations

Groundwater Prediction Limits (mg/L)
Appendix I Parameters, Third Quarter 2020
LRI Landfill, Pierce County, Washington

	MRL (typical)	Prediction Limit	MW-1/ MW-1A	MW-2/ MW-2A	MW-3	MW-4	MW-5/ MW-5A	MW-6	MW-7	MW-9	MW-10
Antimony	0.050	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L	0.050 L
Arsenic	0.005	0.011	0.005 L	0.005 L	0.005 L	0.011	0.008	0.008	0.006	0.005 L	0.005 L
Barium	0.005	0.091	0.030	0.018	0.015	0.091	0.036	0.014	0.016	0.0057	0.016
Beryllium	0.005	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.001 L	0.005 L	0.001 L	0.005 L
Cadmium	0.005	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L
Chromium	0.005	0.011	0.005 L	0.005 L	0.005 L	0.011	0.005	0.005 L	0.005 L	0.005 L	0.005 L
Cobalt	0.010	0.010 L	0.010 L	0.010 L	0.010 L	0.004	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Copper	0.010	0.063	0.010 L	0.010 L	0.010 L	0.063	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Lead	0.002	0.042	0.002 L	0.002 L	0.002 L	0.042	0.002 L	0.002 L	0.002 L	0.002 L	0.002 L
Nickel	0.020	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L	0.020 L
Selenium	0.005	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L
Silver	0.010	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L	0.010 L
Thallium	0.005	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L	0.005 L
Vanadium	0.010	0.016	0.010 L	0.010 L	0.010 L	0.014	0.010 L	0.010 L	0.010 L	0.016	0.010 L
Zinc	0.01	0.290	0.032	0.010 L	0.010 L	0.290	0.010	0.010 L	0.010 L	0.043	0.034
Nitrate as Nitrogen	0.50	6.40	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	0.500 L	6.40

Notes:

Prediction Limits are shown in bold.

Prediction Limits for metals are for total metals.

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

mg/L = milligrams per liter.

**Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2020
LRI Landfill, Pierce County, Washington**

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO ₃)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-1																																
3/24/2014	0.002	L 0.001	0.005	L 0.0025	0.022	0.022	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/24/2014	0.002	L 0.001	0.005	L 0.0025	0.02	0.02	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.005	L 0.0025	0.024	0.024	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.002	L 0.001	0.002	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.02	0.02	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	L 0.0025	0.03	0.03	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.032	0.032	0.5	L 0.25
3/23/2015	0.05	L 0.025	0.005	L 0.0025	0.02	0.02	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.005	L 0.0025	0.022	0.022	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/16/2015	0.05	L 0.025	0.005	L 0.0025	0.021	0.021	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.005	L 0.0025	0.024	0.024	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		0		8		0		0		0		0		0		0		0		0		0		0		0		2		0	
Minimum Concentration		0.001		0.0025		0.02		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0025		0.03		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.032		0.25
Average Concentration	NC		NC		0.02288		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
Variance	NC		NC		1.1E-05		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
Standard Deviation	NC		NC		0.0033		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
oefficient of Variation (%)	NC		NC		14.2974		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
Standard Error	NC		NC		0.00116		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
MW-2																																
3/24/2014	0.002	L 0.001	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/26/2014	0.002	L 0.001	0.005	L 0.0025	0.015	0.015	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/16/2014	0.05	L 0.025	0.005	L 0.0025	0.018	0.018	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/23/2015	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/16/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		0		8		0		0		0		0		0		0		0		0		0		0		0		0		0	
Minimum Concentration		0.001		0.0025		0.012		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.0025		0.018		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.005		0.25
Average Concentration	NC		NC		0.01413		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
Variance	NC		NC		3.3E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
Standard Deviation	NC		NC		0.00181		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
oefficient of Variation (%)	NC		NC		12.798		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
Standard Error	NC		NC		0.00064		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC	
MW-3																																
3/26/2014	0.002	L 0.001	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.005	L 0.0025	0.011	0.011	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.005	L 0.0025	0.01	0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.002	L 0.001	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.005	L 0.0025	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/26/2015	0.05	L 0.025	0.005	L 0.0025	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.005	L 0.0025	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/16/2015	0.05	L 0.025	0.005	L 0.0025	0.01	0.01	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0

**Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2020
LRI Landfill, Pierce County, Washington**

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO ₃)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-4																																
3/24/2014	0.002	L 0.001	0.0074	0.0074	0.012	0.012	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.0086	0.0086	0.012	0.012	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/17/2014	0.05	L 0.025	0.0099	0.0099	0.013	0.013	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/16/2014	0.05	L 0.025	0.0076	0.0076	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/24/2015	0.05	L 0.025	0.0079	0.0079	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.0094	0.0094	0.013	0.013	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/18/2015	0.05	L 0.025	0.0094	0.0094	0.017	0.017	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.5	L 0.25
12/15/2015	0.05	L 0.025	0.011	0.011	0.091	0.091	0.001	L 0.0005	0.001	L 0.0005	0.011	0.011	0.0039	0.0039	0.063	0.063	0.042	0.042	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.29	0.29	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		8		8		0		0		1		1		1		1		0		0		0		0		1		2		0	
Minimum Concentration		0.001		0.0074		0.011		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.011		0.091		0.0025		0.0025		0.011		0.005		0.063		0.042		0.01		0.0025		0.005		0.0025		0.014		0.29		0.25
Average Concentration		NC		0.0089		0.02275		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		1.6E-06		0.00076		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		0.00125		0.02763		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
oefficient of Variation (%)		NC		14.0465		121.469		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		0.00044		0.00977		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-5																																
3/24/2014	0.002	L 0.001	0.0072	0.0072	0.032	0.032	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.0067	0.0067	0.033	0.033	0.001	L 0.0005	0.005	L 0.0025	0.0036	0.0036	0.01	L 0.005	0.0061	0.0061	0.001	L 0.0005	0.0043	0.0043	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/16/2014	0.05	L 0.025	0.0059	0.0059	0.036	0.036	0.005	L 0.0025	0.005	L 0.0025	0.0051	0.0051	0.01	L 0.005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.01	L 0.005	0.005	L 0.0025	0.01	L 0.005	0.01		0.5	L 0.25
12/16/2014	0.05	L 0.025	0.0055	0.0055	0.022	0.022	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/23/2015	0.05	L 0.025	0.008	0.008	0.03	0.03	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.0075	0.0075	0.02	0.02	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/18/2015	0.05	L 0.025	0.005	L 0.0025	0.014	0.014	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
12/14/2015	0.05	L 0.025	0.0072	0.0072	0.021	0.021	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
Number Analyzed	8		8		8		8		8		8		8		8		8		8		8		8		8		8		8		8	
Number Detected	0		7		8		0		0		2		0		1		0		1		0		0		0		0		1		0	
Minimum Concentration		0.001		0.0025		0.014		0.0005		0.0005		0.001		0.0005		0.001		0.0005		0.001		0.0025		0.0025		0.0005		0.0025		0.005		0.25
Maximum Concentration		0.025		0.008		0.036		0.0025		0.0025		0.0051		0.005		0.0061		0.001		0.01		0.0025		0.005		0.0025		0.005		0.01		0.25
Average Concentration		NC		0.00631		0.026		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Variance		NC		3E-06		6E-05		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Deviation		NC		0.00175		0.00776		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
oefficient of Variation (%)		NC		27.6653		29.863		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
Standard Error		NC		0.00062		0.00275		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC
MW-6																																
3/26/2014	0.002	L 0.001	0.0075	0.0075	0.014	0.014	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
6/25/2014	0.002	L 0.001	0.0065	0.0065	0.011	0.011	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
9/18/2014	0.002	L 0.001	0.0078	0.0078	0.01	0.01	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.01	L 0.005	0.01	L 0.005	0.5	L 0.25
12/17/2014	0.05	L 0.025	0.0068	0.0068	0.012	0.012	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
3/26/2015	0.05	L 0.025	0.0068	0.0068	0.01	0.01	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
6/8/2015	0.05	L 0.025	0.0075	0.0075	0.01	0.01	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.01	L 0.005	0.5	L 0.25
9/17/2015	0.05	L 0.025	0.0069	0.0069	0.011	0.011	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.0			

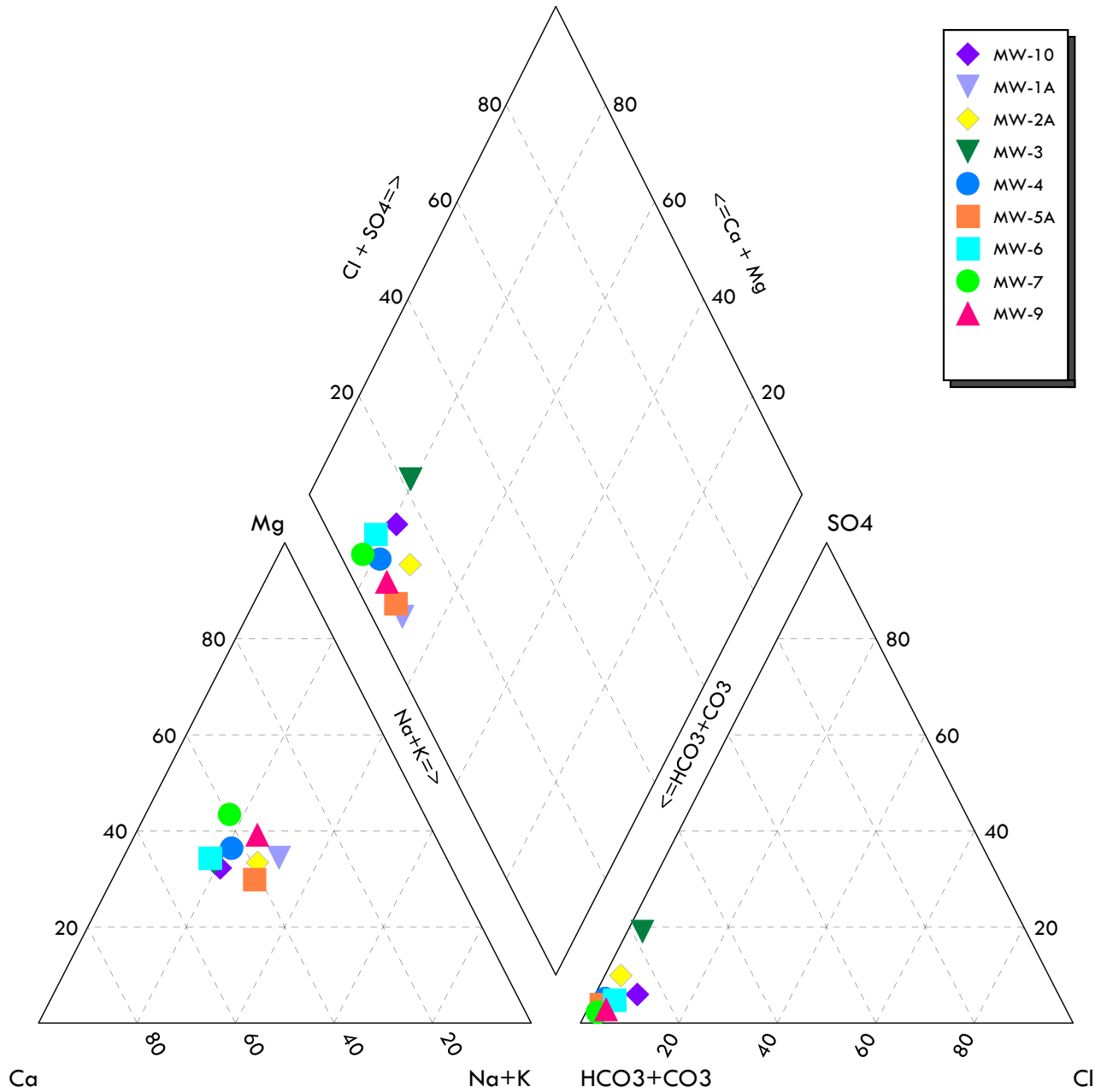
Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Third Quarter 2020
LRI Landfill, Pierce County, Washington

Location ID	Antimony (Sb)		Arsenic (As)		Barium (Ba)		Beryllium (Be)		Cadmium (Cd)		Chromium (Cr)		Cobalt (Co)		Copper (Cu)		Lead (Pb)		Nickel (Ni)		Selenium (Se)		Silver (Ag)		Thallium (Tl)		Vanadium (V)		Zinc (Zn)		Nitrate (NO ₃)	
Monitoring Date	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.	Result	Conc.
MW-9																																
3/25/2014	0.002	L 0.001	0.005	L 0.0025	0.0047	0.0047	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.016	0.016	0.01	0.01	0.5	L 0.25
6/24/2014	0.002	L 0.001	0.005	L 0.0025	0.0045	0.0045	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.016	0.016	0.01	L 0.005	0.5	L 0.25
9/18/2014	0.002	L 0.001	0.005	L 0.0025	0.0057	0.0057	0.001	L 0.0005	0.005	L 0.0025	0.002	L 0.001	0.01	L 0.005	0.002	L 0.001	0.001	L 0.0005	0.002	L 0.001	0.005	L 0.0025	0.01	L 0.005	0.001	L 0.0005	0.014	0.014	0.014	0.014	0.5	L 0.25
12/17/2014	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/24/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
6/9/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/18/2015	0.05	L 0.025	0.005	L 0.0025	0.005	0.005	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
12/16/2015	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.042	0.042	0.5	L 0.25
3/22/2016	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.028	0.028	0.5	L 0.25
6/8/2016	0.05	L 0.025	0.005	L 0.0025	0.005	0.005	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.023	0.023	0.5	L 0.25
9/16/2016	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.015	0.015	0.043	0.043	0.5	L 0.25
12/6/2016	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/29/2017	0.05	L 0.025	0.005	L 0.0025	0.0056	0.0056	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
6/22/2017	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
9/26/2017	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.012	0.012	0.01	L 0.005	0.5	L 0.25
12/13/2017	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
3/21/2018	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.016	0.016	0.01	L 0.005	0.5	L 0.25
6/19/2018	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
9/19/2018	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
12/4/2018	0.05	L 0.025	0.005	L 0.0025	0.0051	0.0051	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
3/11/2019	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.014	0.014	0.01	L 0.005	0.5	L 0.25
6/19/2019	0.05	L 0.025	0.005	L 0.0025	0.0051	0.0051	0.001	L 0.0005	0.001	L 0.0005	0.005	L 0.0025	0.001	L 0.0005	0.01	L 0.005	0.002	L 0.001	0.02	L 0.01	0.005	L 0.0025	0.005	L 0.0025	0.005	L 0.0025	0.013	0.013	0.01	L 0.005	0.5	L 0.25
9/26/2019	0.05	L 0.025	0.005	L 0.0025	0.005	L 0.0025	0.001	L 0.00																								

Attachment E

Trilinear Diagrams

Third Quarter, Groundwater Monitoring Wells



DESCRIPTION: Piper Diagram - Groundwater - 3Q20

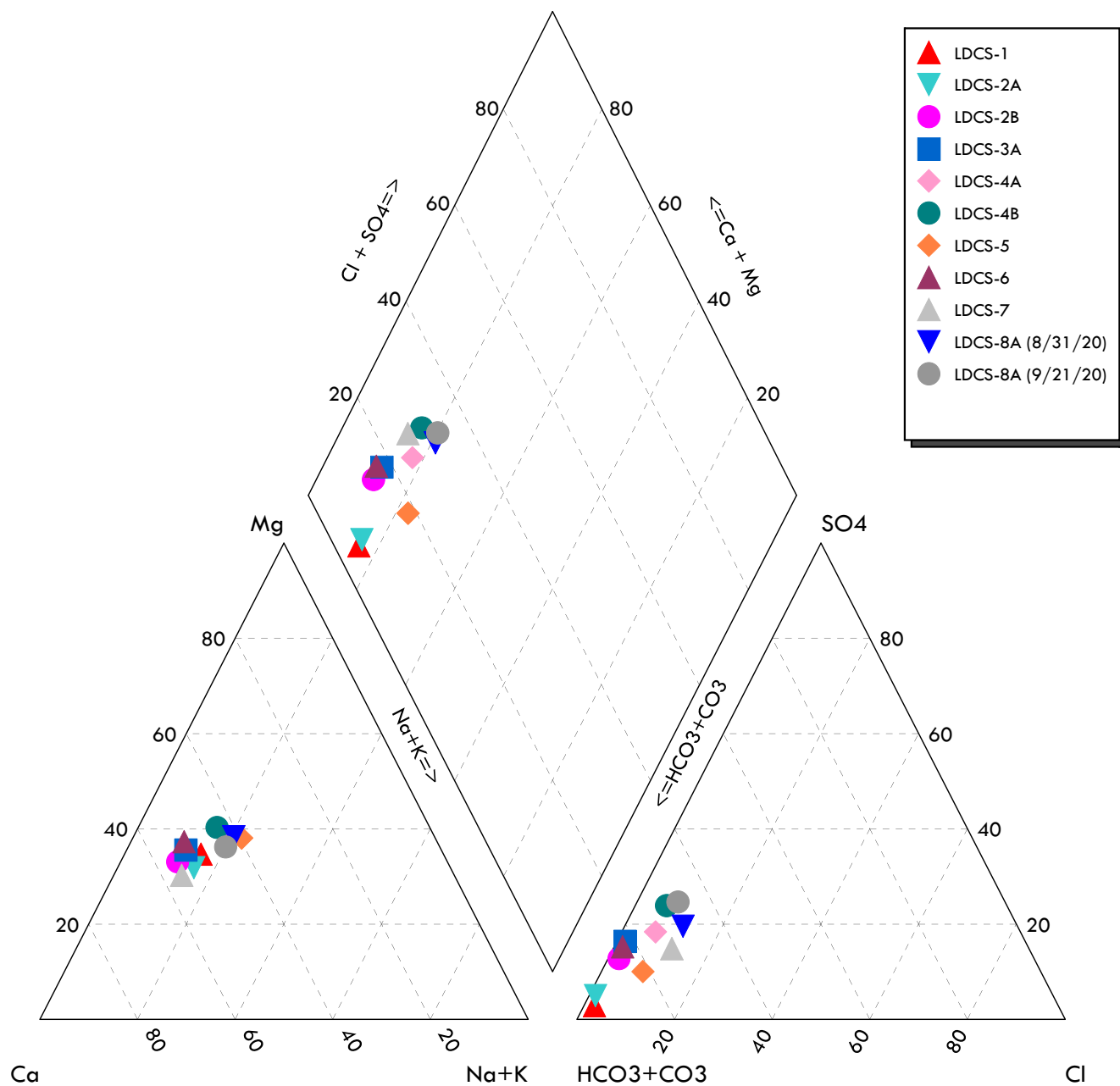
PROJECT: LRI Landfill

PROJECT NO: 04220001.02

CLIENT: LRI, Inc.

DATE: November 2020

Third Quarter, Leak Detection Collection Recovery System



DESCRIPTION: Piper Diagram - LDCRS - 3Q20

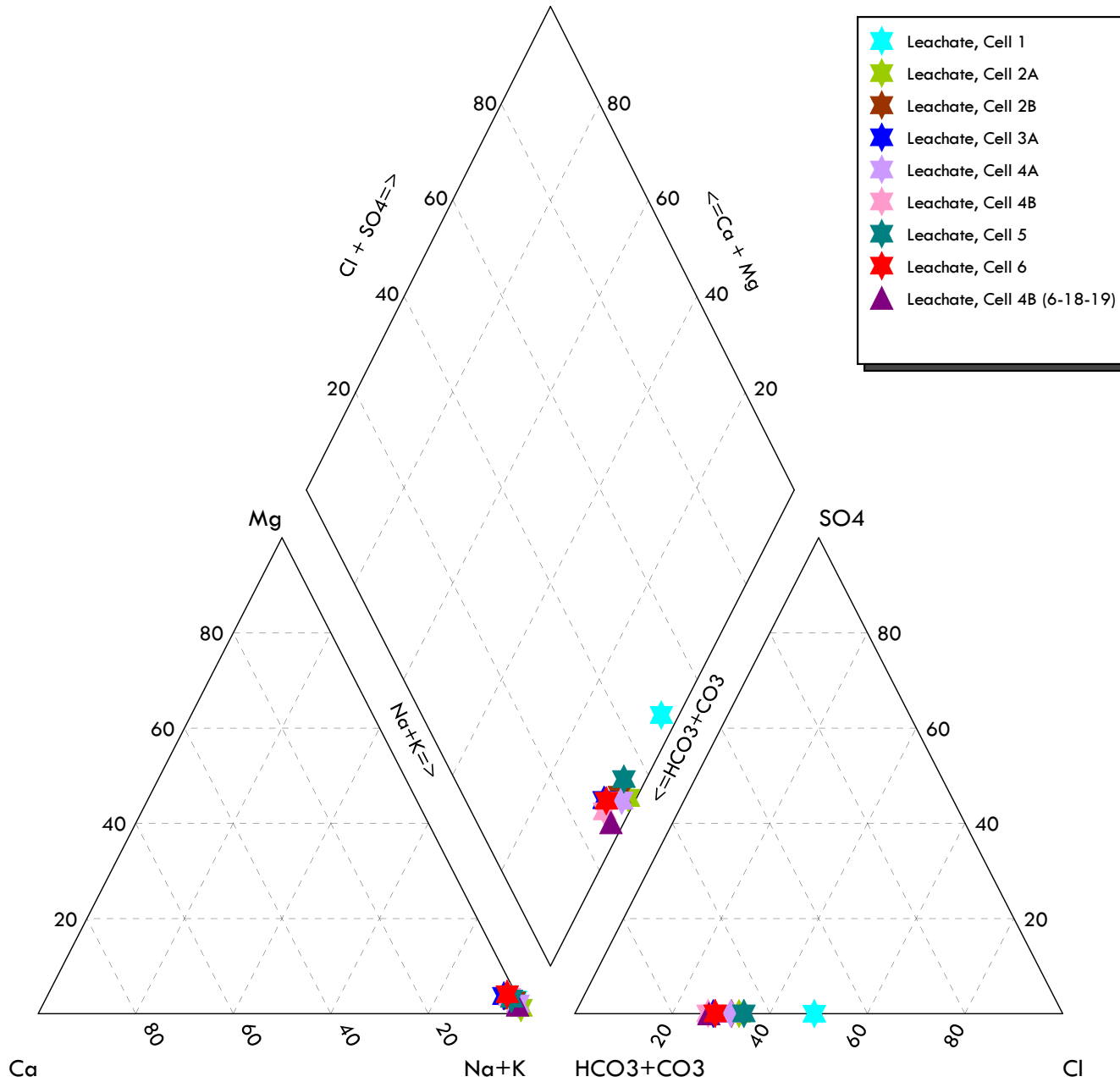
PROJECT: LRI Landfill

PROJECT NO: 04220001.02

CLIENT: LRI, Inc.

DATE: November 2020

Fourth Quarter 2019, Leachate



DESCRIPTION: Piper Diagram - Leachate - 4Q19

PROJECT: LRI Landfill

PROJECT NO: 04219001.02

CLIENT: LRI, Inc.

DATE: March 2020

Attachment F

Analytical Data Validation Report

THIRD QTR. 2020 DATA VALIDATION REPORT – LRI LANDFILL

Project Details

Project No.	04220001.02	Site Name	LRI 304 th Street LF
Data Validator	Sam Graber	Data Level	Level 2
Date	10/21/2020	DV Tier	Tier 1
QA Document	LRI Landfill Groundwater Monitoring Plan, March 10, 2014		

Sample Login Summary

Sample Group	Sample Login Comments	Analytical Lab (Primary)
280-140667-1	No comments.	TestAmerica, Denver, CO
280-140668-1	No comments.	TestAmerica, Denver, CO
280-140730-1	No comments.	TestAmerica, Denver, CO
280-140733-1	No comments.	TestAmerica, Denver, CO
280-140775-1	The reanalysis of nitrate sample “-17” was performed outside of the holding time due to lab error.	TestAmerica, Denver, CO
280-140833-1	No comments.	TestAmerica, Denver, CO
280-140835-1	No comments.	TestAmerica, Denver, CO
280-139983-1	No comments.	TestAmerica, Denver, CO

Analytical Summary

Sample Group	Analyses					
	TDS/Aik/NO3	Metals	NH4/TOC	VOCs	Anions	TSS
280-140667-1	X	X ²	X	X	X	X
280-140668-1	X	X ¹	X	X	X	--
280-140730-1	X	X ¹	X	X	X	--
280-140733-1	X	X ²	X	X	X	X
280-140775-1	X	X ¹	X	X	X	--
280-140833-1	X	X ²	X	X	X	X
280-140835-1	X	X ¹	X	X	X	--
280-139983-1	X	X ¹	X	X	X	--

Notes:

1. Dissolved metals analysis performed (field filtered)
2. Dissolved and Total metals analysis performed
3. Total Metals analysis performed



Laboratory Quality Assurance Samples

Lab QA Samples	Results	Comments
Method Blank	Acceptable.	See case narratives.
LCS/LCSD	Acceptable.	See case narratives.
MS/MSD	Acceptable.	See case narratives.
Metals	Acceptable.	See case narratives.
Duplicates	Acceptable.	See case narratives.
Organics	Acceptable.	See case narratives.
General Comments	Acceptable.	See case narratives.

Field Quality Assurance Samples

Field QA Samples	Sample Group	Analytes	Notes
QC-FB	280-140833-1	Dissolved Calcium (0.73 mg/L) Dissolved Sodium (1.6 mg/L) Total Dissolved Solids (30 mg/L)	
QC-TB	280-140667-1	None.	
QC-TB	280-140668-1	None.	
QC-TB	280-140730-1	None.	
QC-TB	280-140733-1	None.	
QC-TB	280-140775-1	None.	
QC-TB	280-140835-1	None.	
QC-TB	280-139983-1	None.	

Lab Quality Flags

Flag	Sample Groups	Comments
*	280-140668-1, 280-140775-1	LCS or LCSD is outside acceptance limits.
*1	280-140730-1, 280-140733-1	LCS/LCSD RPD exceeds control limits
4	280-140667-1, 280-140668-1, 280-140730-1, 280-140733-1, 280-140775-1, 280-140833-1, 280-140835-1, 280-139983-1	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
B		Compound was found in the blank and sample.
E	280-139983-1	Result exceeded calibration range.
F1	280-139983-1	MS and/or MSD recovery exceeds the control limits.
F2	280-139983-1	MS/MSD RPD exceeds control limits.
H	280-140775-1	Sample was prepped or analyzed beyond specified holding time.

J	280-140667-1, 280-140668-1, 280-140730-1, 280-140733-1, 280-140775-1, 280-140833-1, 280-140835-1, 280-139983-1	Result is less than RL but greater than or equal to the MDL and concentration is an approximate value.
^	280-140667-1, 280-140730-1, 280-140733-1	ICV, CCV, ICB, CCB, ISA, ISB, CRI, CRA, DLCK, or MRL standard: instrument related QC is outside acceptance limits.

Duplicate Evaluation

Analyte	Units	MW-5A (304-092120-05)	MW-5A DUP (304-092120-06)	RPD (%)
Alkalinity, Total	mg/L	130	140	7.4
Ammonia	mg/L	0.1	0.1	0.0
Barium, Total	mg/L	0.0093	0.01	7.3
Calcium, Dissolved	mg/L	25	26	3.9
Chloride	mg/L	2.2	2.2	0.0
Magnesium, Dissolved	mg/L	11	11	0.0
Manganese, Dissolved	mg/L	0.14	0.14	0.0
Potassium, Dissolved	mg/L	3.6	3.7	2.7
Sodium, Dissolved	mg/L	18	18	0.0
Sulfate	mg/L	5.1	5.1	0.0
Total Dissolved Solids	mg/L	210	180	15.4
Total Organic Carbon	mg/L	1 U	1.1	9.5

U = Non-detection. Reporting limit (RL) used for calculation of RPD when necessary.

Additional Data Flags

Flag	Description
U	Not detected above the method reporting limit.

Qualified Data and Usability

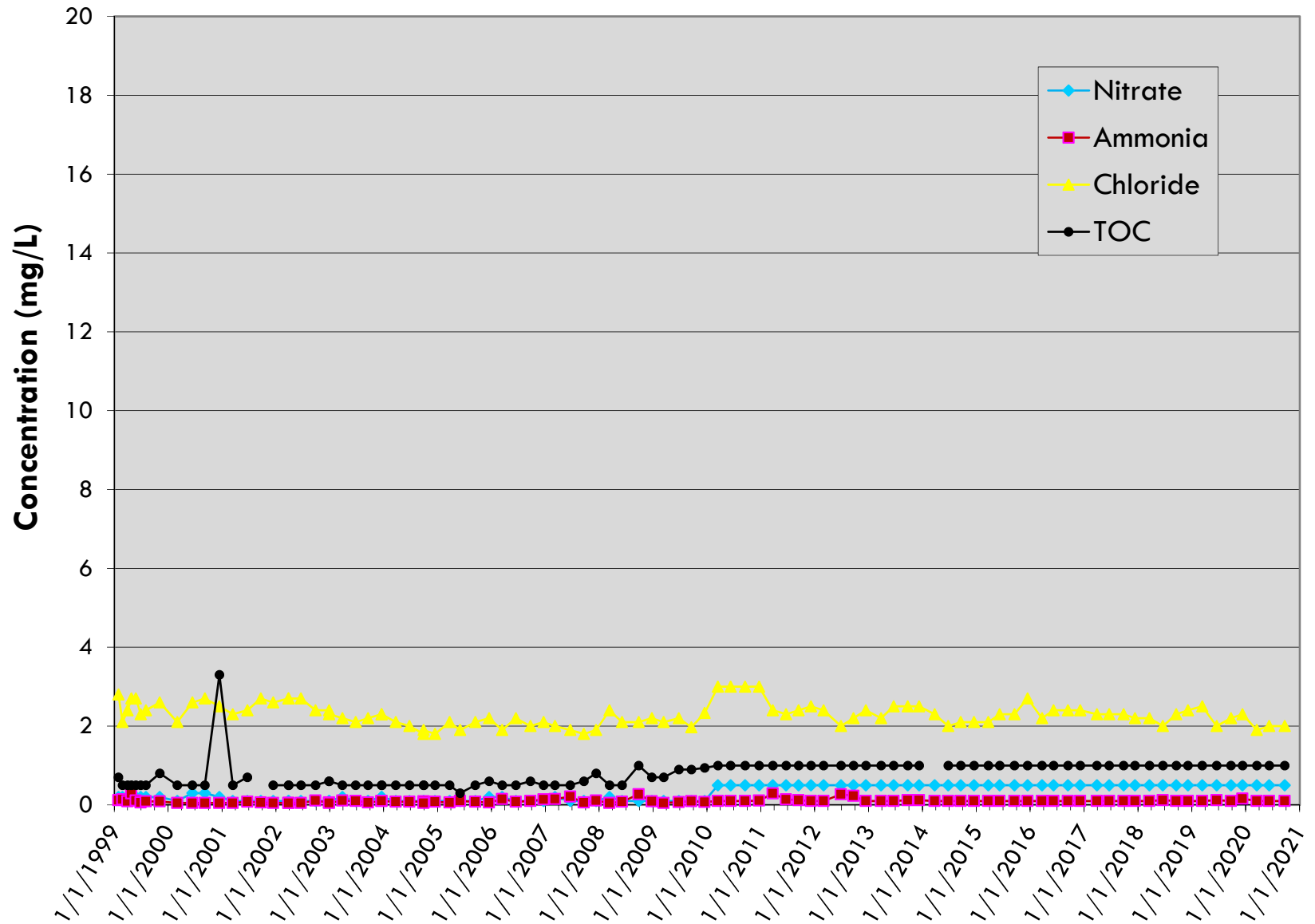
Lab qualifiers are noted. All data, as qualified, are acceptable for use.

Attachment G

Groundwater and LDCS Time Trend Plots

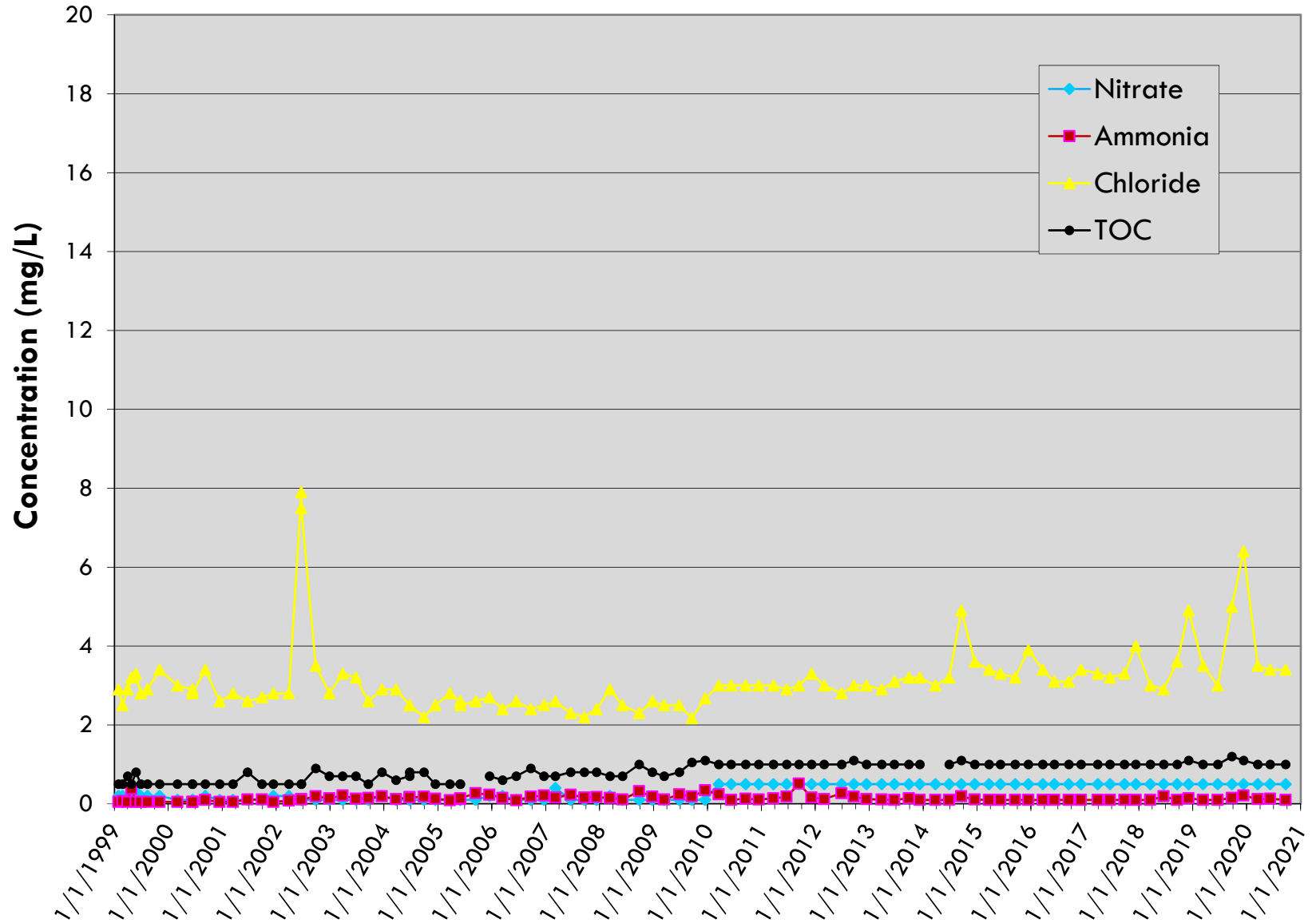
MW-1A

LRI Landfill, Pierce County, Washington



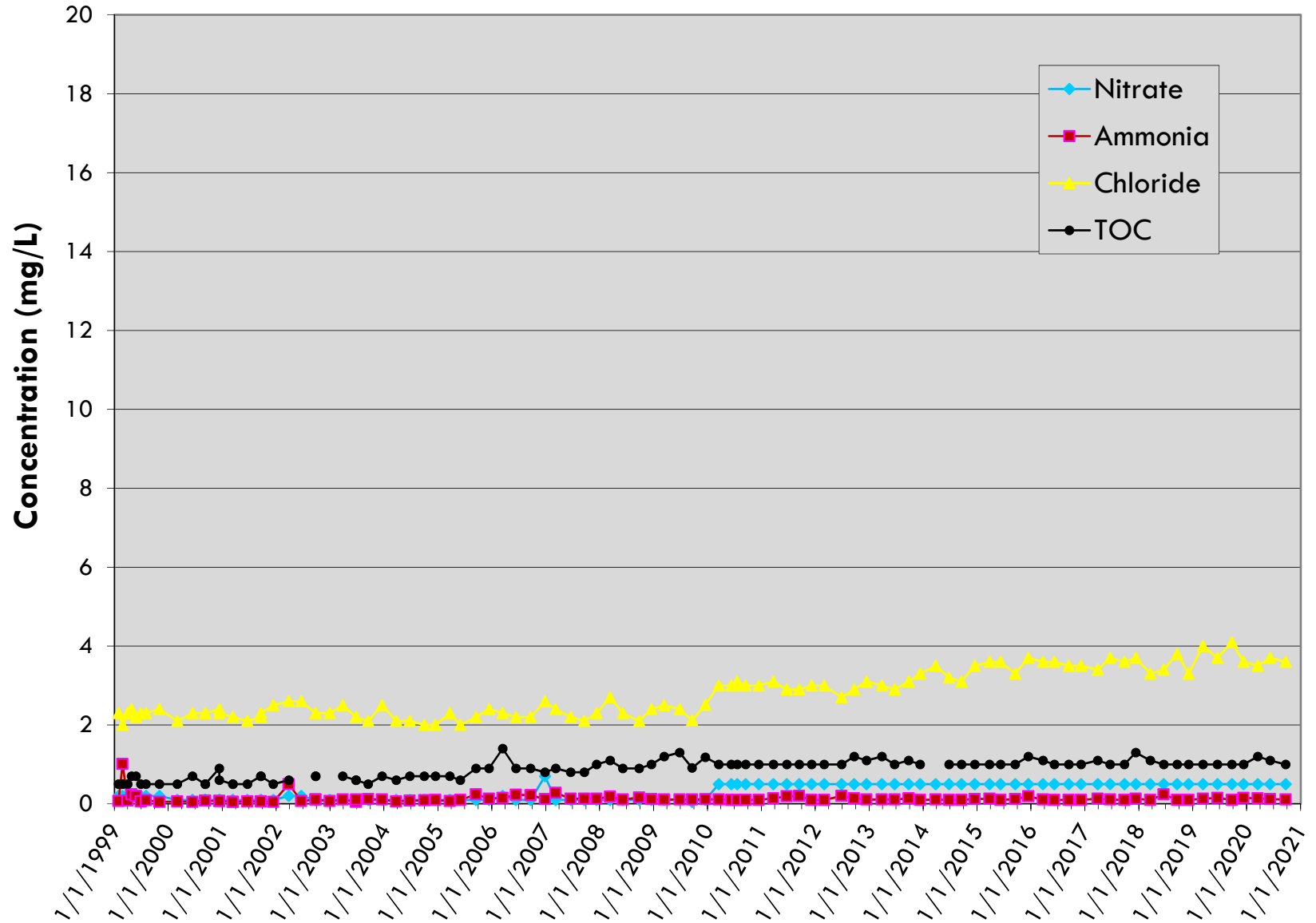
MW-2A

LRI Landfill, Pierce County, Washington



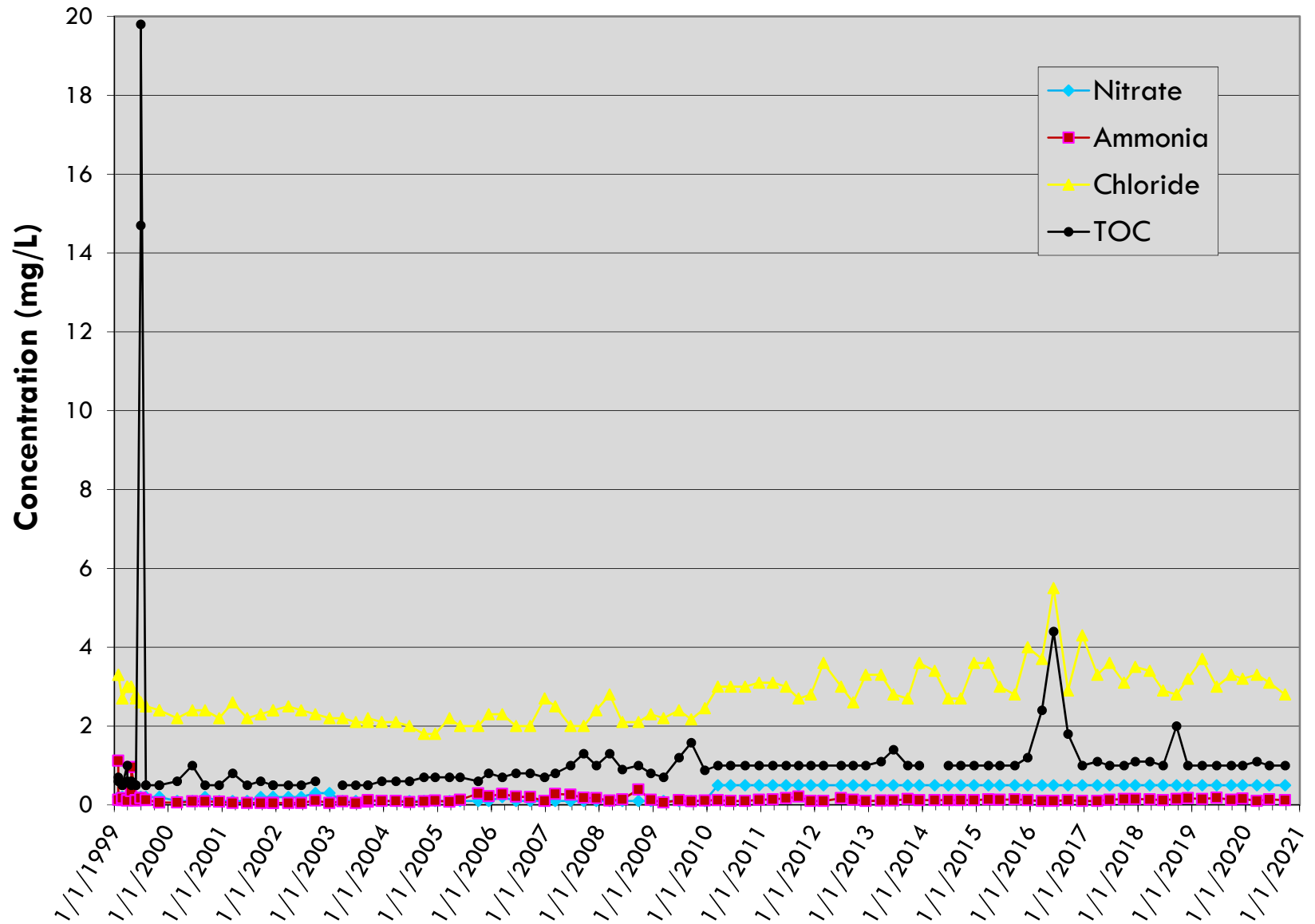
MW-3

LRI Landfill, Pierce County, Washington



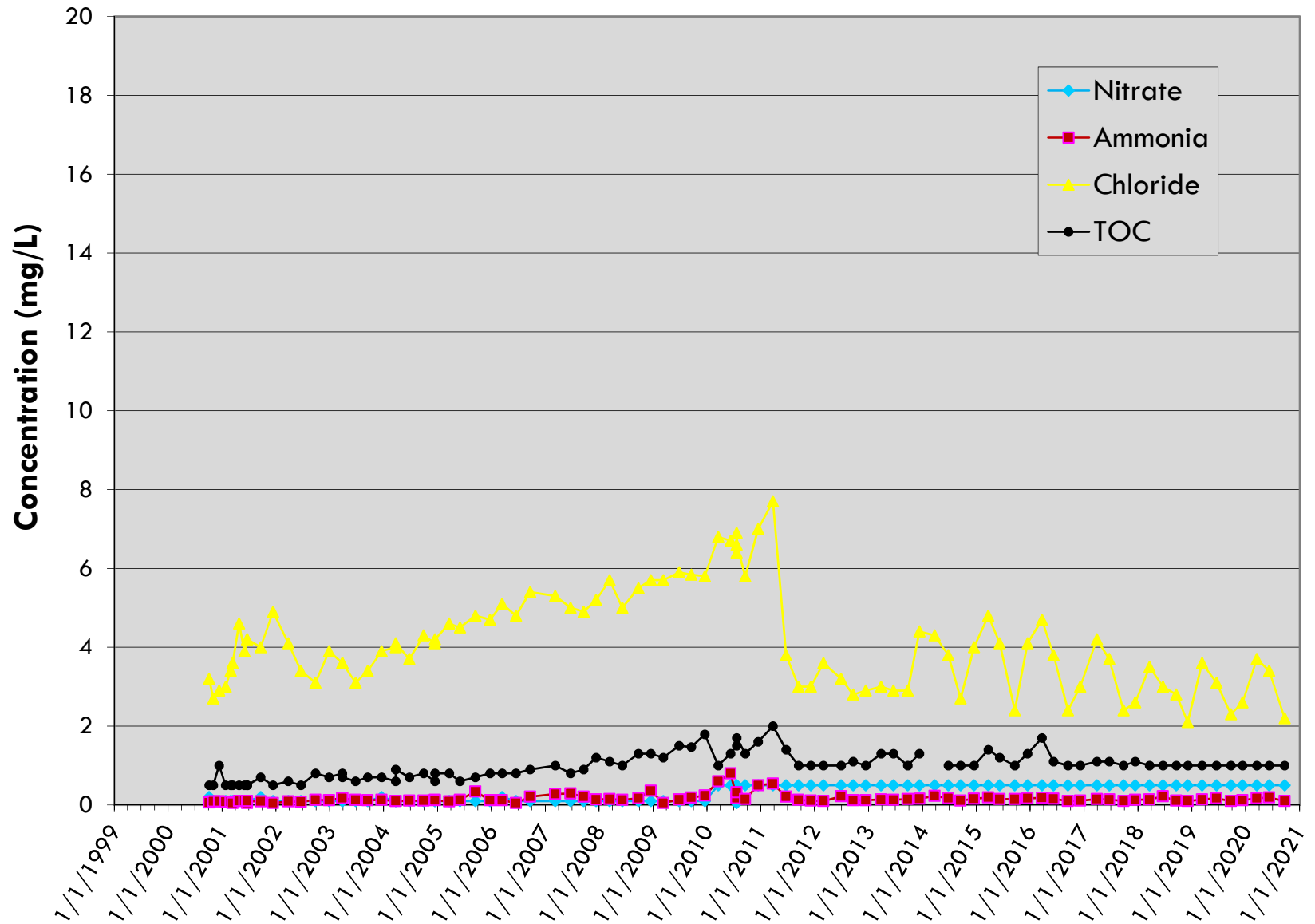
MW-4

LRI Landfill, Pierce County, Washington



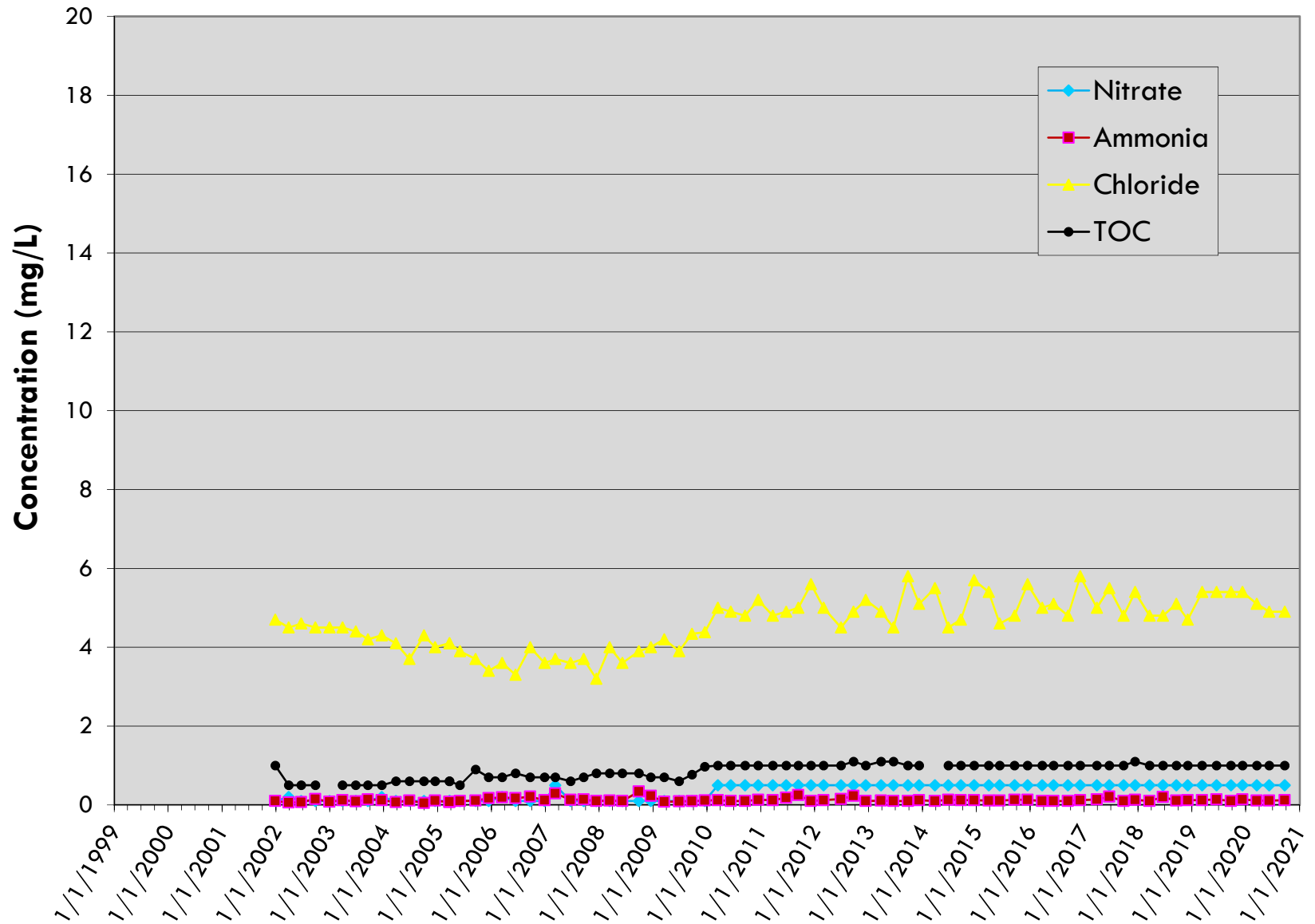
MW-5A

LRI Landfill, Pierce County, Washington



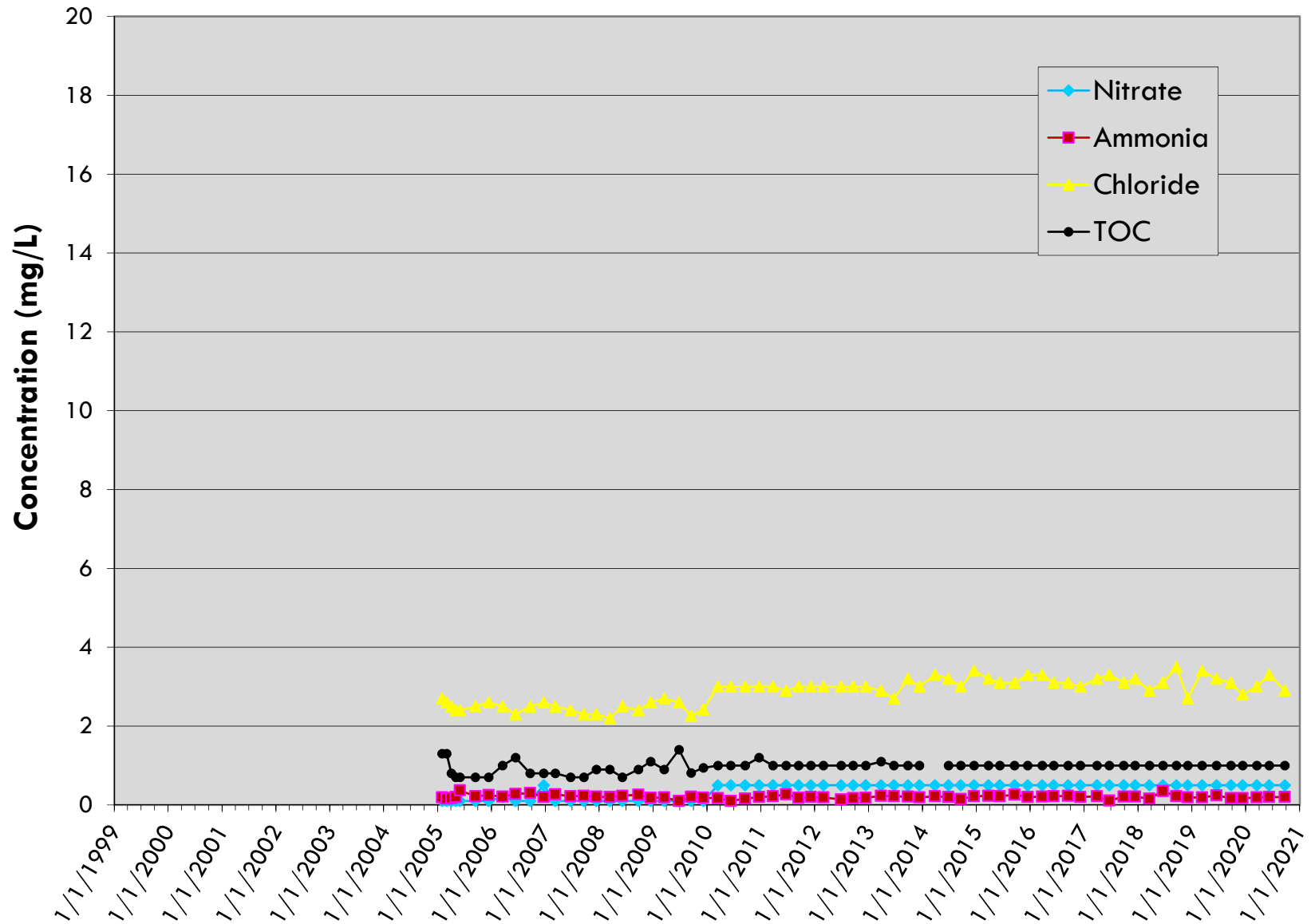
MW-6

LRI Landfill, Pierce County, Washington

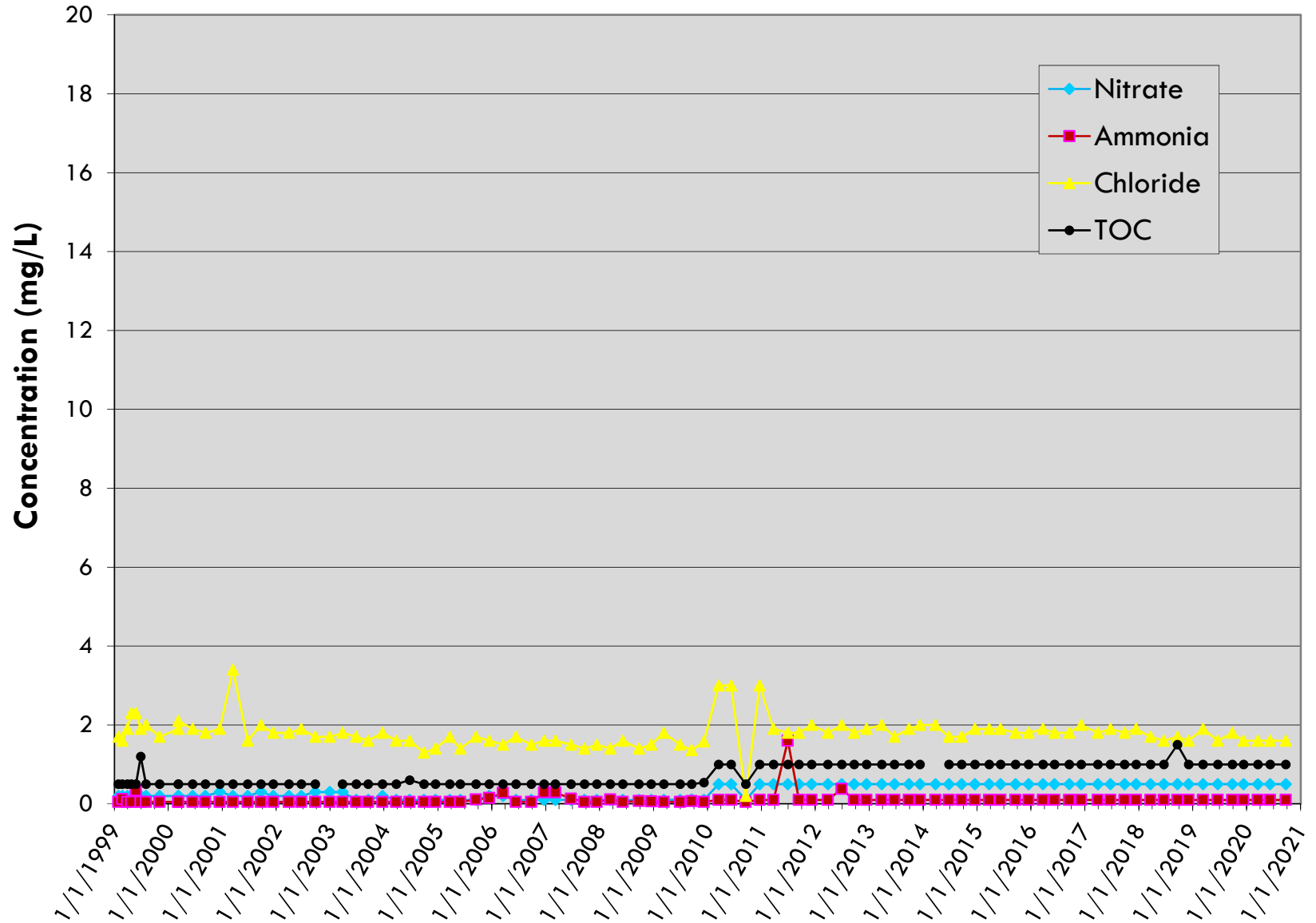


MW-7

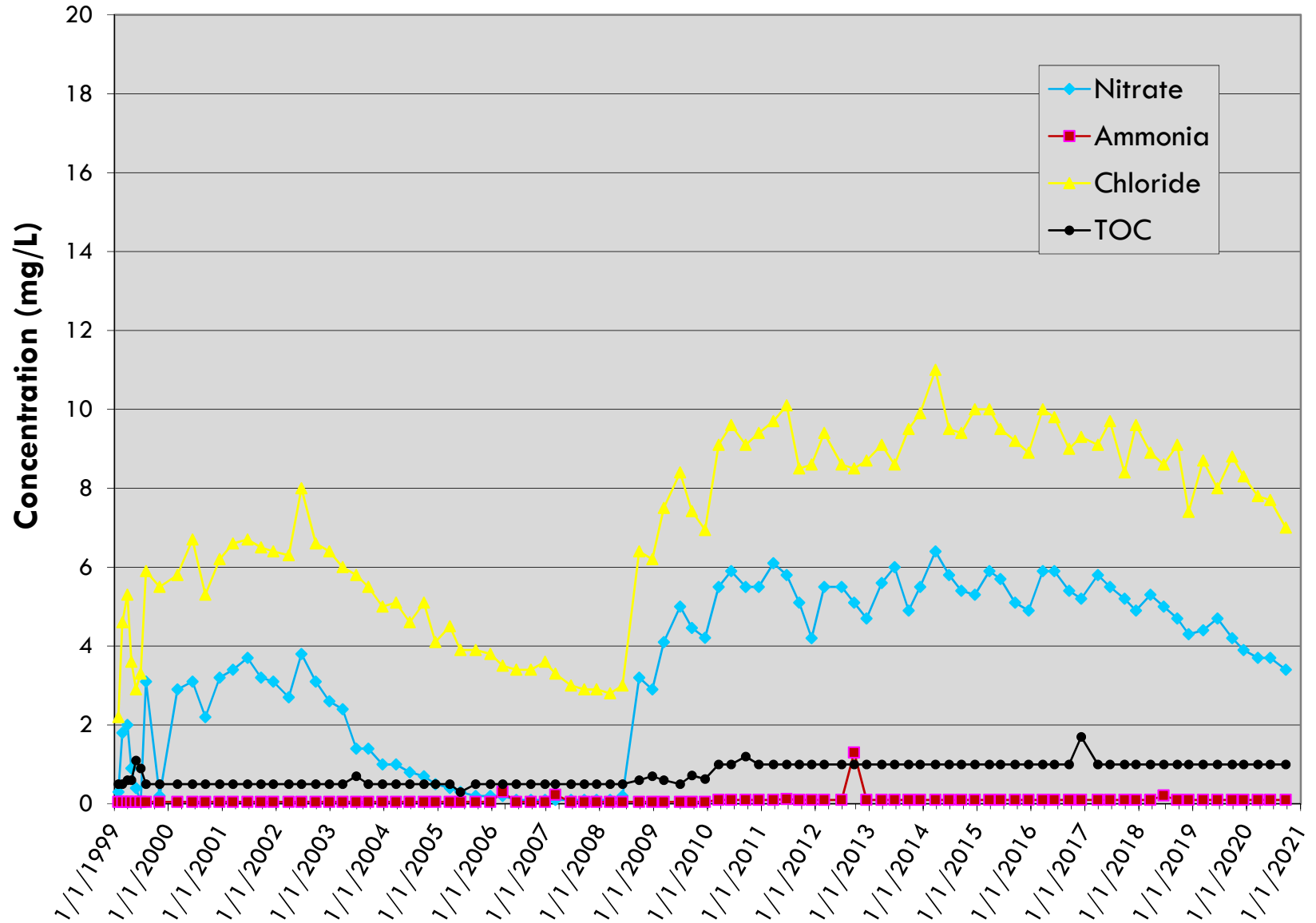
LRI Landfill, Pierce County, Washington



MW-9 (Background) LRI Landfill, Pierce County, Washington

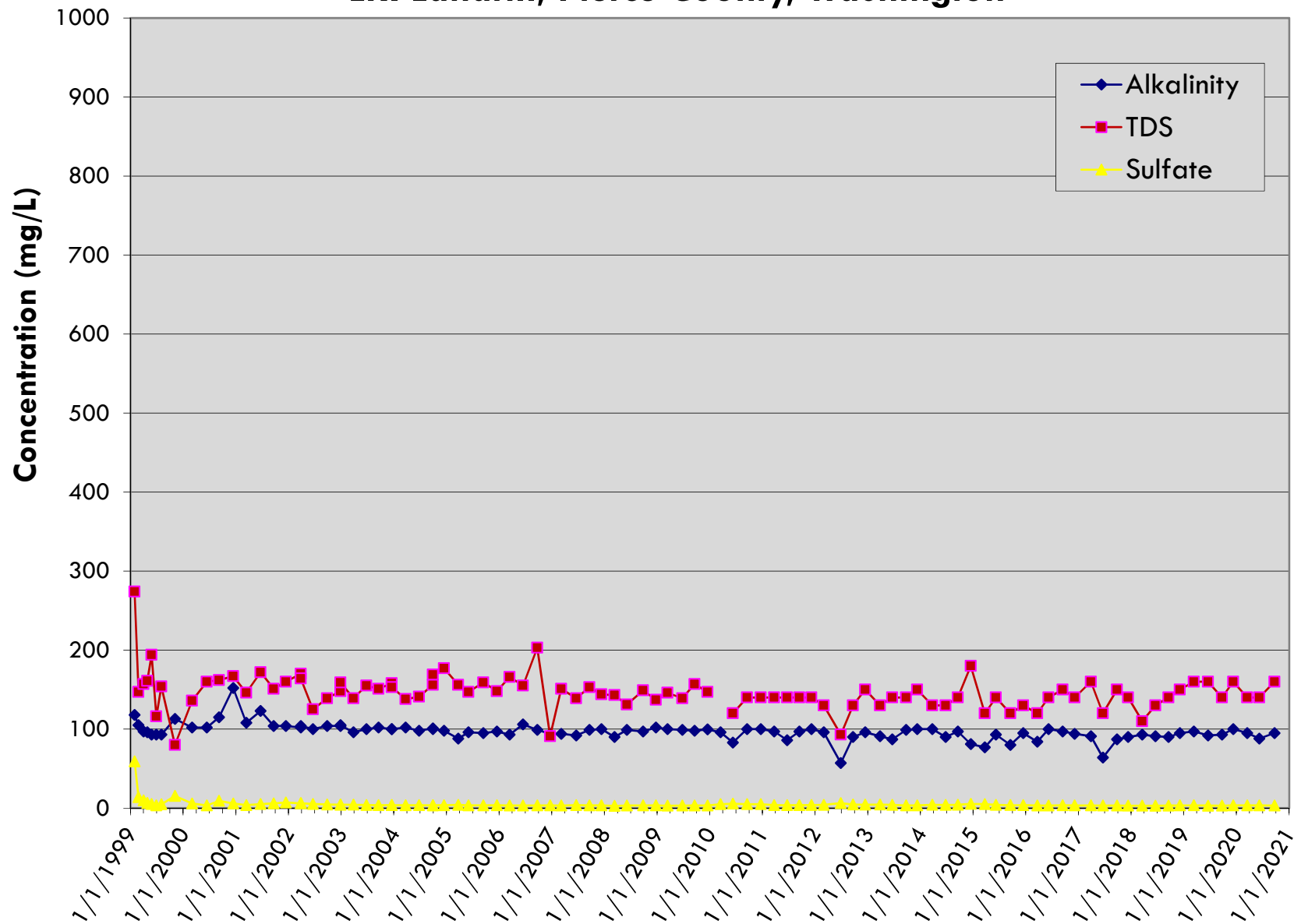


MW-10 (Background) LRI Landfill, Pierce County, Washington



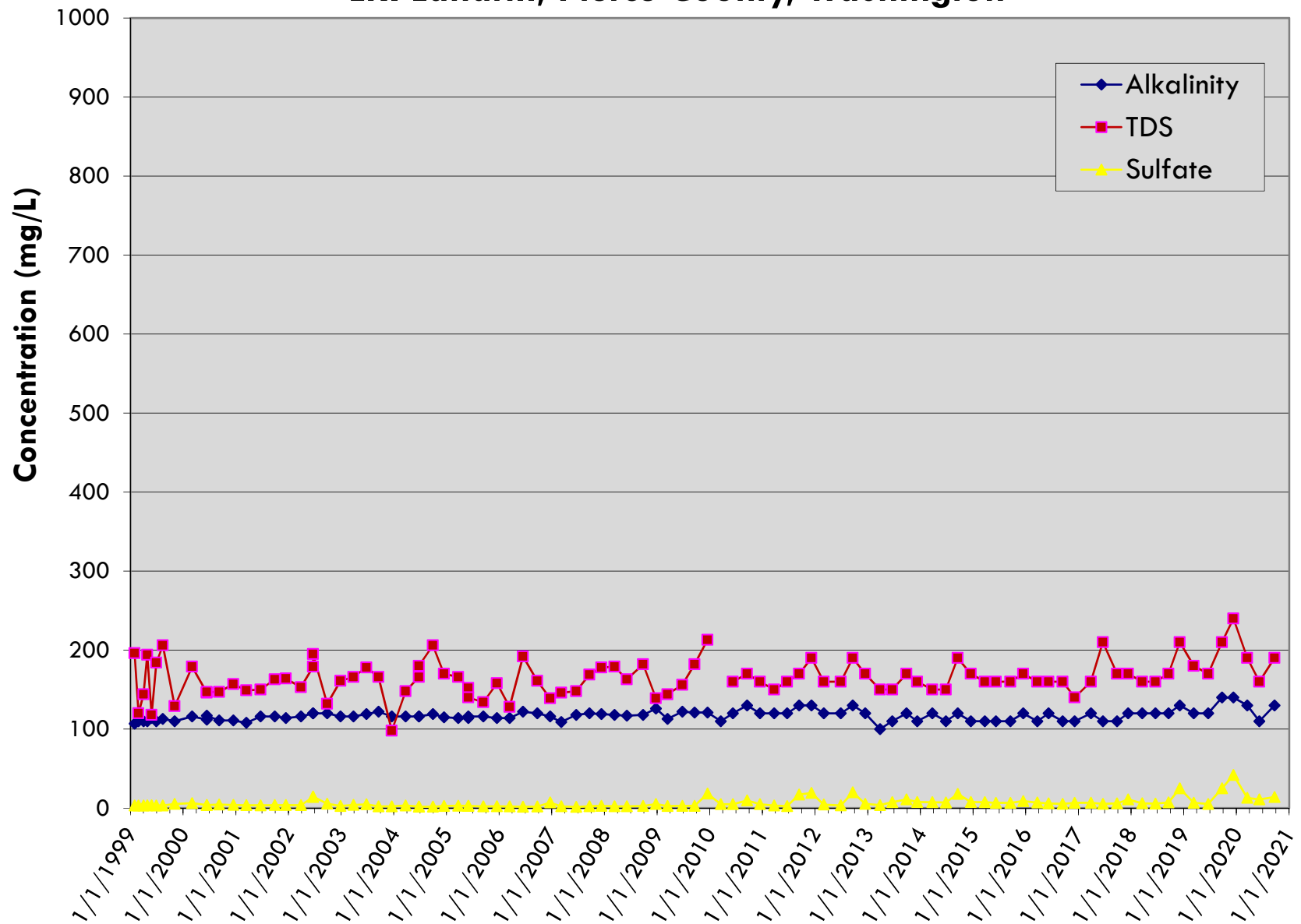
MW-1A

LRI Landfill, Pierce County, Washington



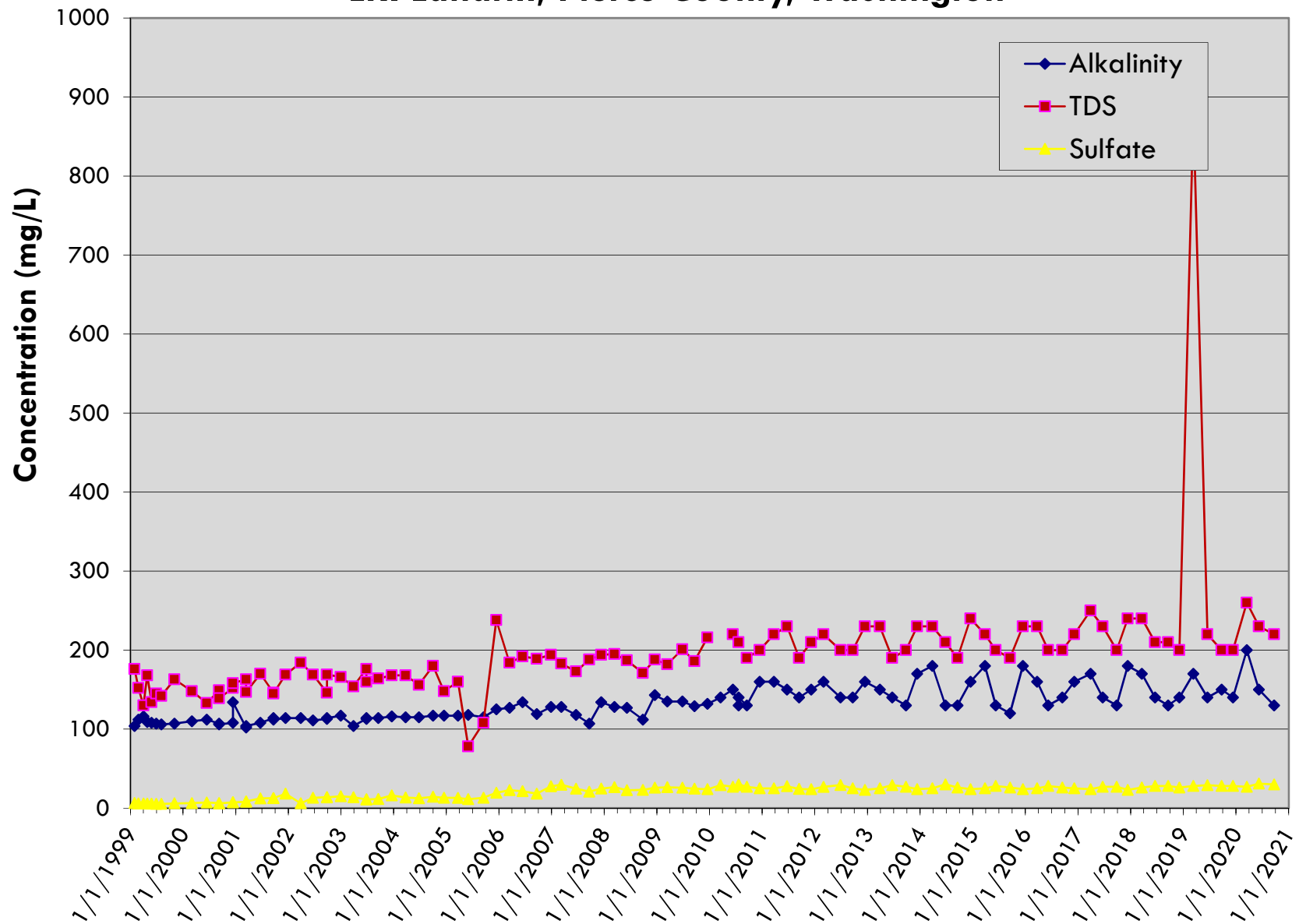
MW-2A

LRI Landfill, Pierce County, Washington



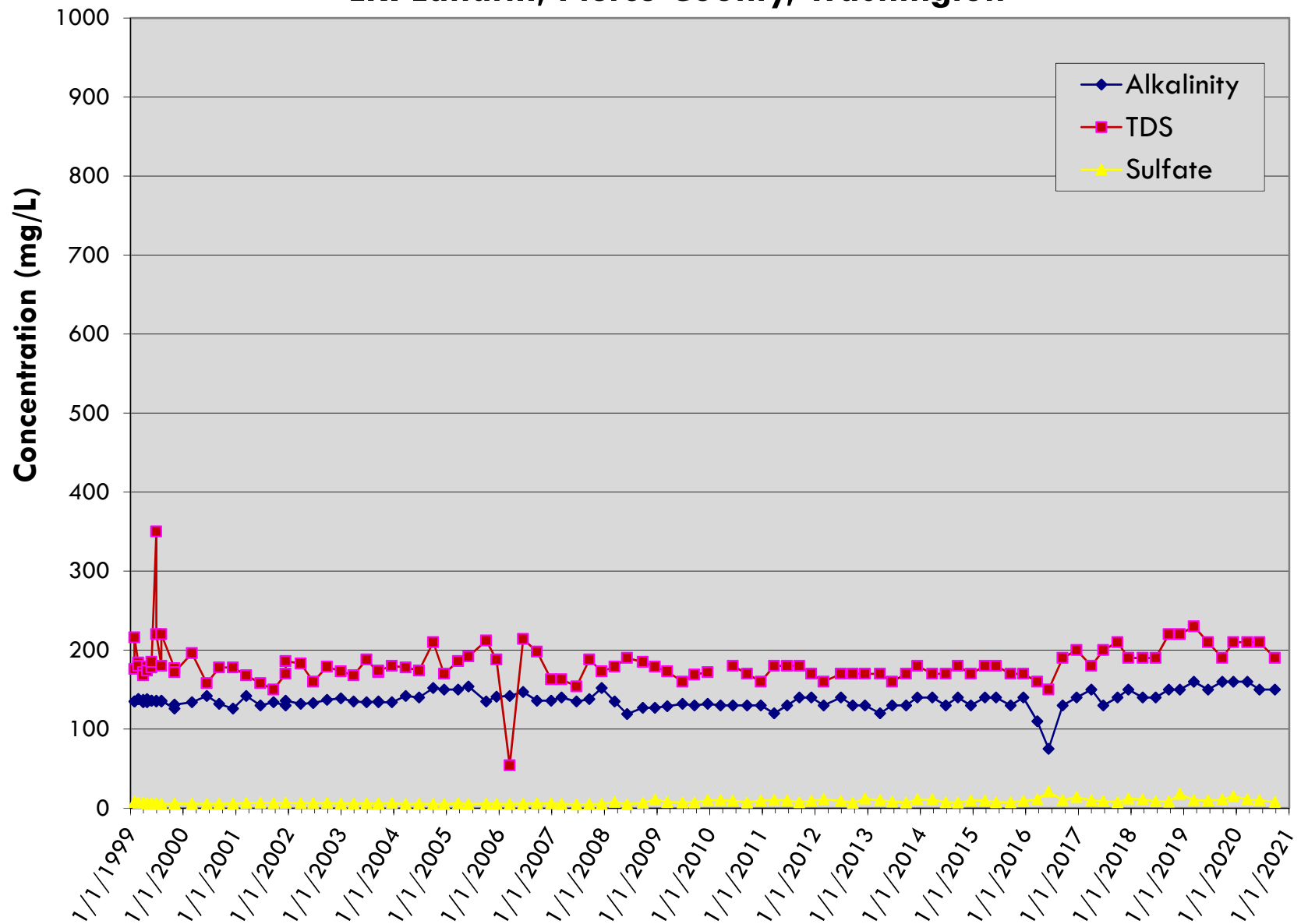
MW-3

LRI Landfill, Pierce County, Washington



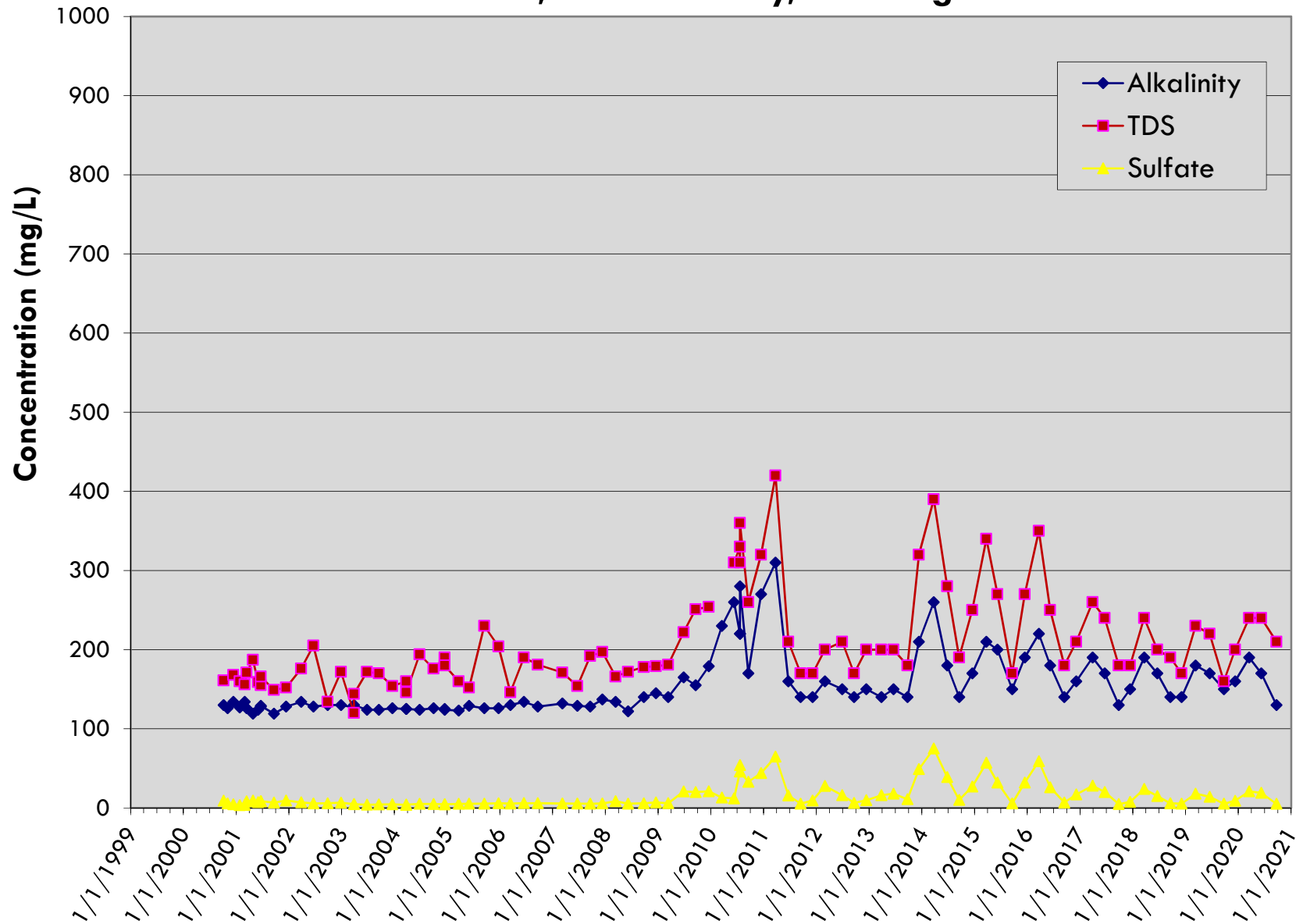
MW-4

LRI Landfill, Pierce County, Washington



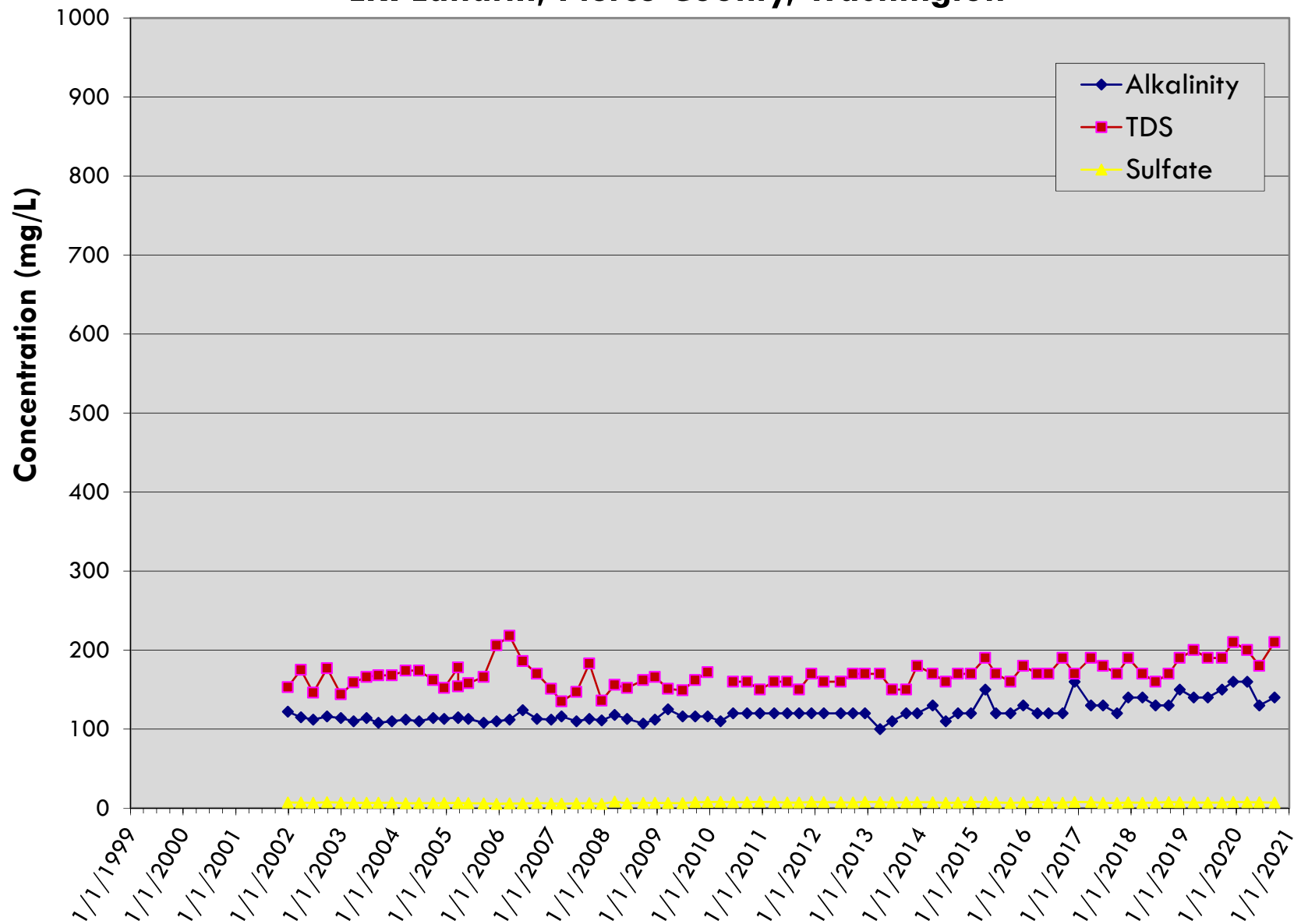
MW-5A

LRI Landfill, Pierce County, Washington



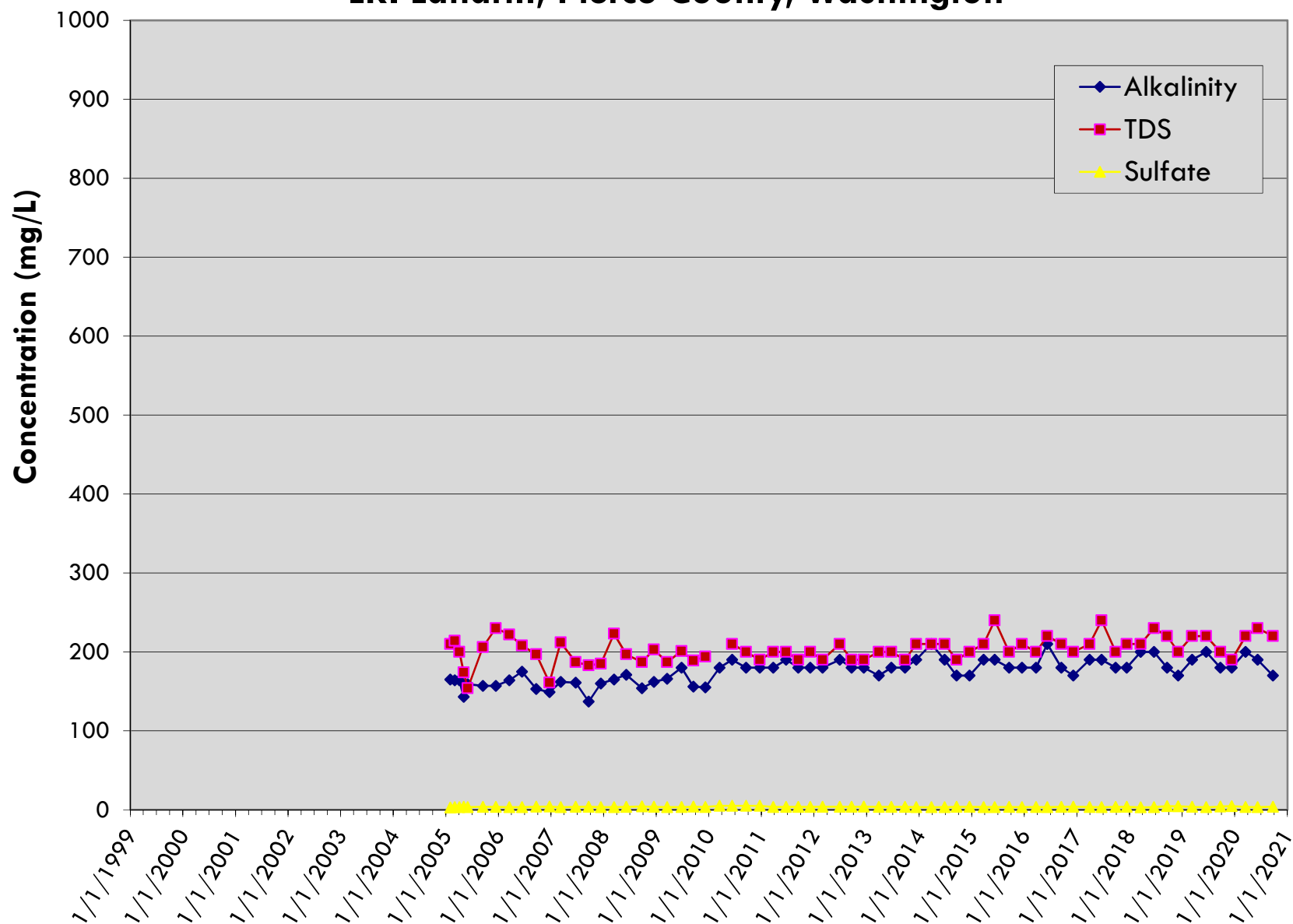
MW-6

LRI Landfill, Pierce County, Washington

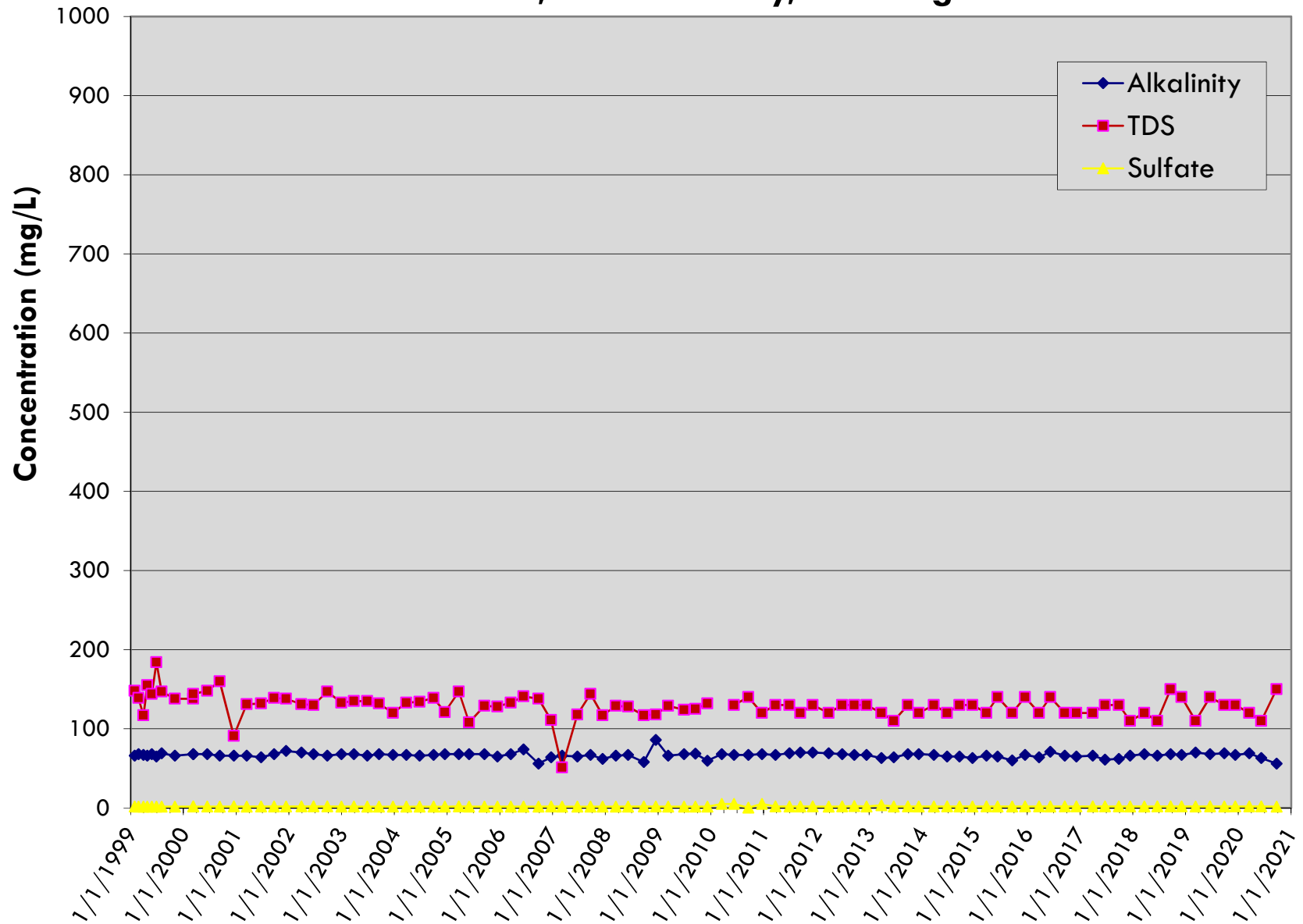


MW-7

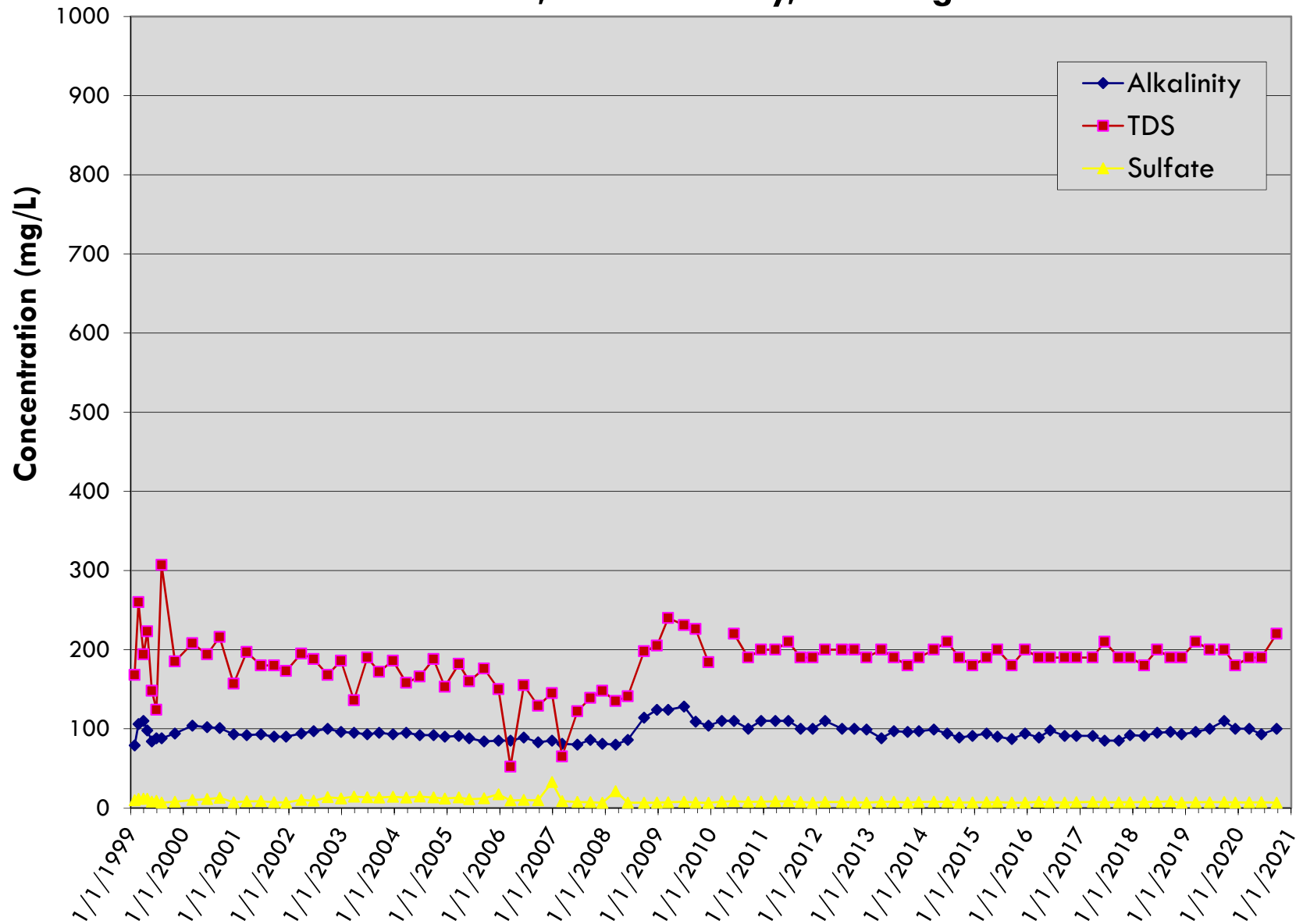
LRI Landfill, Pierce County, Washington



MW-9 (Background) LRI Landfill, Pierce County, Washington

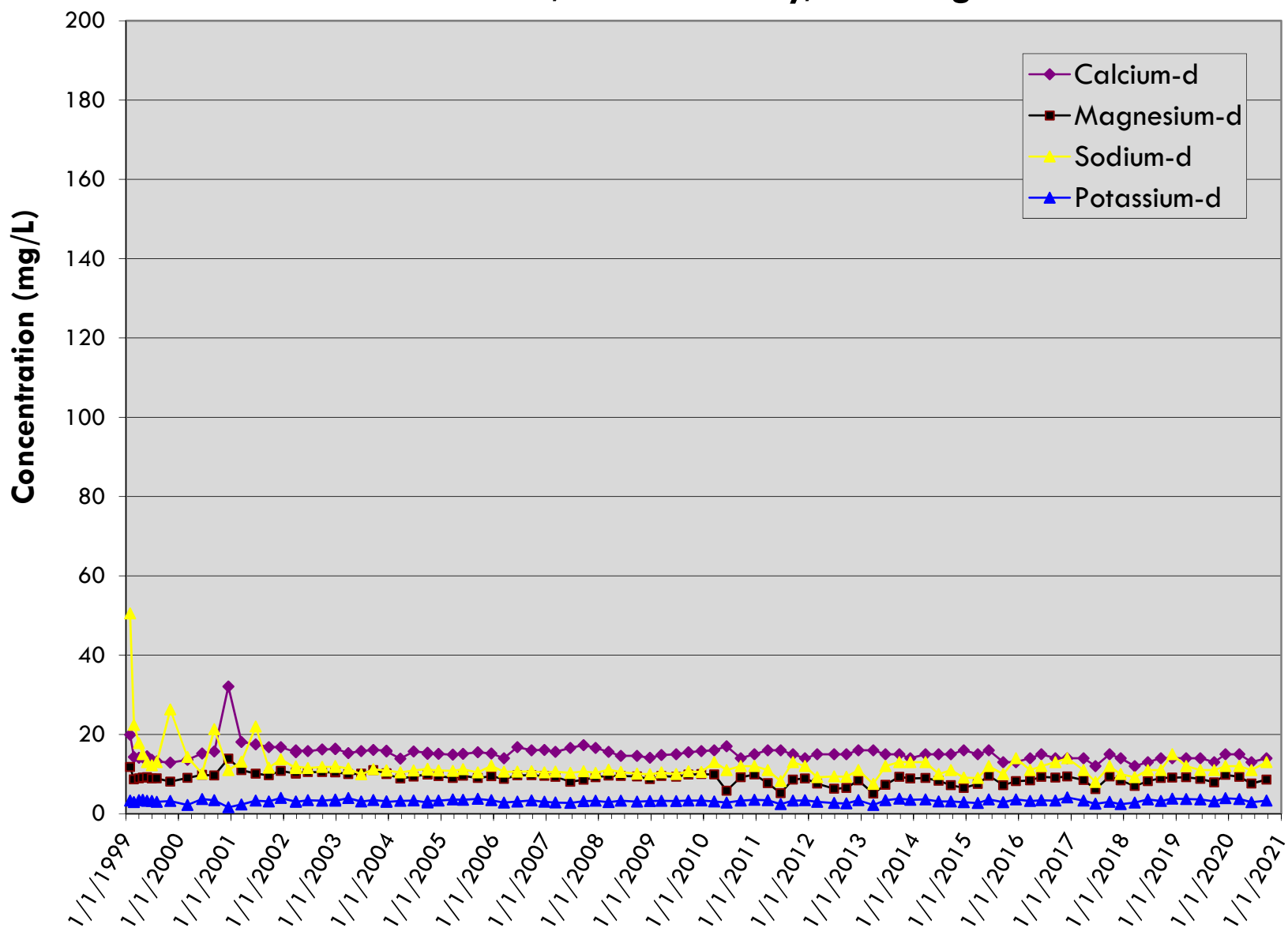


MW-10 (Background) LRI Landfill, Pierce County, Washington



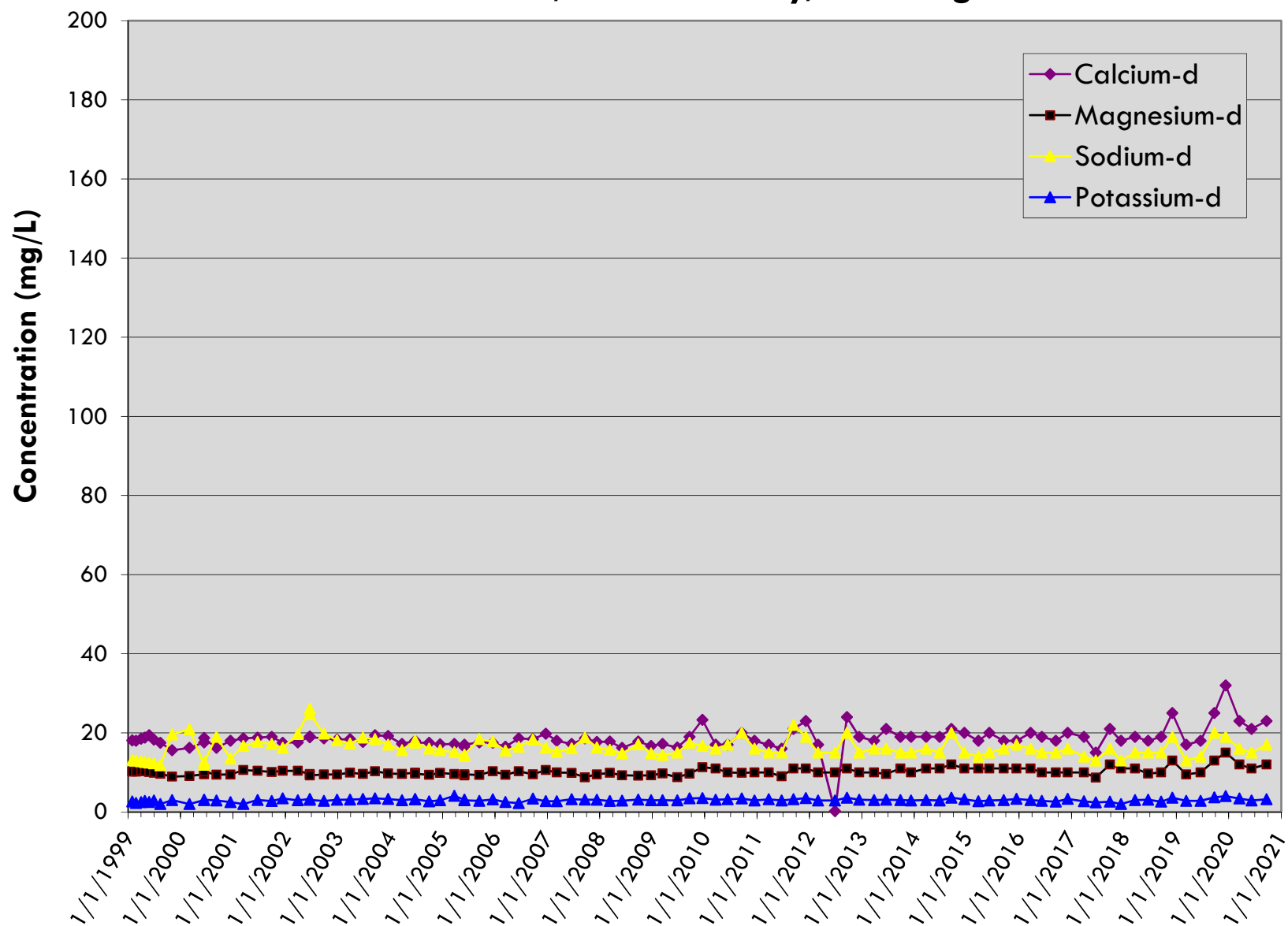
MW-1A

LRI Landfill, Pierce County, Washington



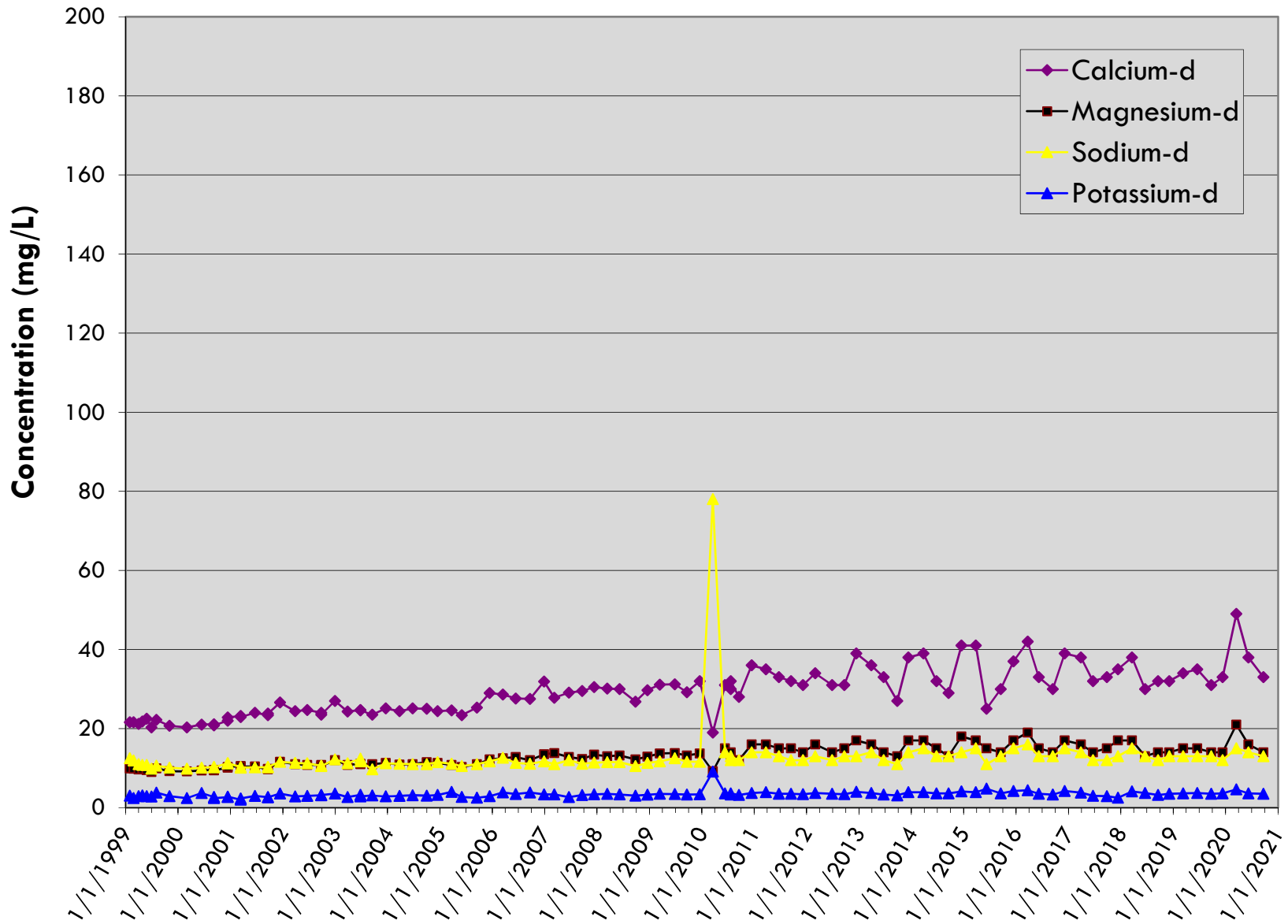
MW-2A

LRI Landfill, Pierce County, Washington



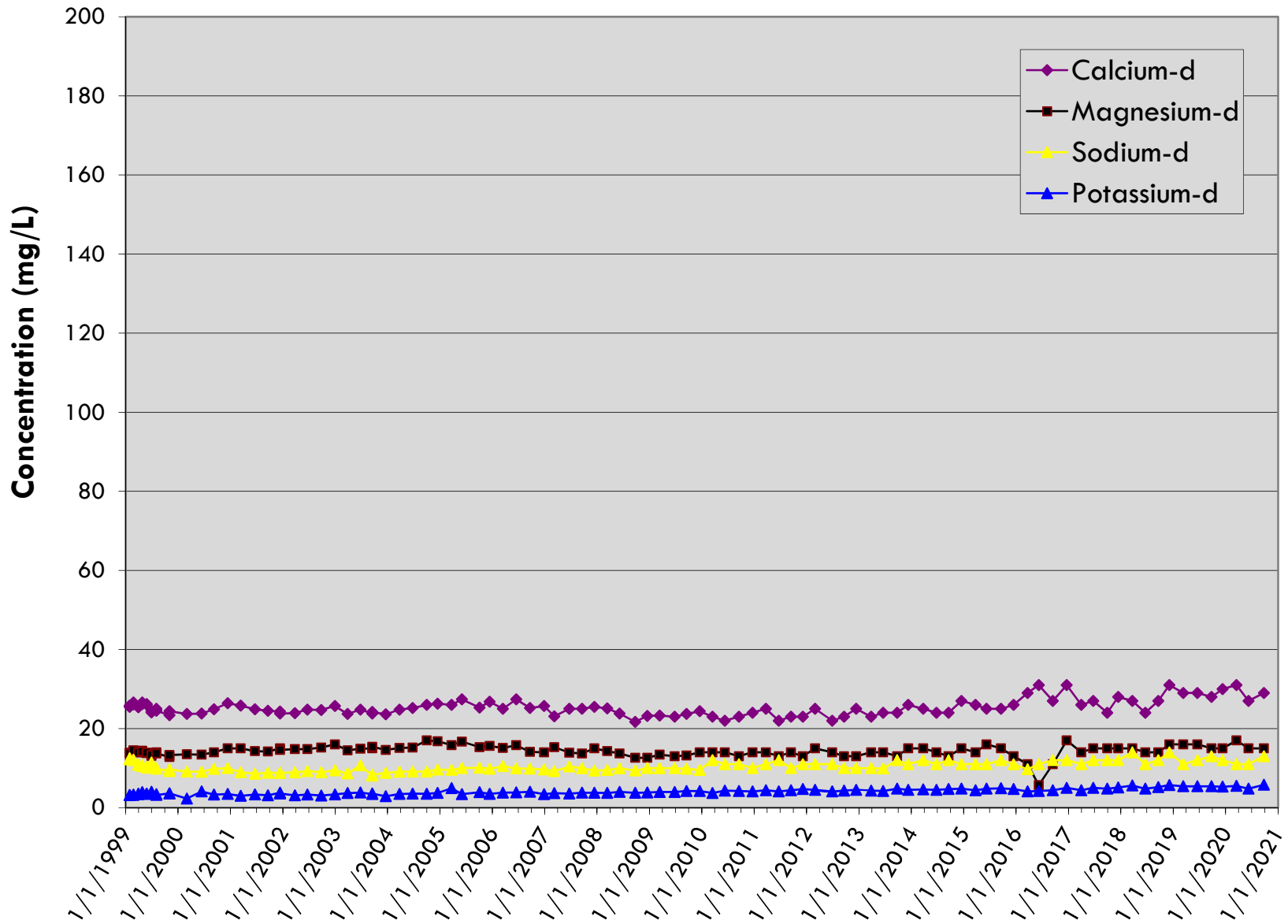
MW-3

LRI Landfill, Pierce County, Washington



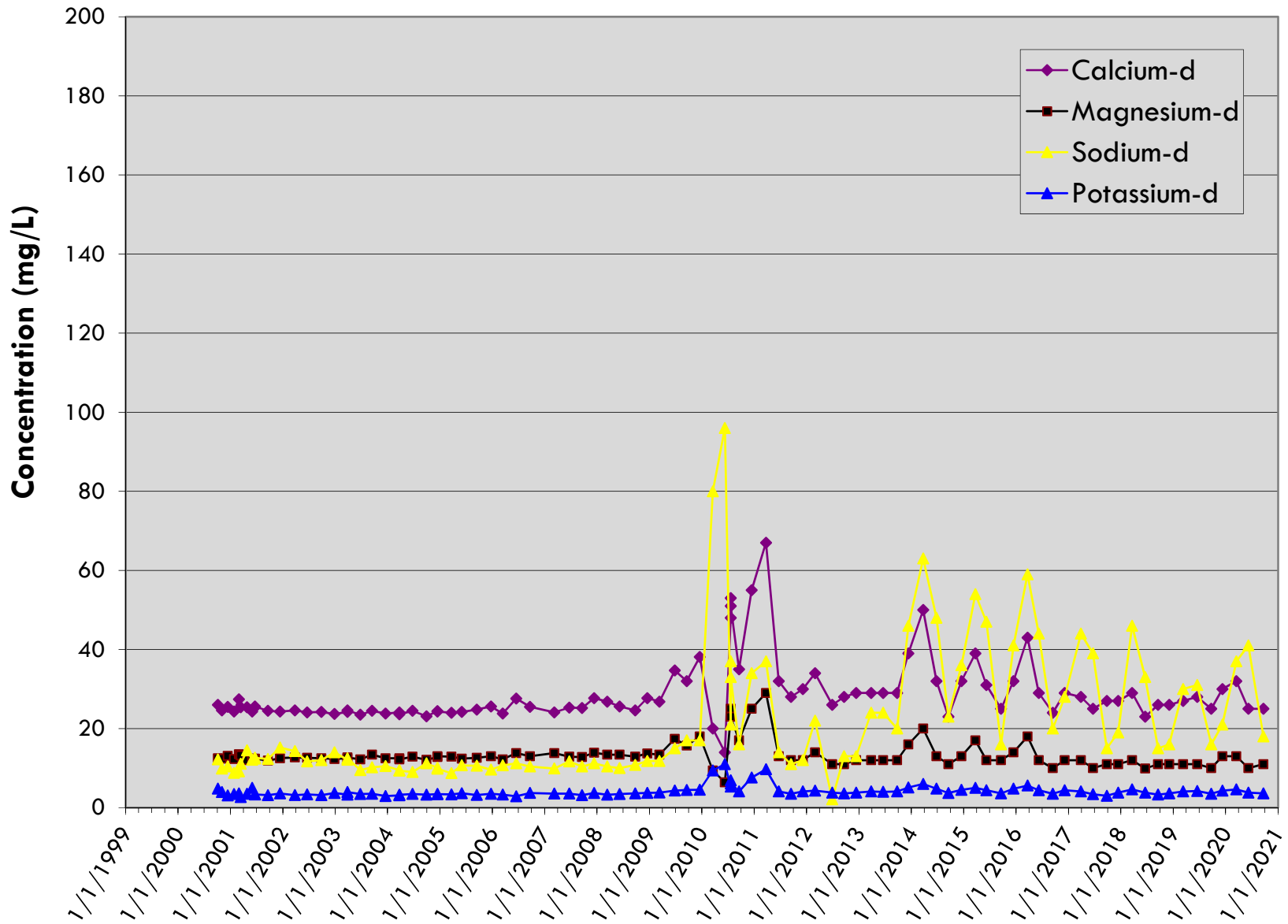
MW-4

LRI Landfill, Pierce County, Washington



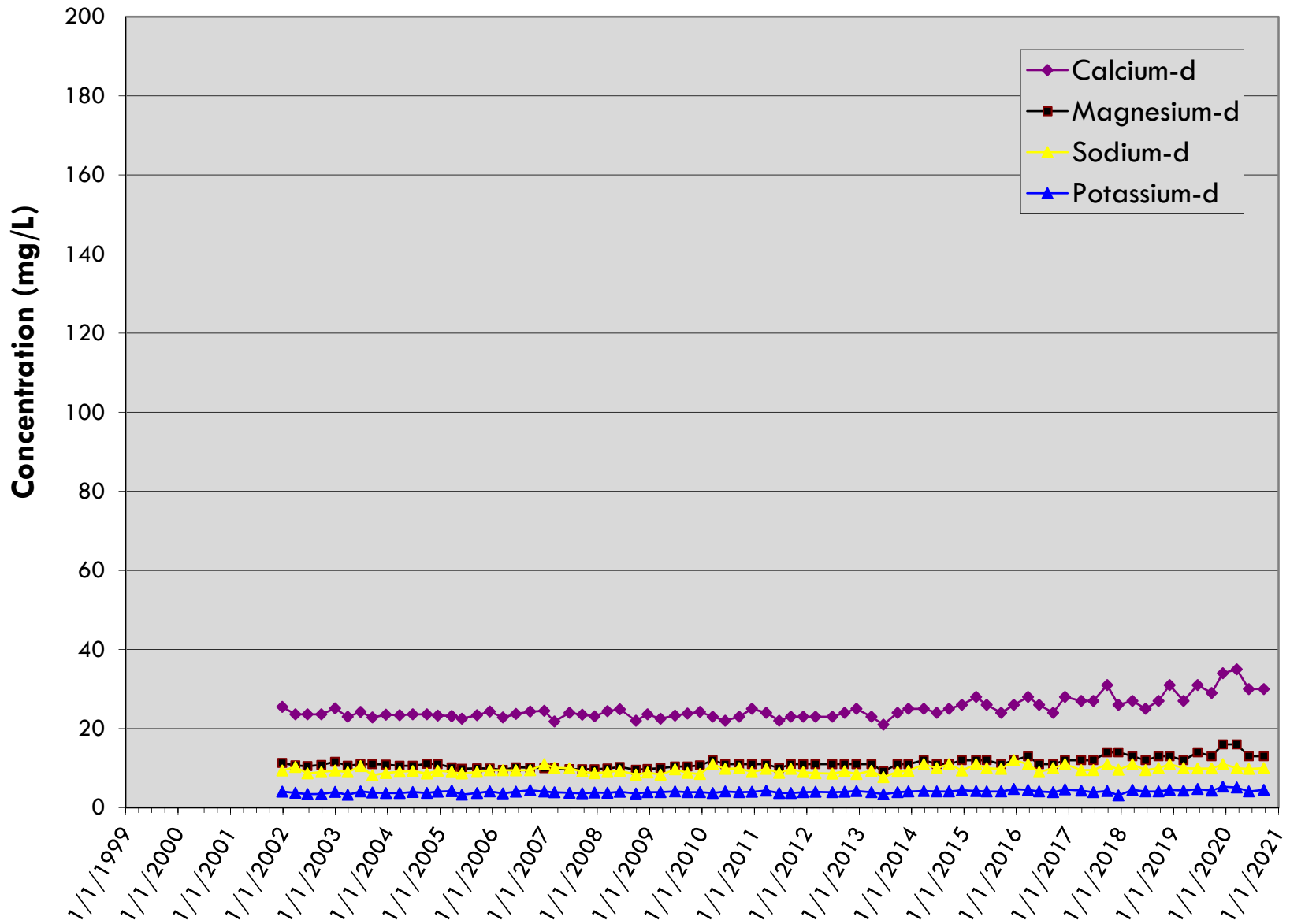
MW-5A

LRI Landfill, Pierce County, Washington

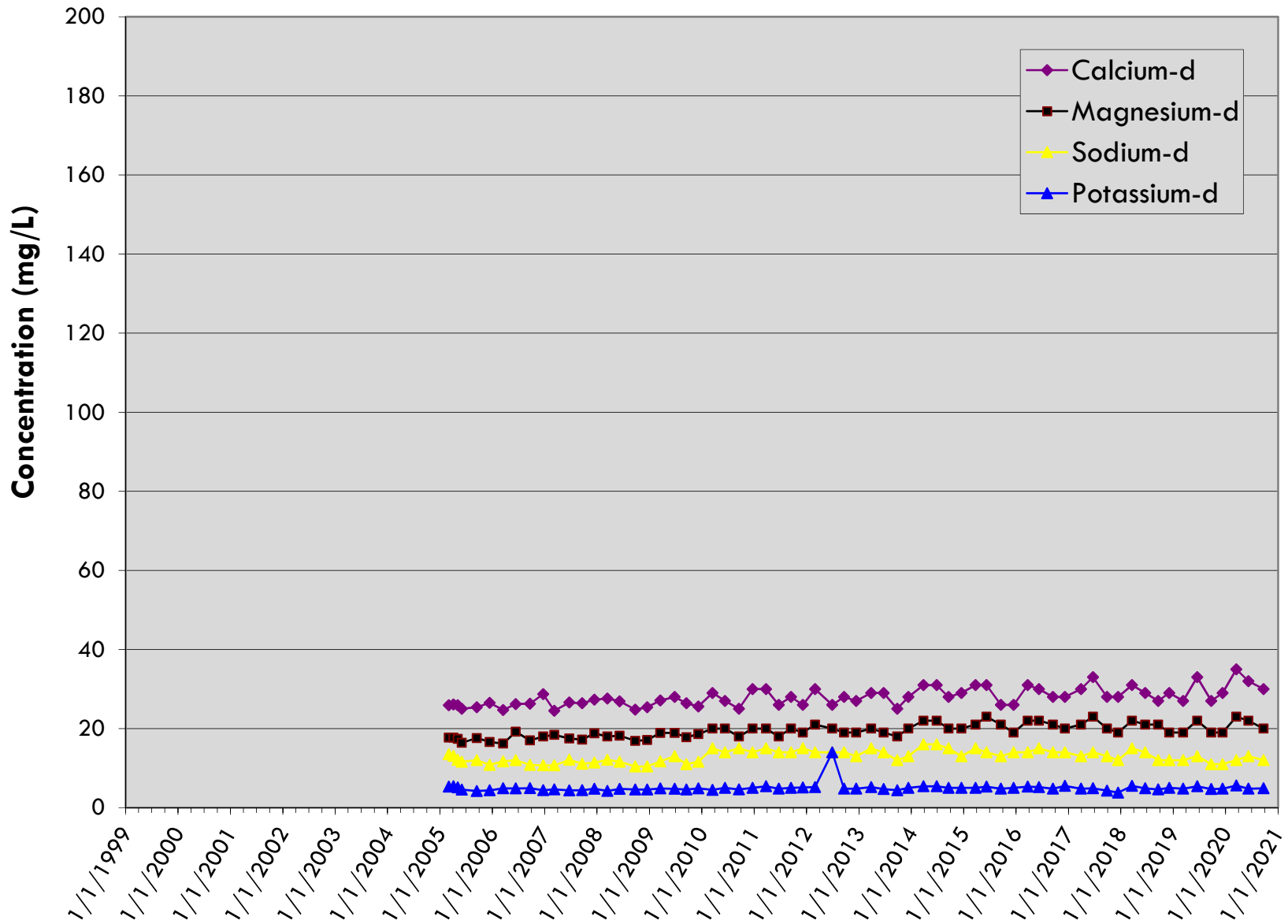


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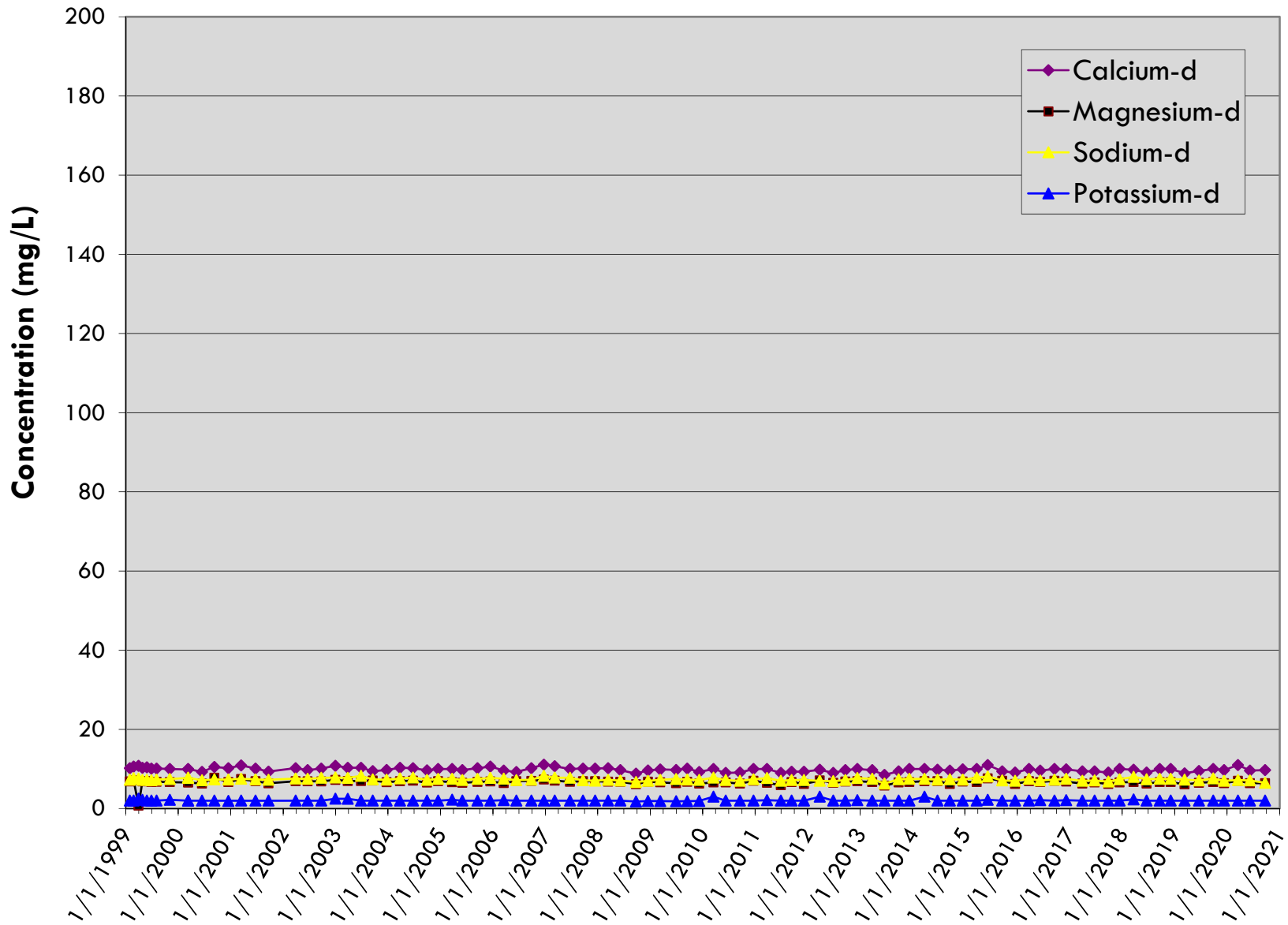
LRI Landfill, Pierce County, Washington



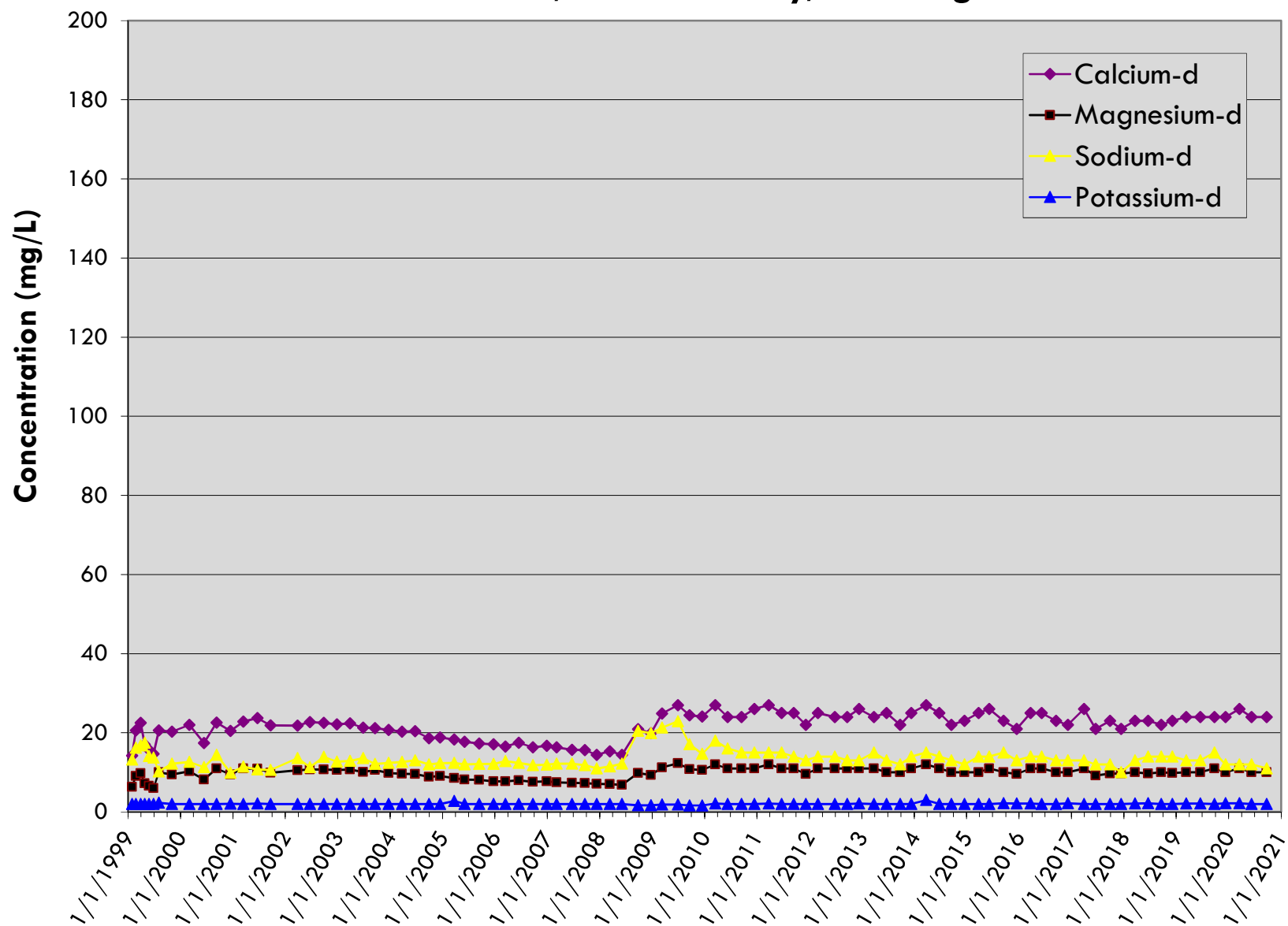
MW-7
LRI Landfill, Pierce County, Washington



MW-9 (Background)
LRI Landfill, Pierce County, Washington

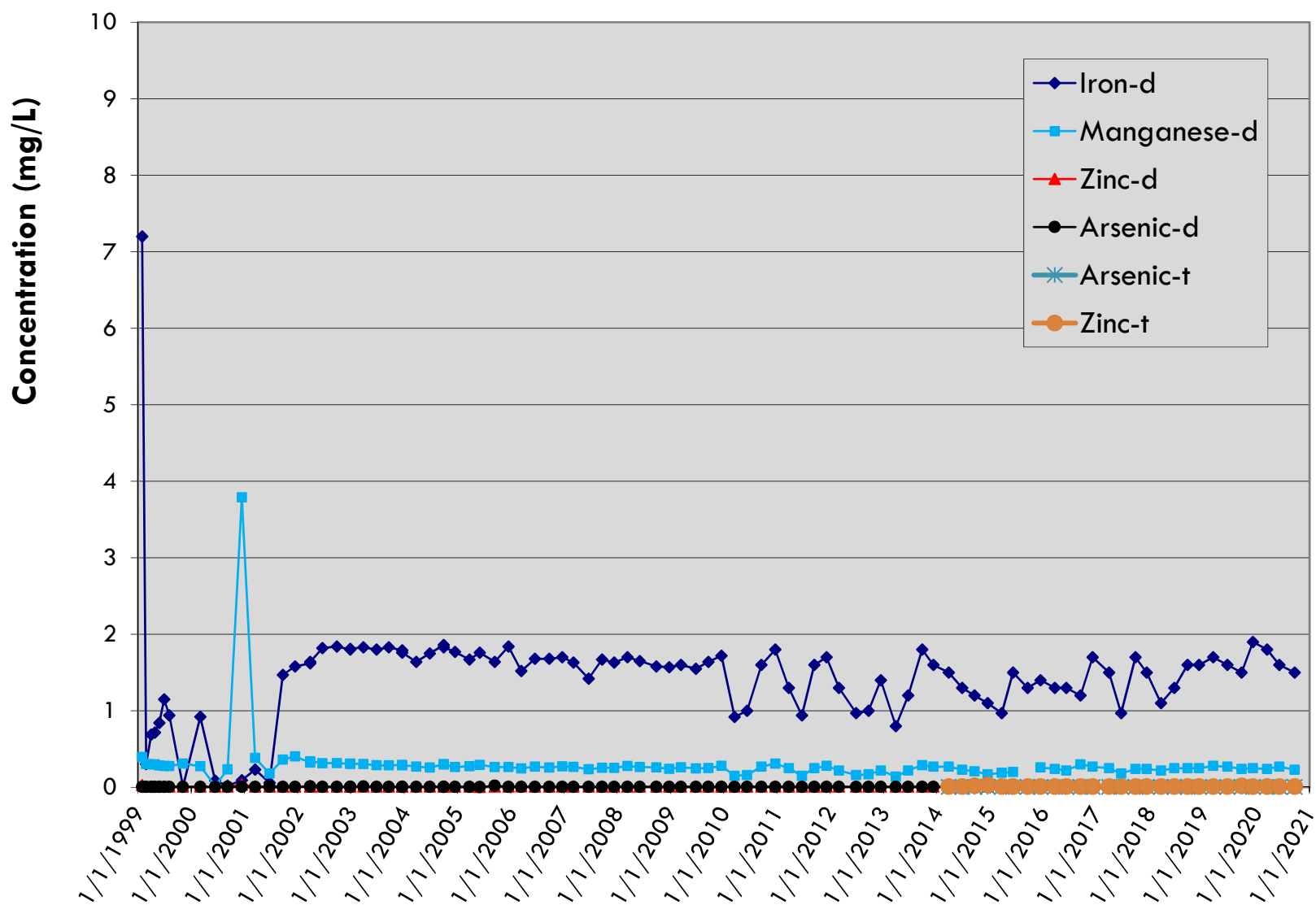


MW-10 (Background) LRI Landfill, Pierce County, Washington



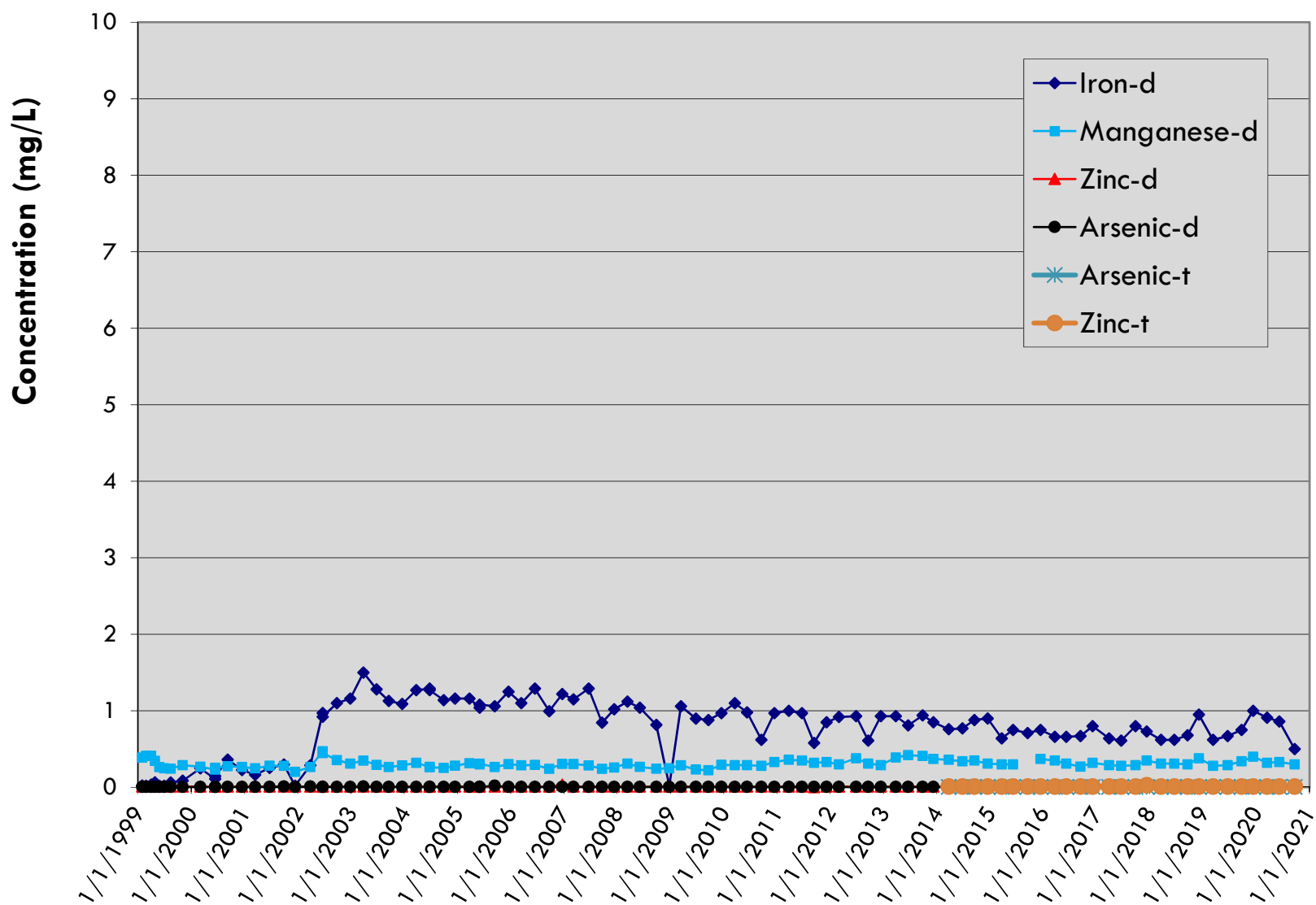
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LRI Landfill, Pierce County, Washington



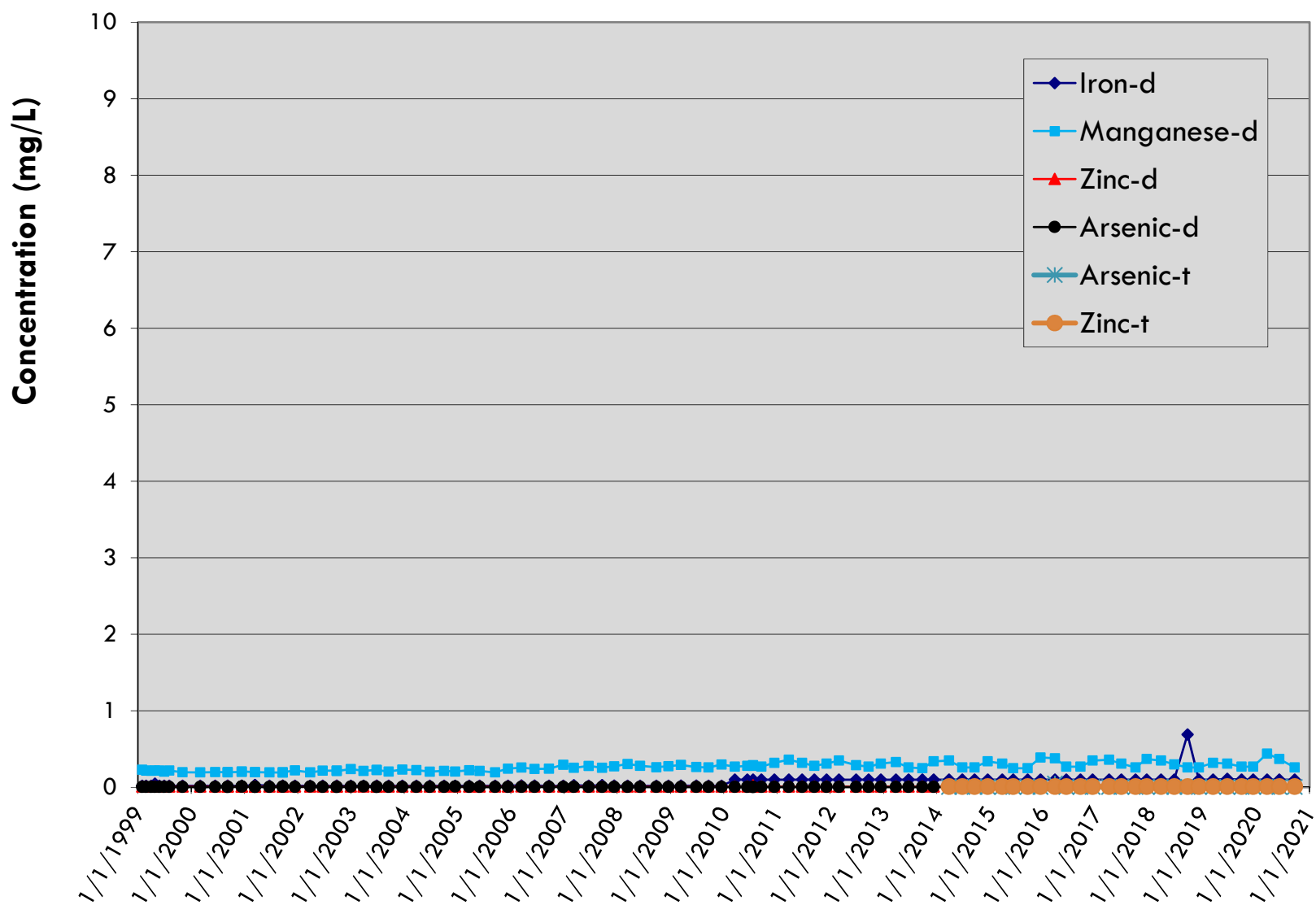
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LRI Landfill, Pierce County, Washington



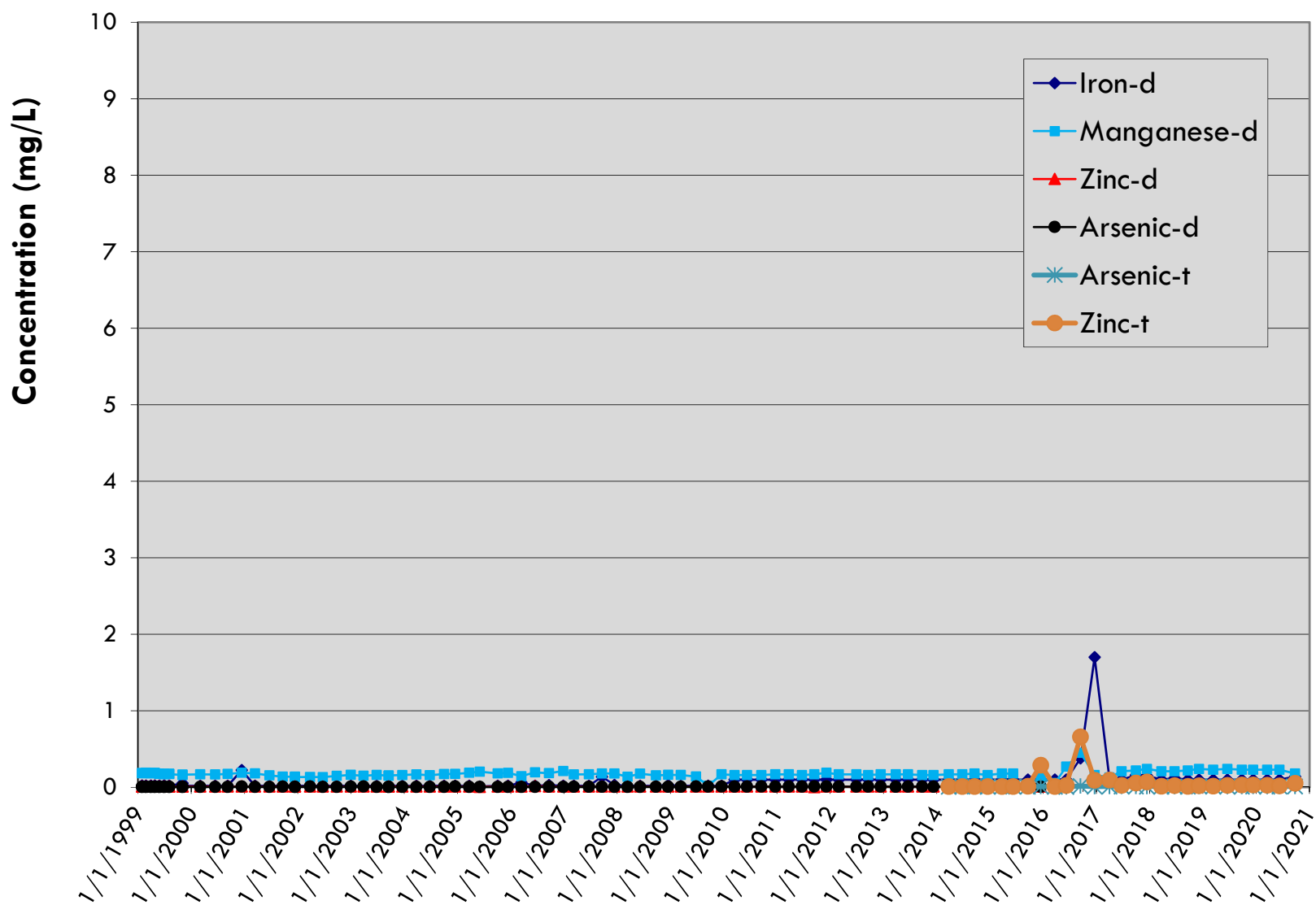
MW-3

LRI Landfill, Pierce County, Washington



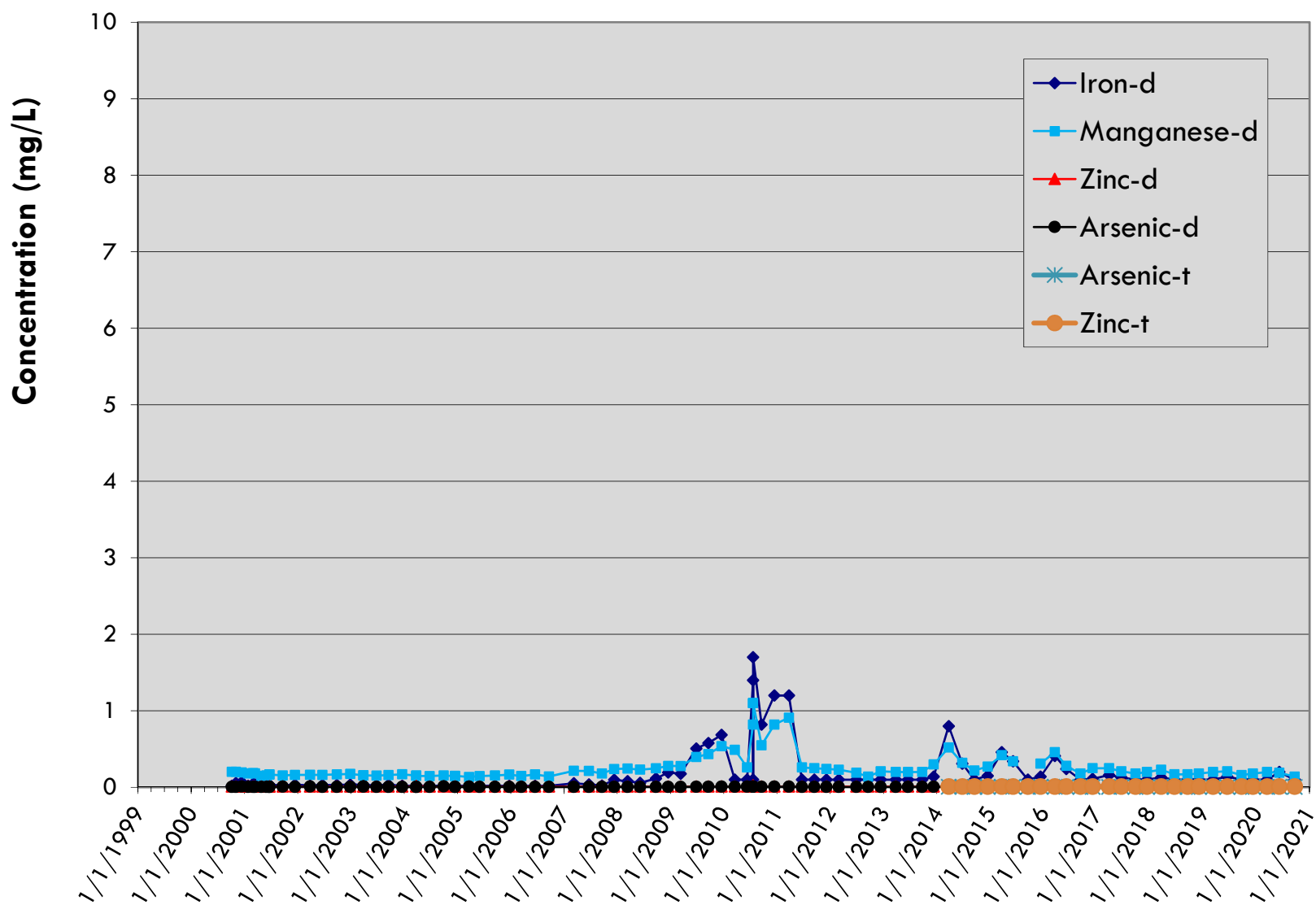
MW-4

LRI Landfill, Pierce County, Washington



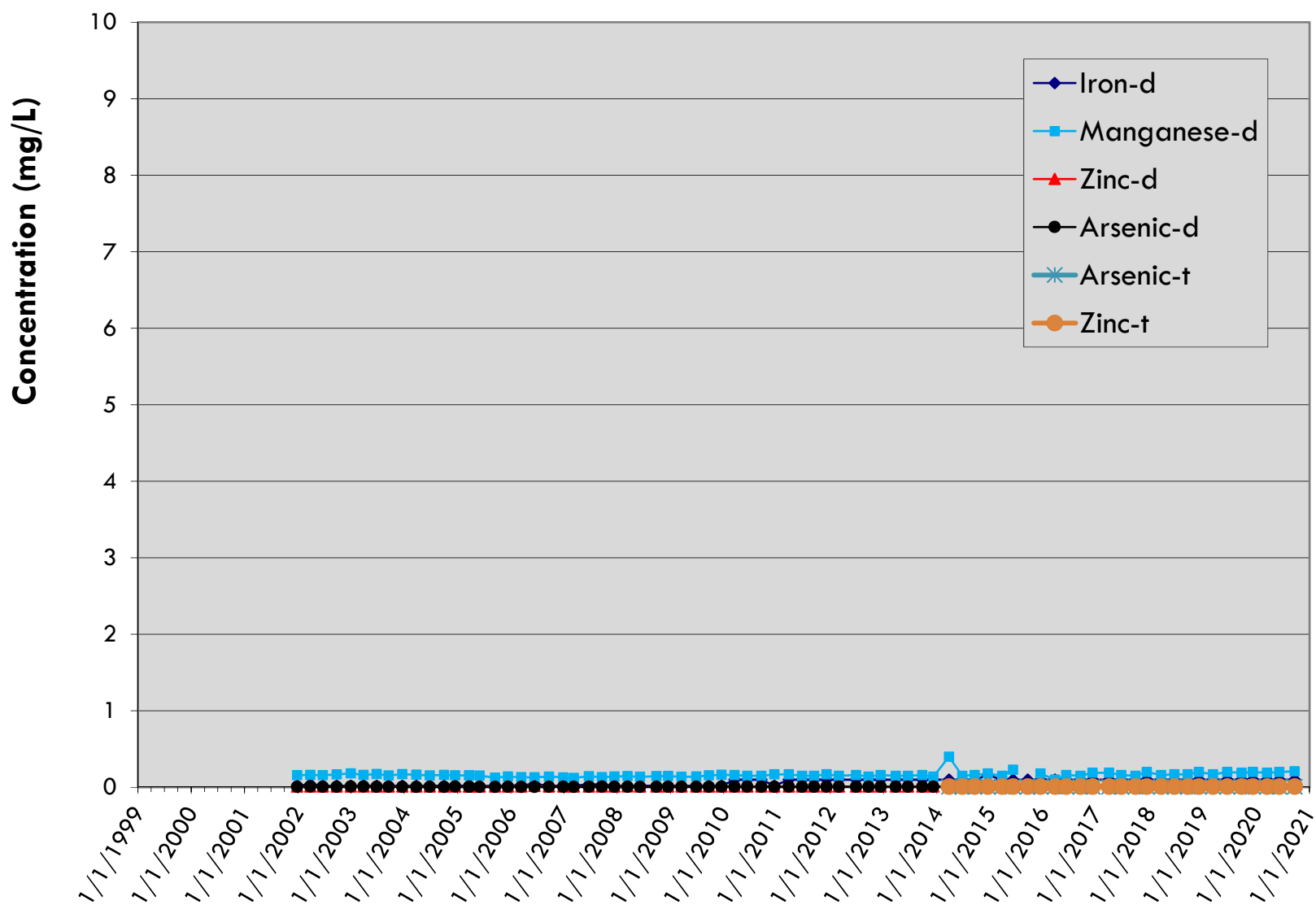
MW-5A

LRI Landfill, Pierce County, Washington



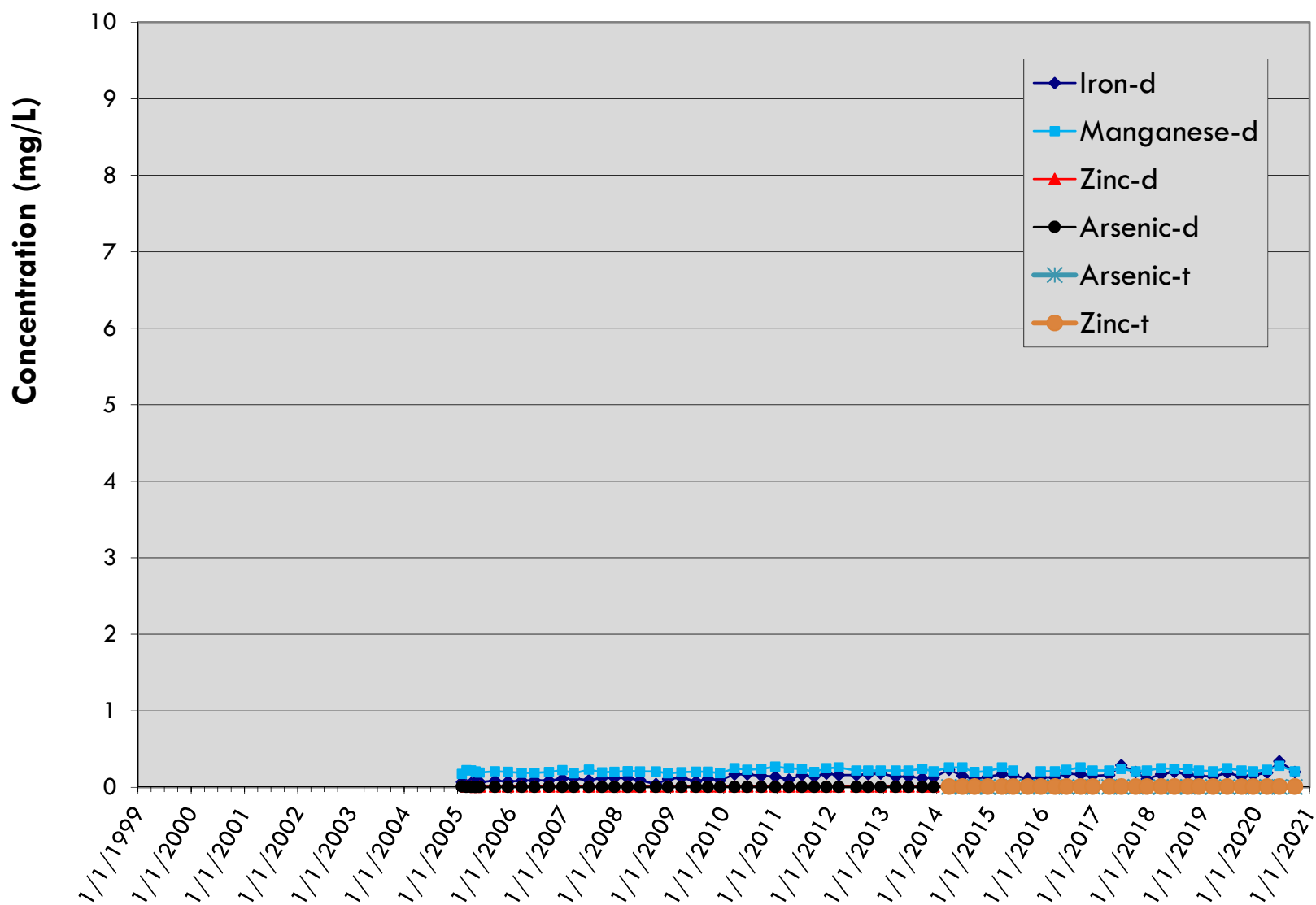
MW-6

LRI Landfill, Pierce County, Washington

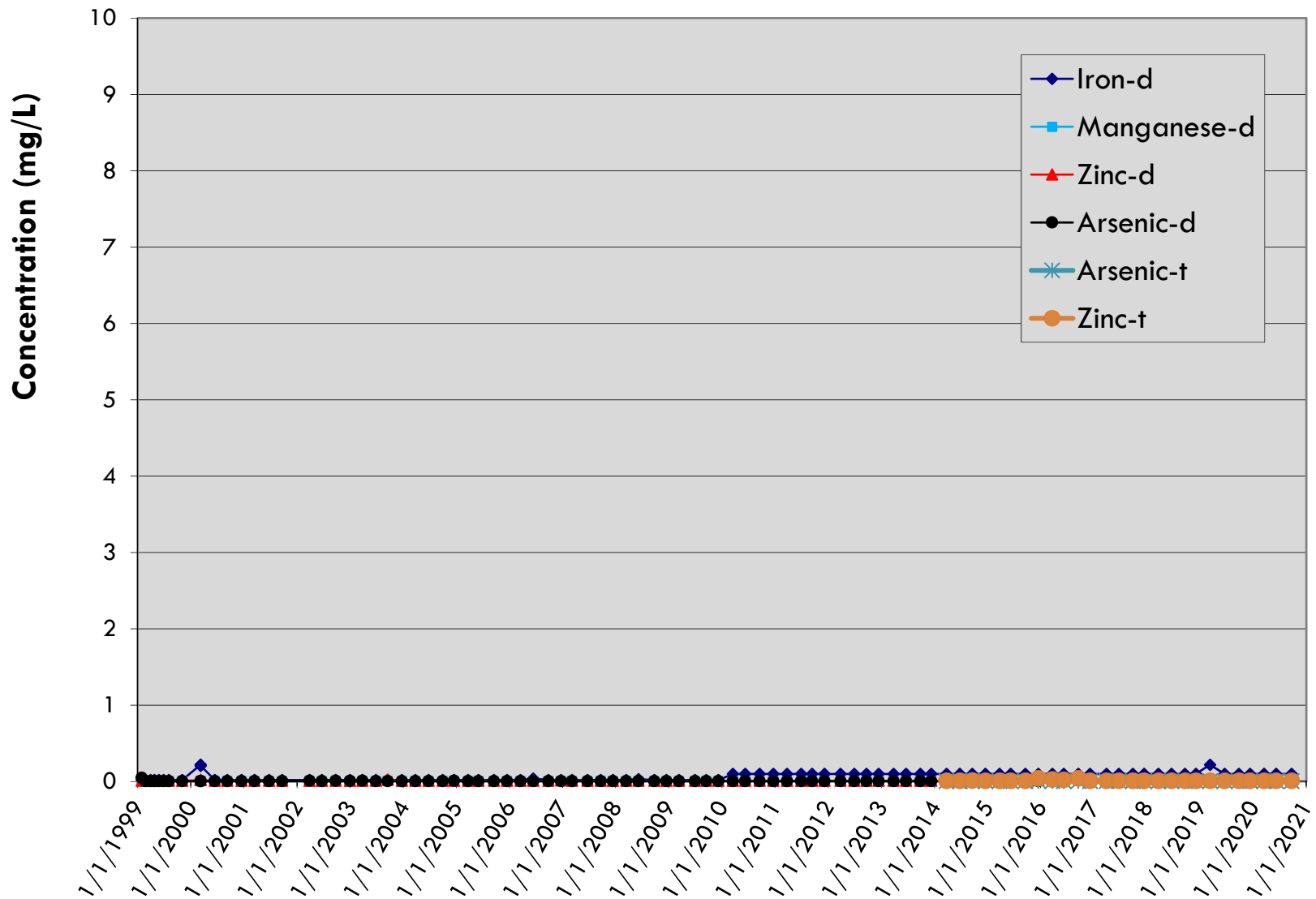


MW-7

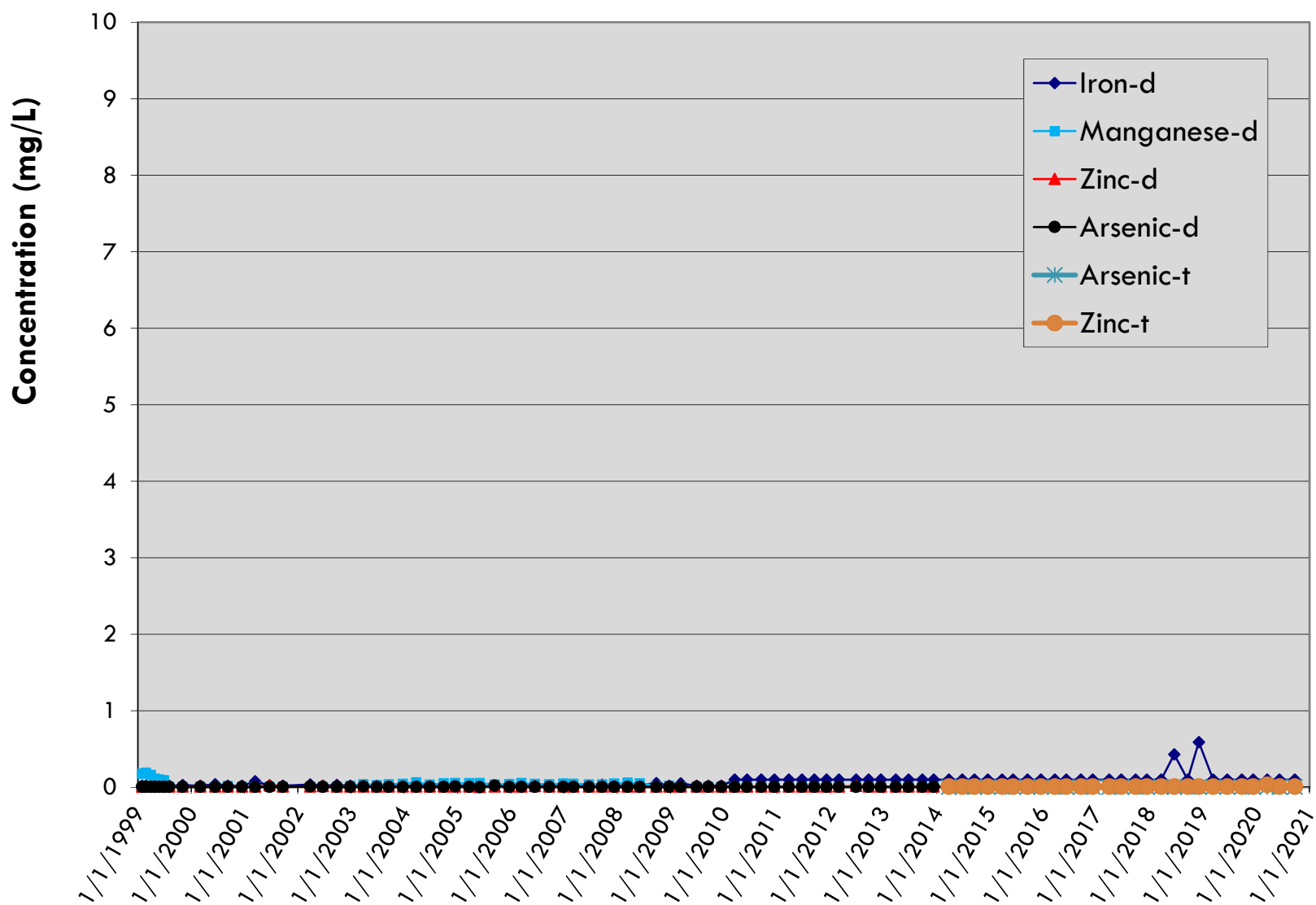
LRI Landfill, Pierce County, Washington



MW-9 (Background) LRI Landfill, Pierce County, Washington

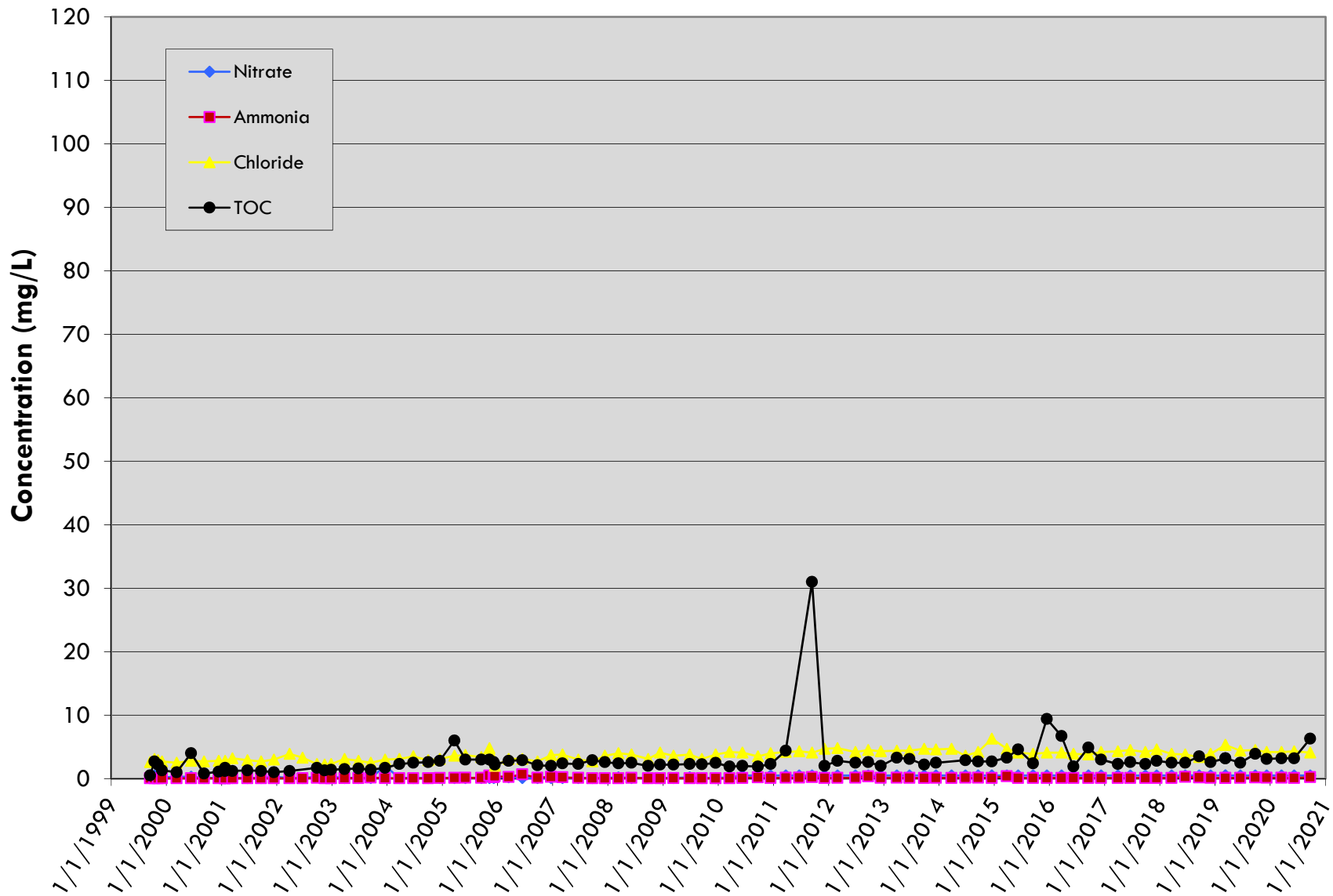


MW-10 (Background) LRI Landfill, Pierce County, Washington



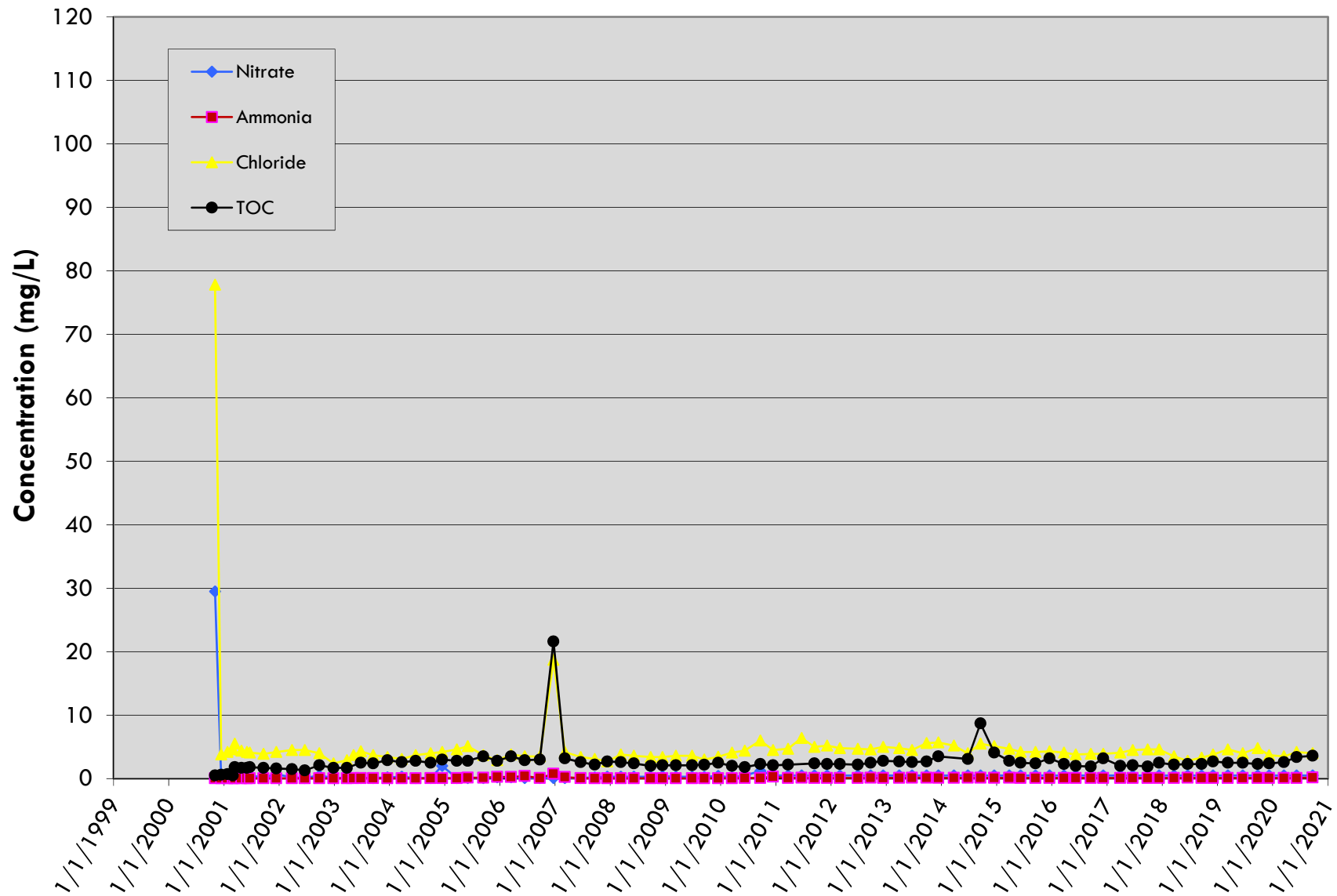
LDCS-1

LRI Landfill, Pierce County, Washington



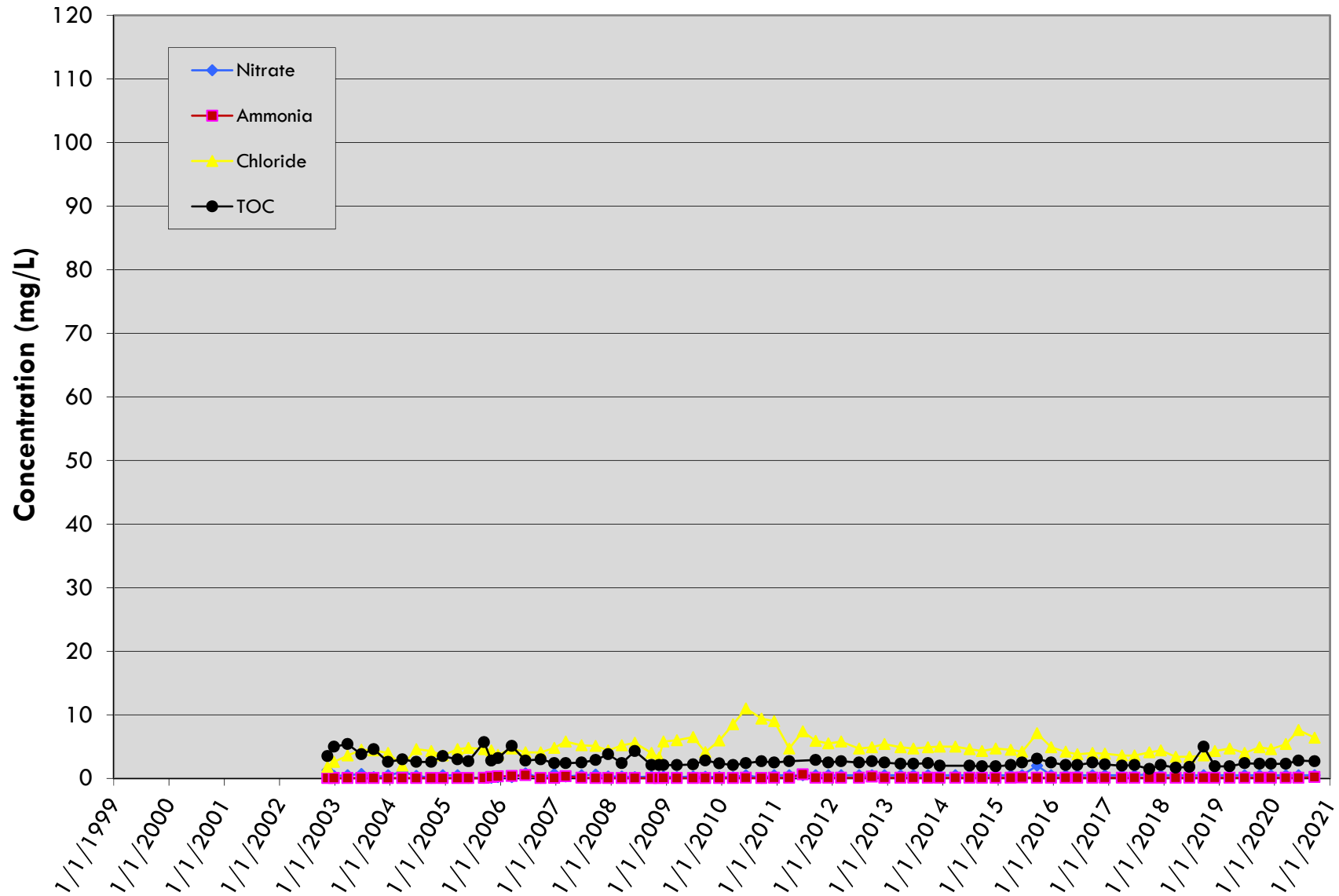
LDCS-2A

LRI Landfill, Pierce County, Washington



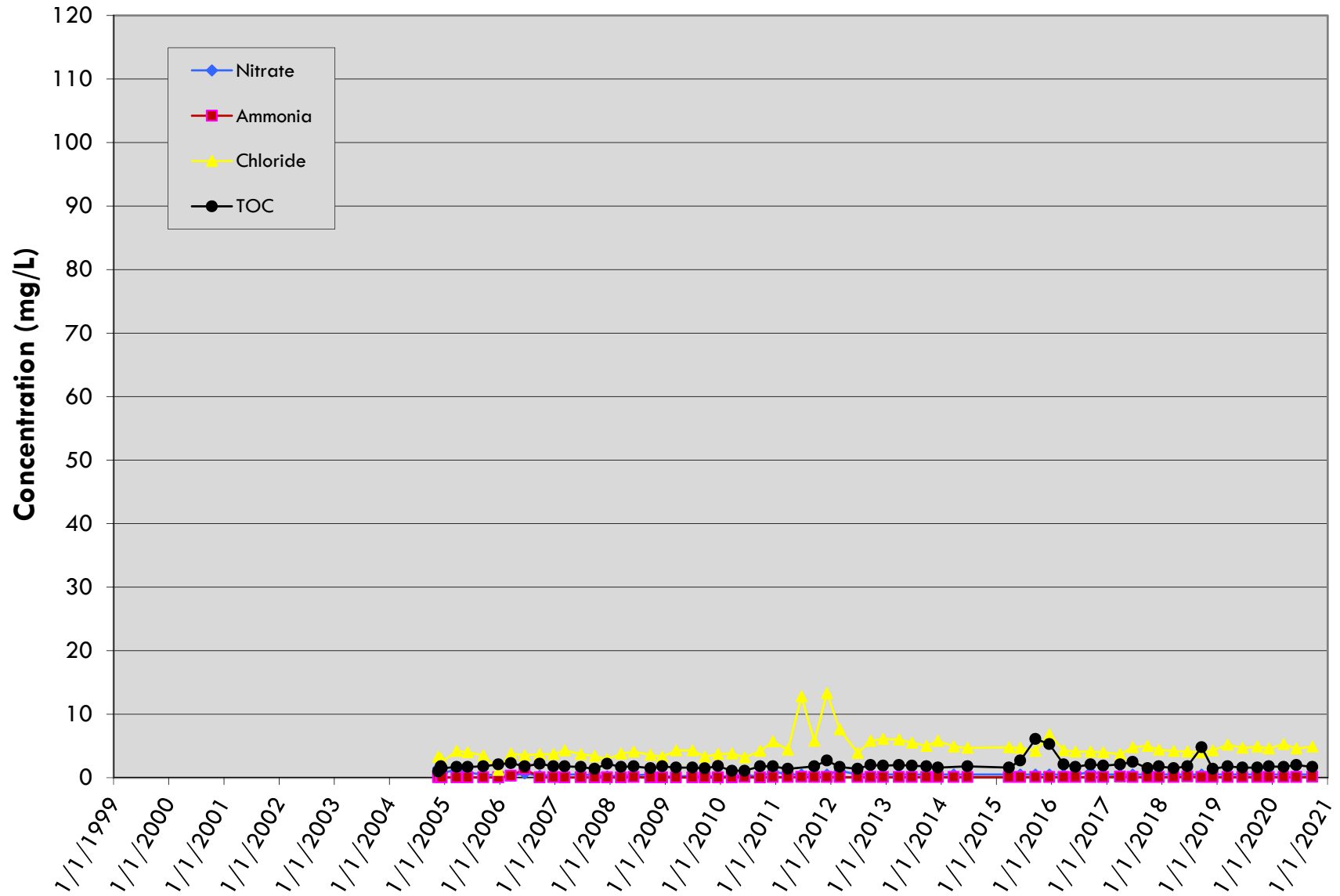
LDCS-2B

LRI Landfill, Pierce County, Washington



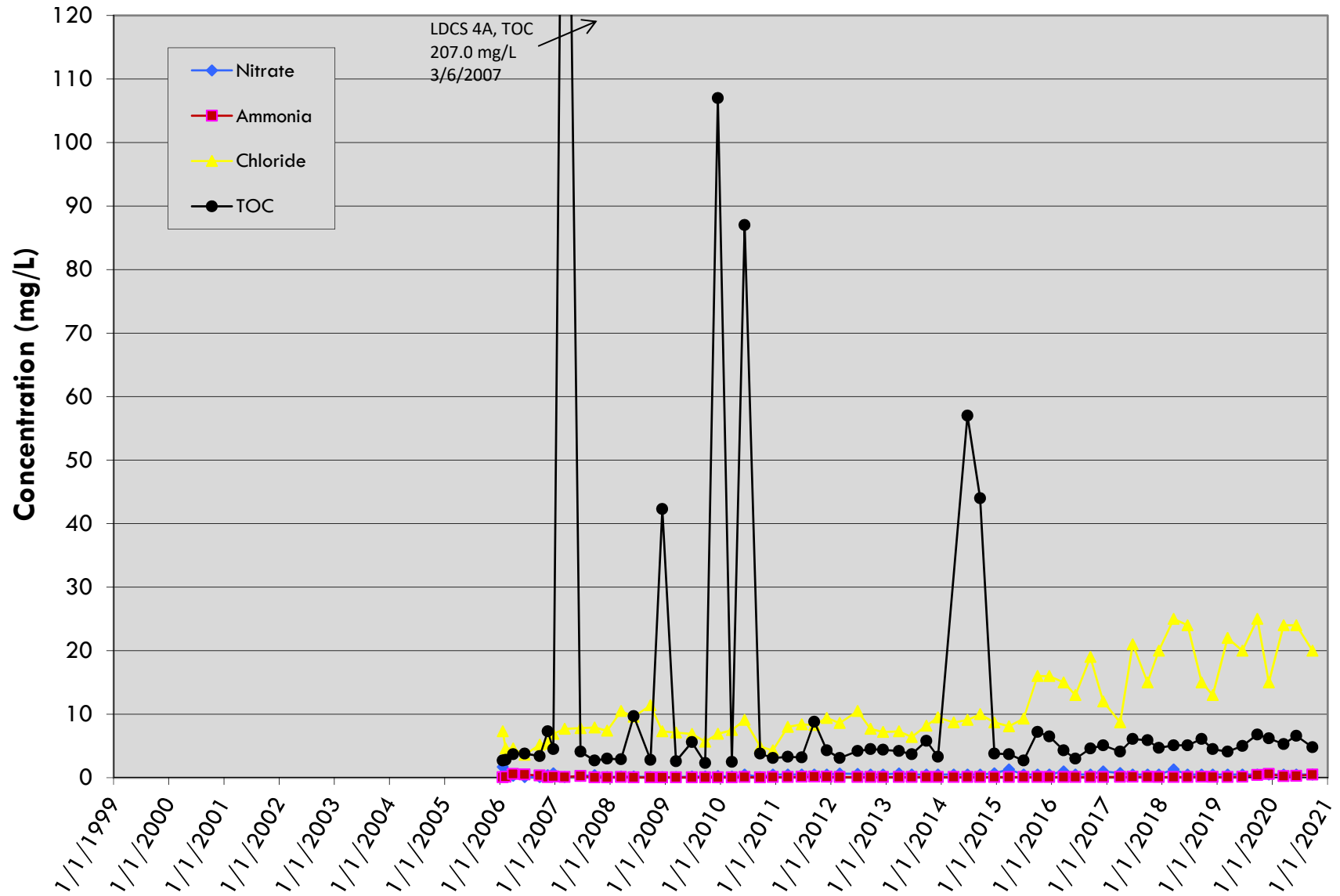
LDCS-3A

LRI Landfill, Pierce County, Washington



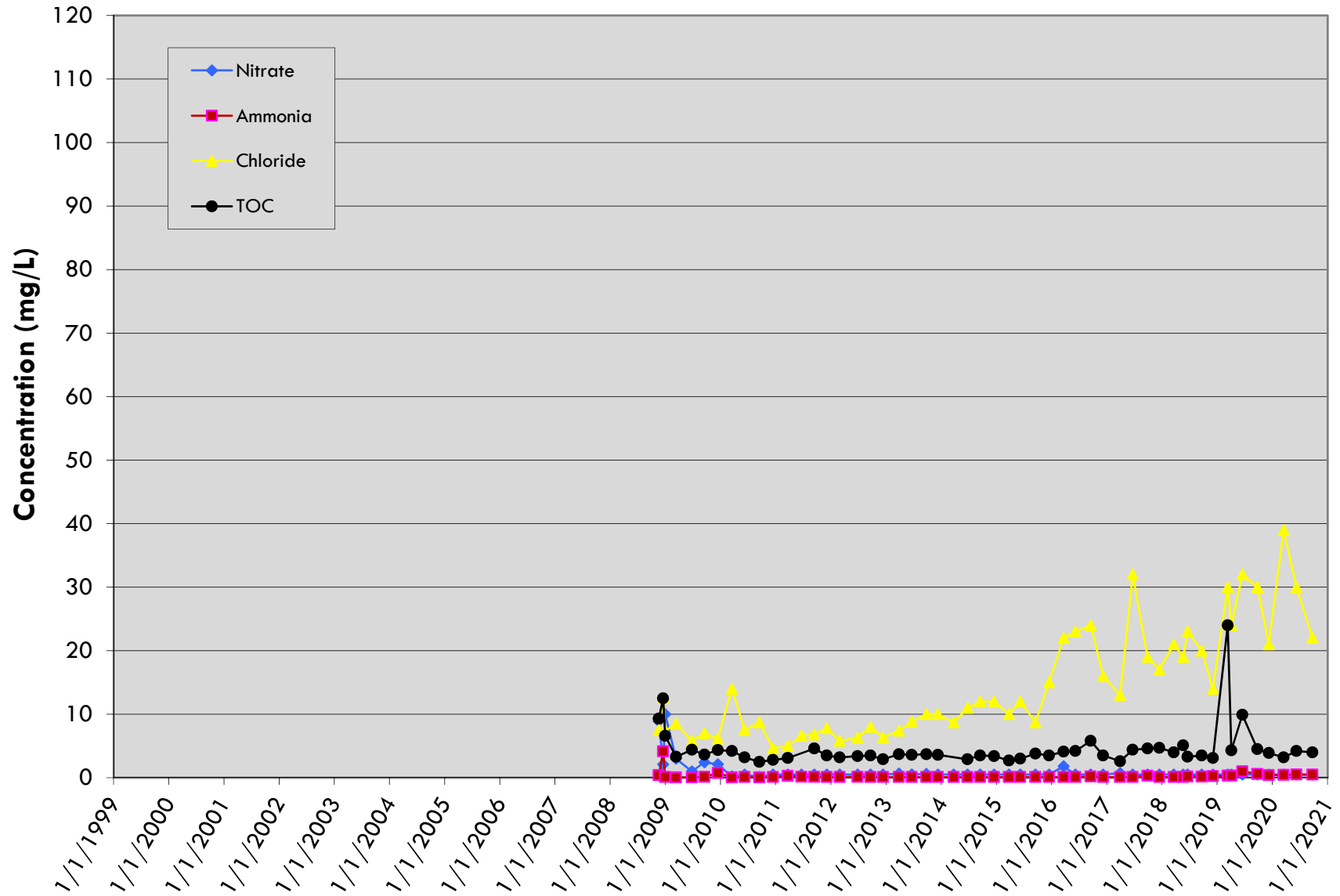
LDCS-4A

LRI Landfill, Pierce County, Washington



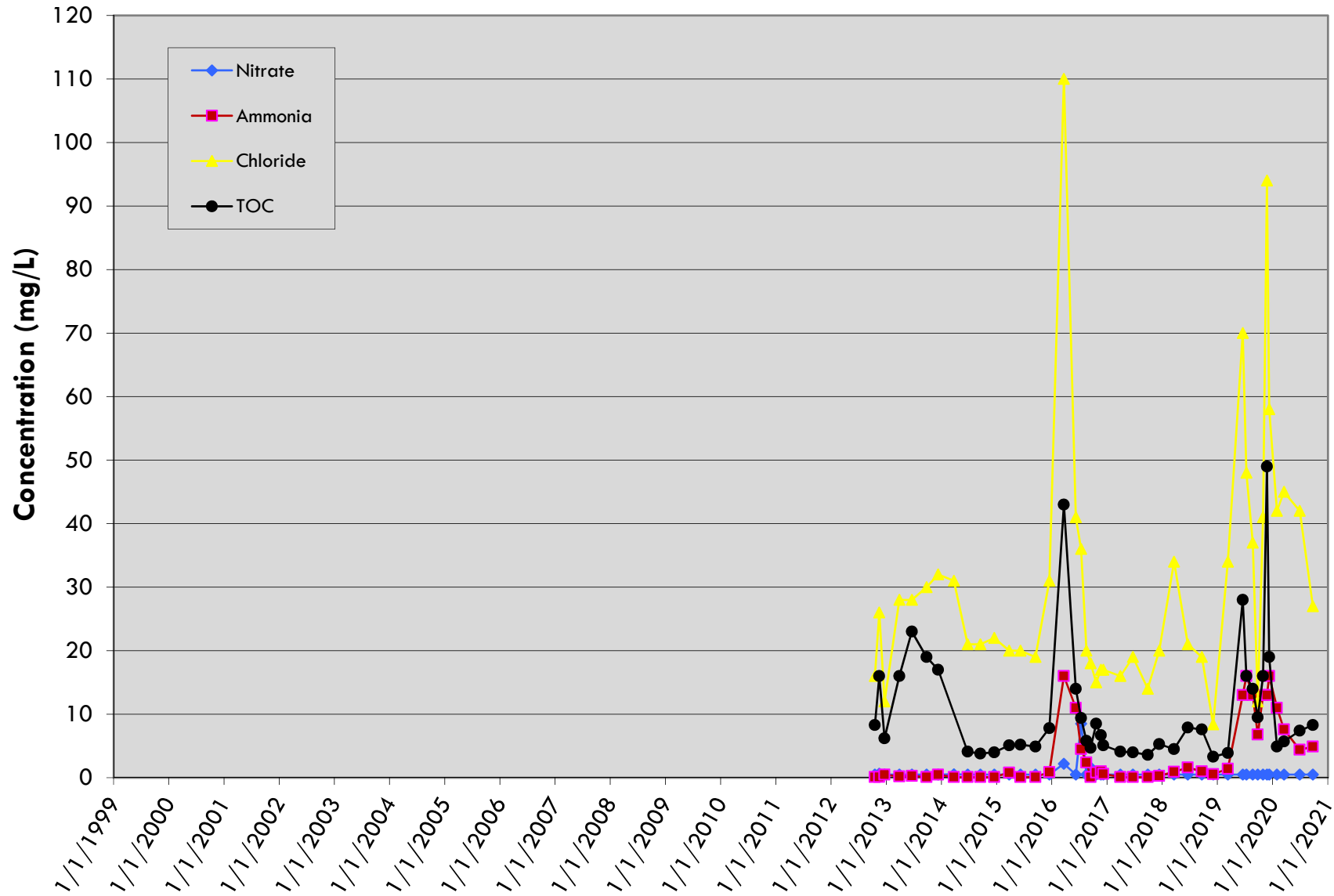
LDCS-4B

LRI Landfill, Pierce County, Washington



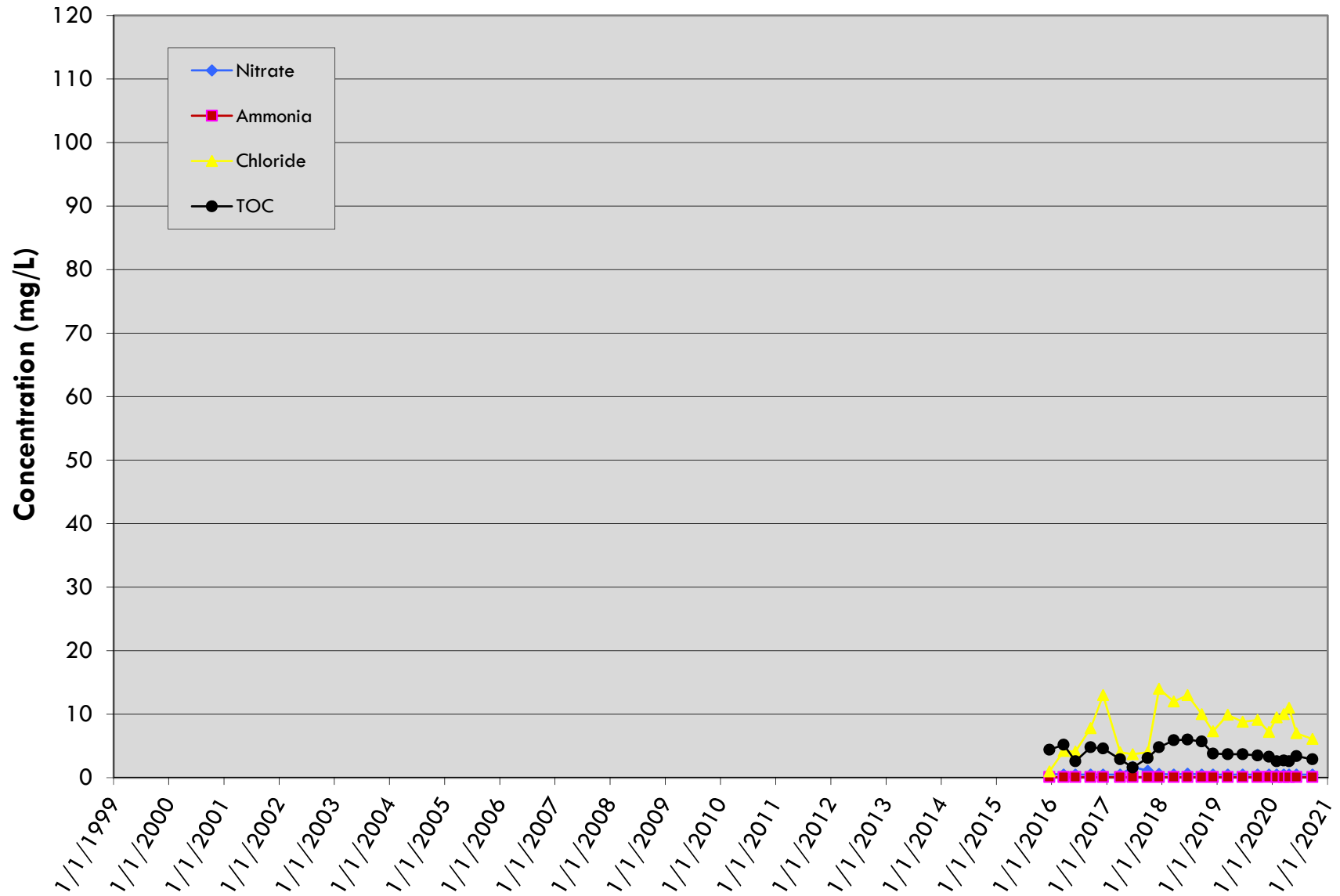
LDCS-5

LRI Landfill, Pierce County, Washington



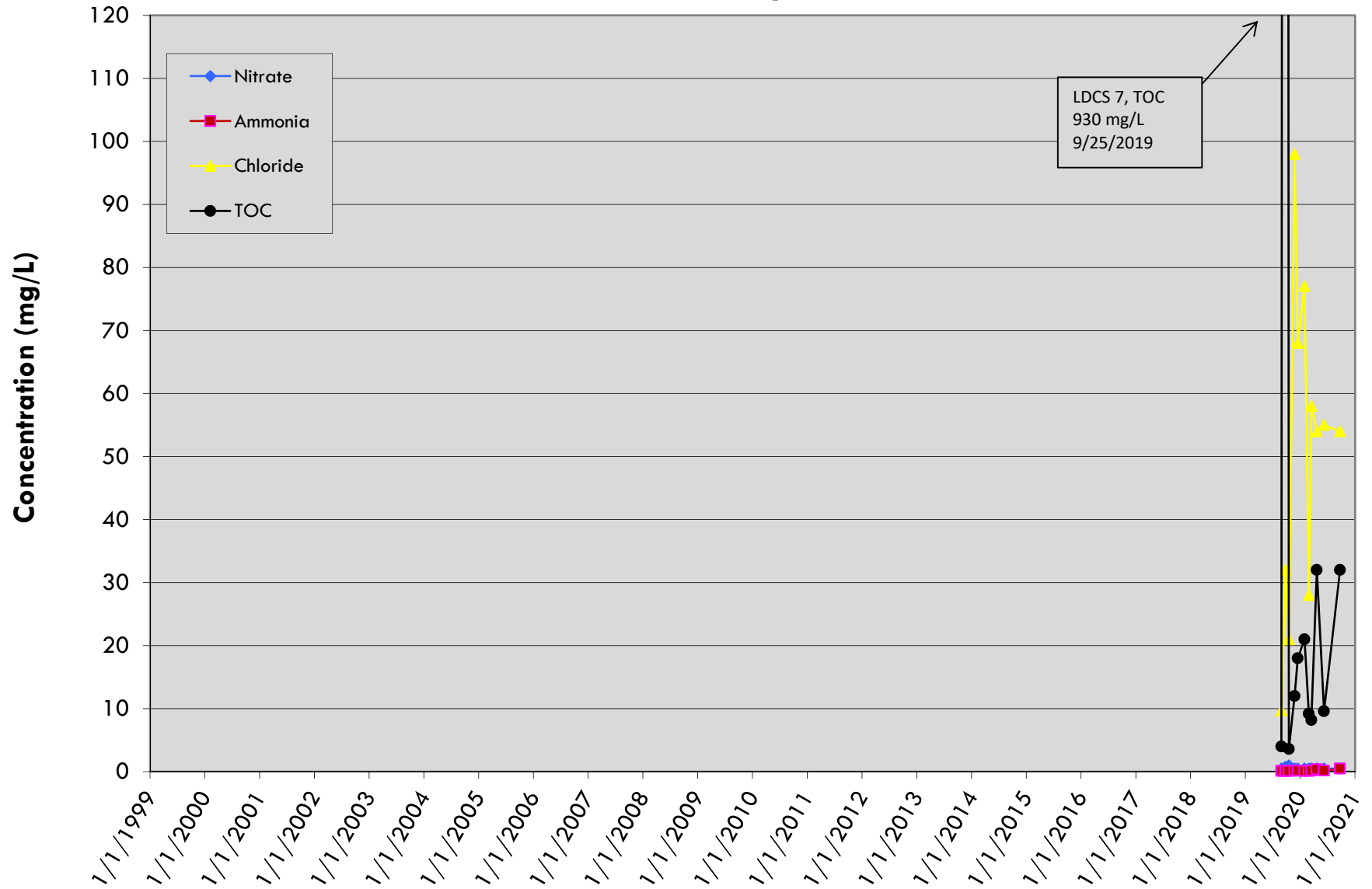
LDCS-6A

LRI Landfill, Pierce County, Washington



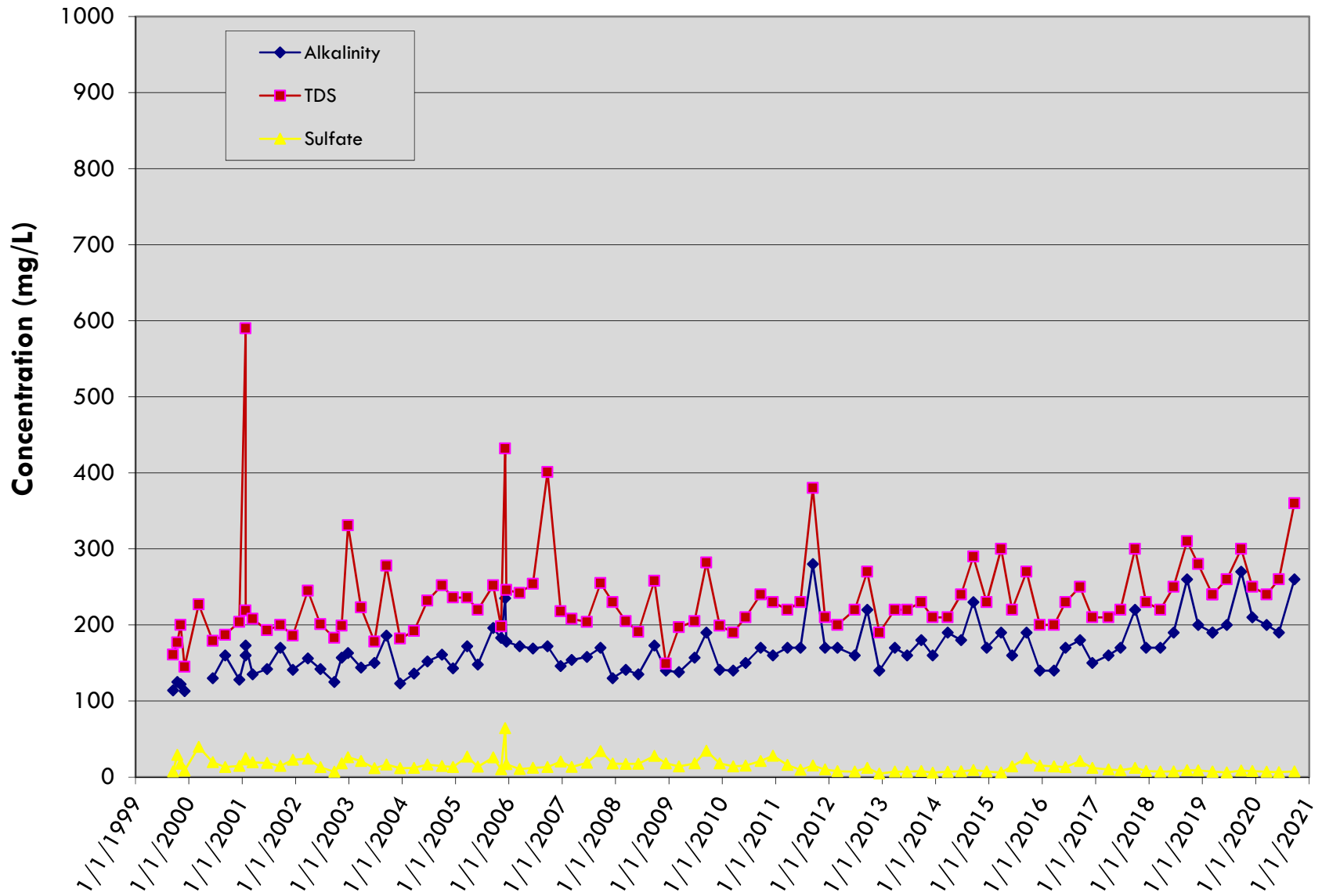
LDCS-7

LRI Landfill, Pierce County, Washington



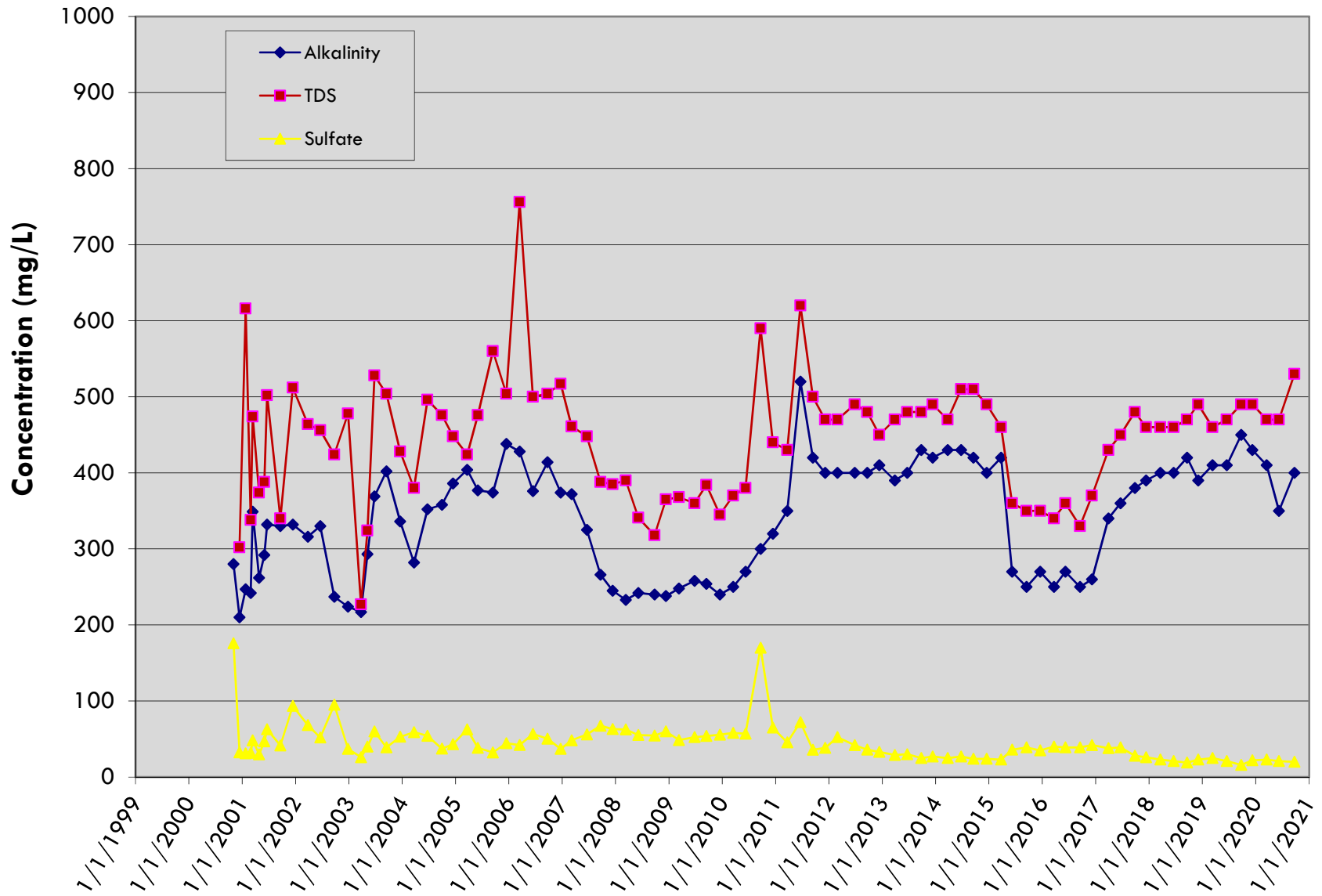
LDCS-1

LRI Landfill, Pierce County, Washington



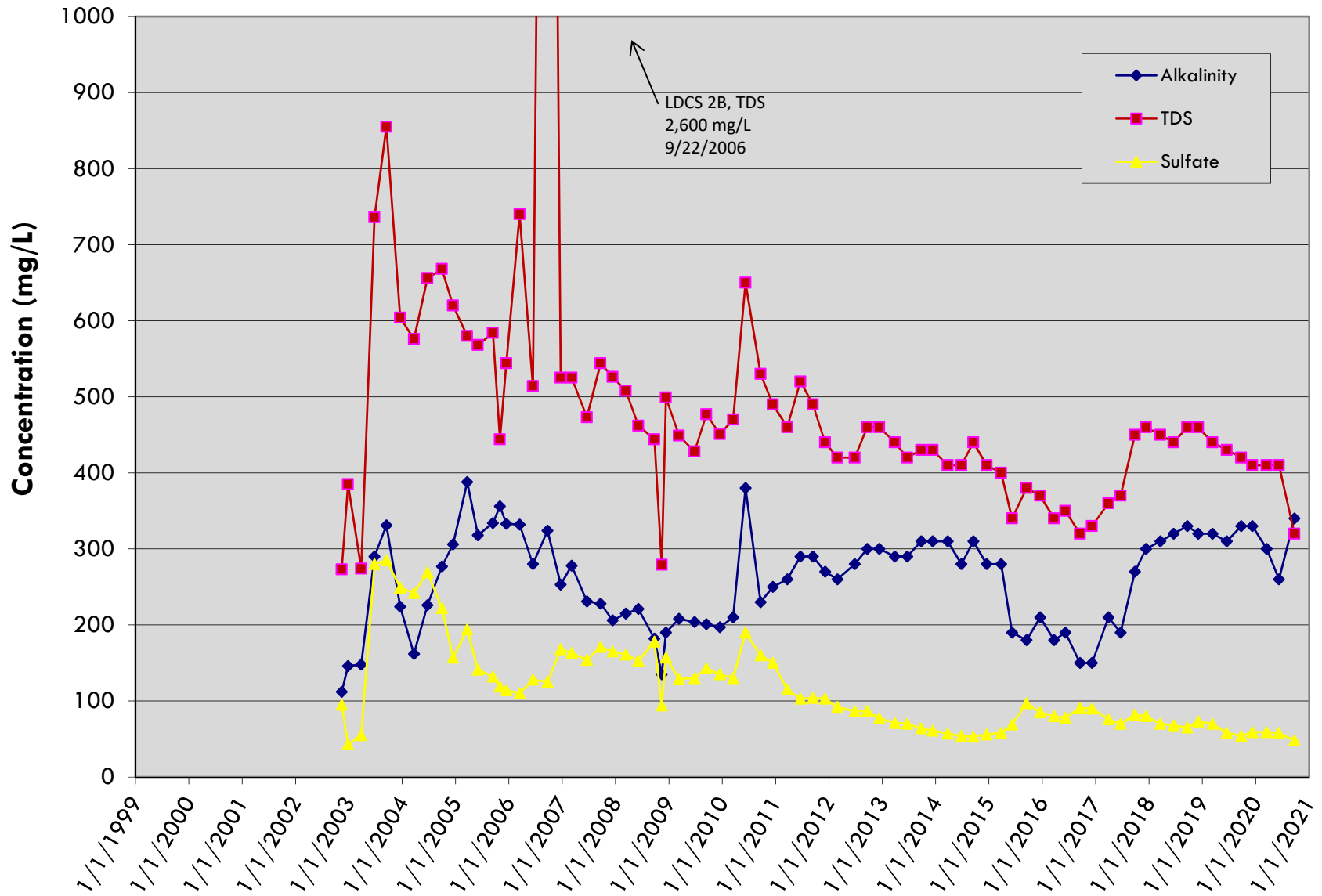
LDCS-2A

LRI Landfill, Pierce County, Washington



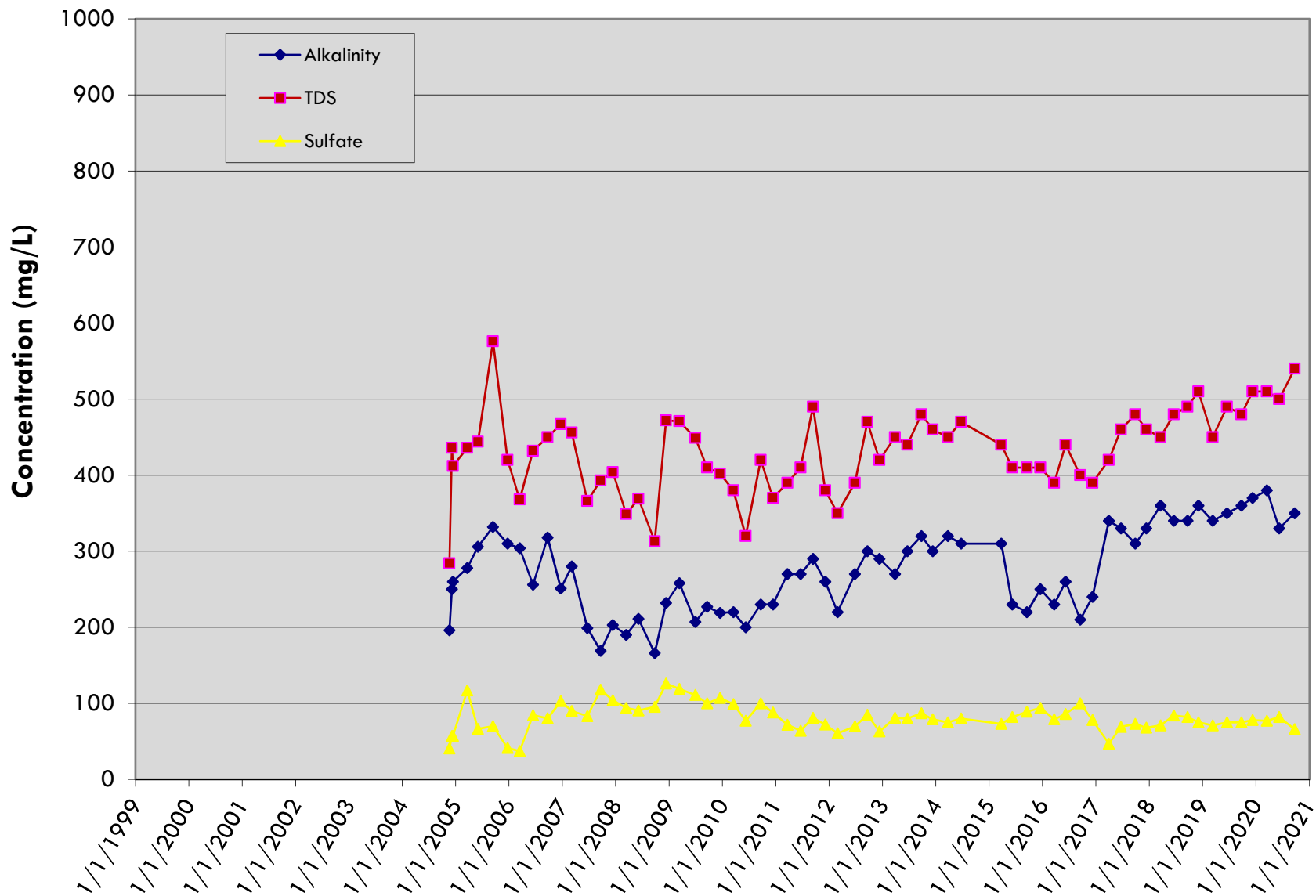
LDCS-2B

LRI Landfill, Pierce County, Washington



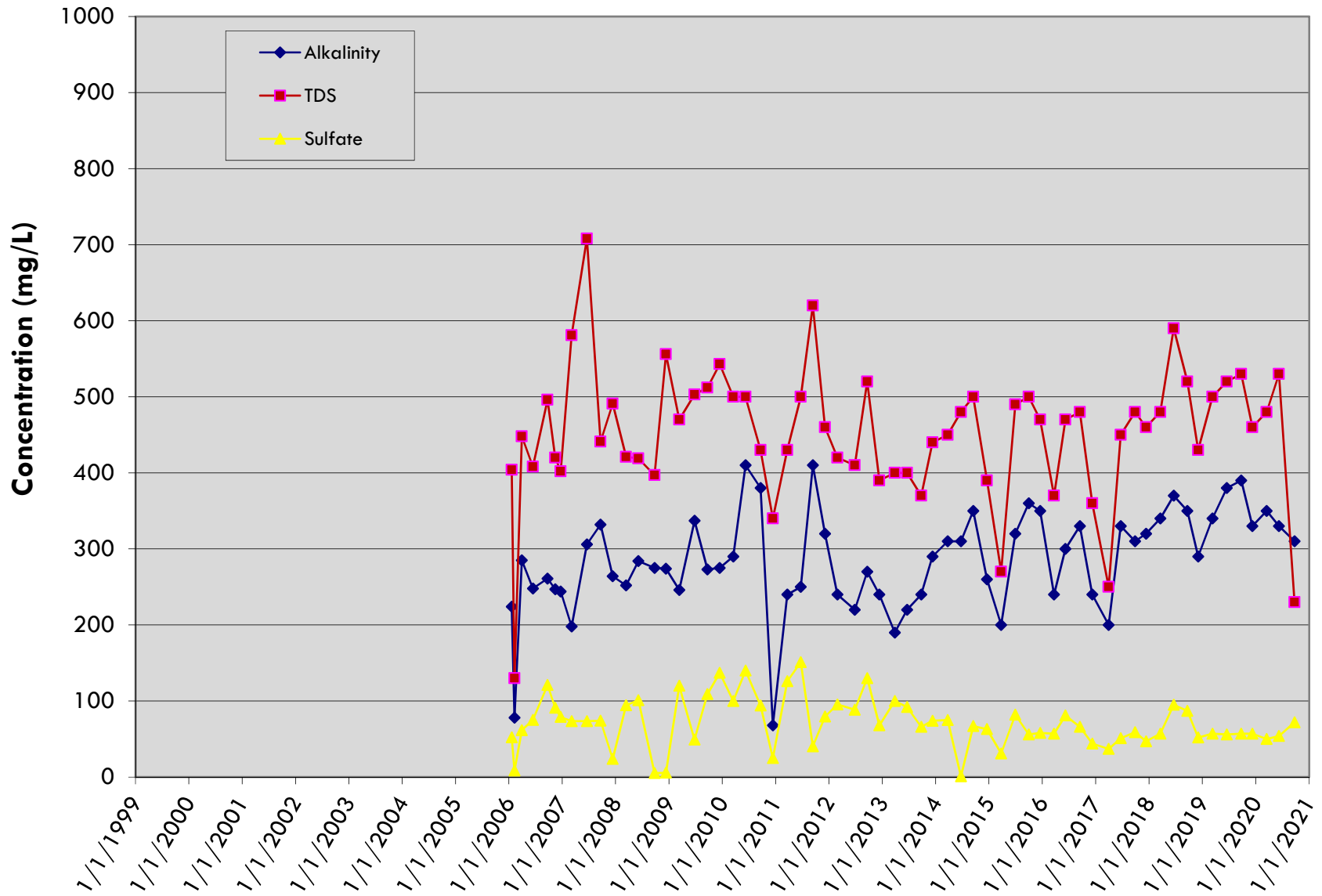
LDCS-3A

LRI Landfill, Pierce County, Washington



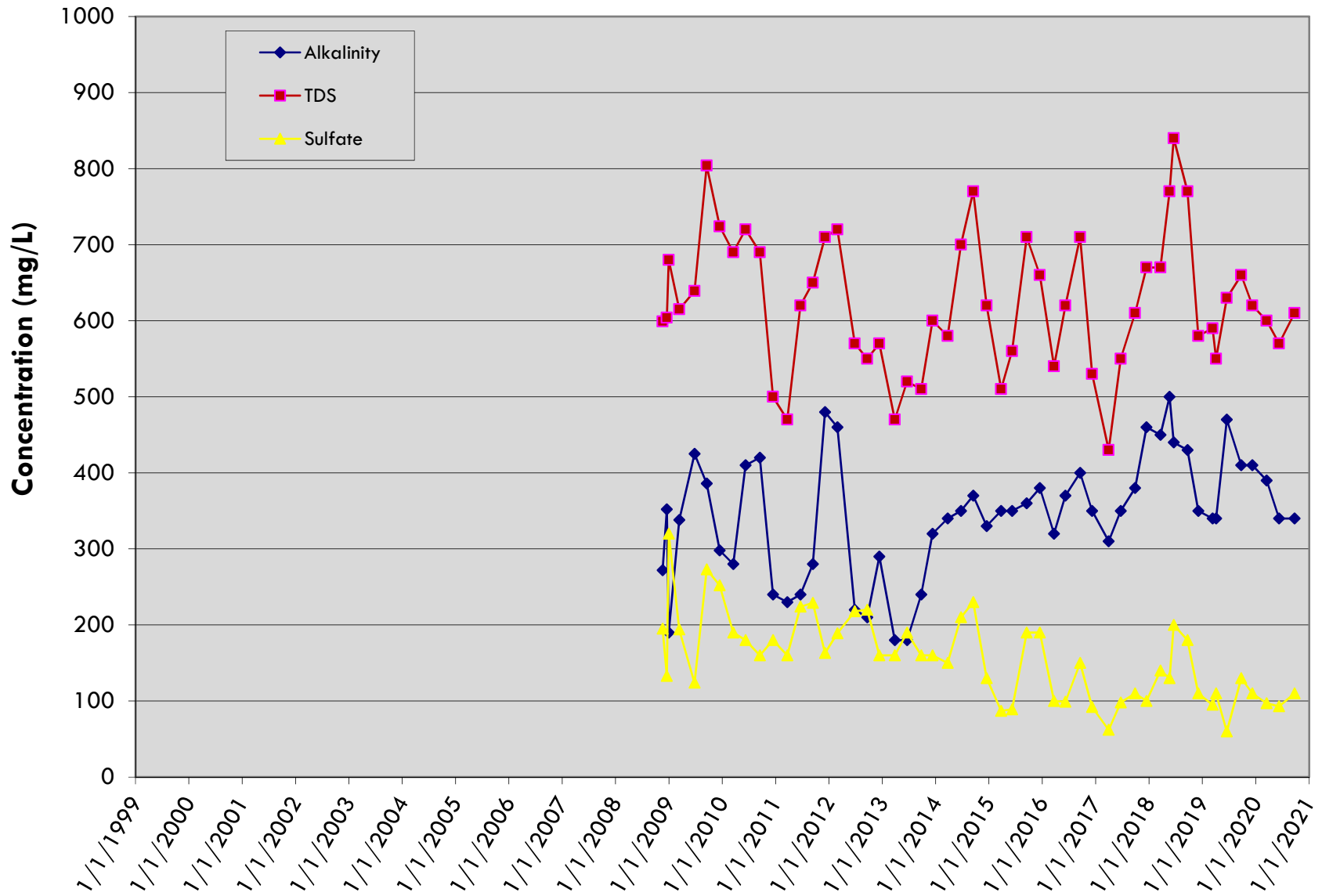
LDCS-4A

LRI Landfill, Pierce County, Washington



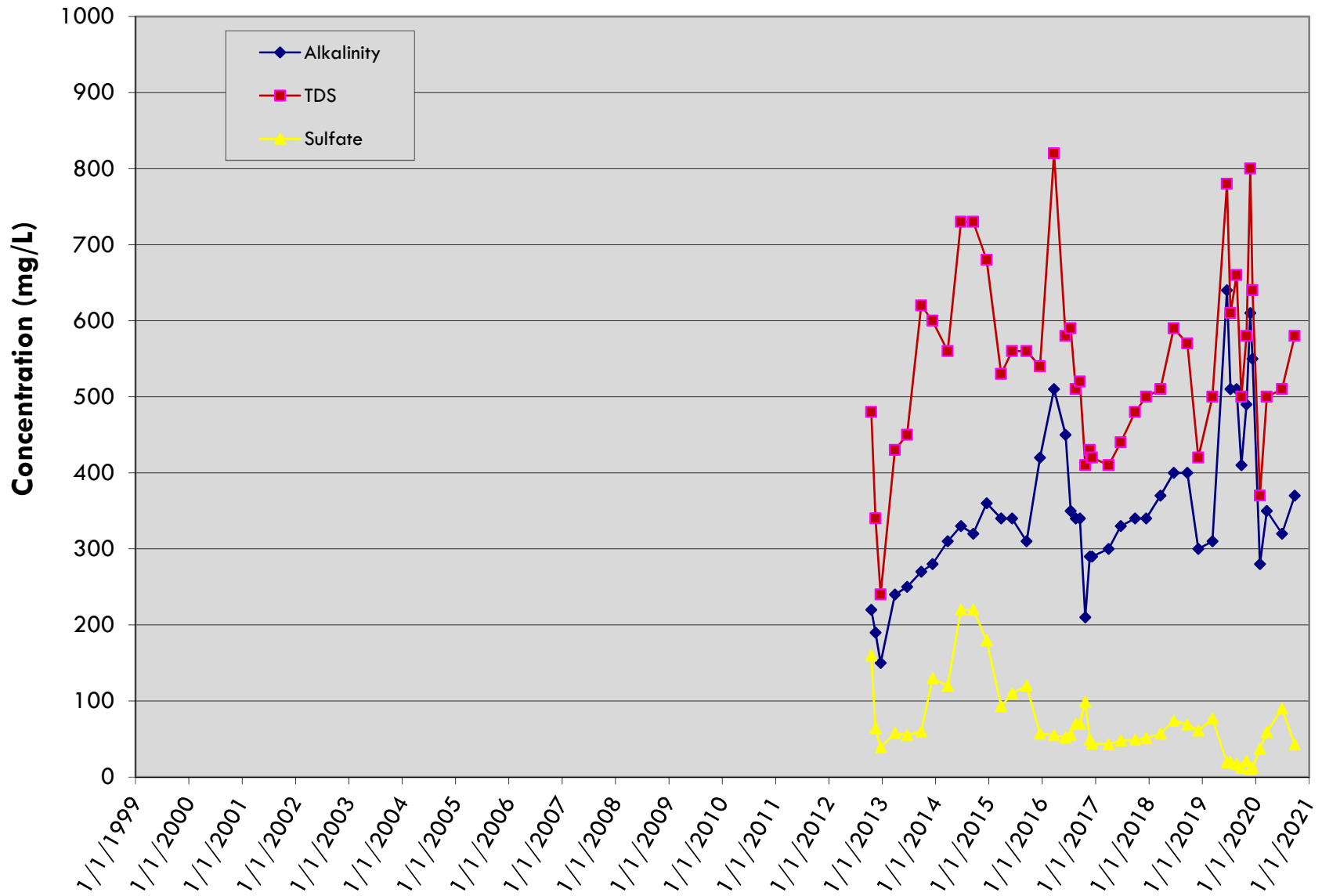
LDCS-4B

LRI Landfill, Pierce County, Washington



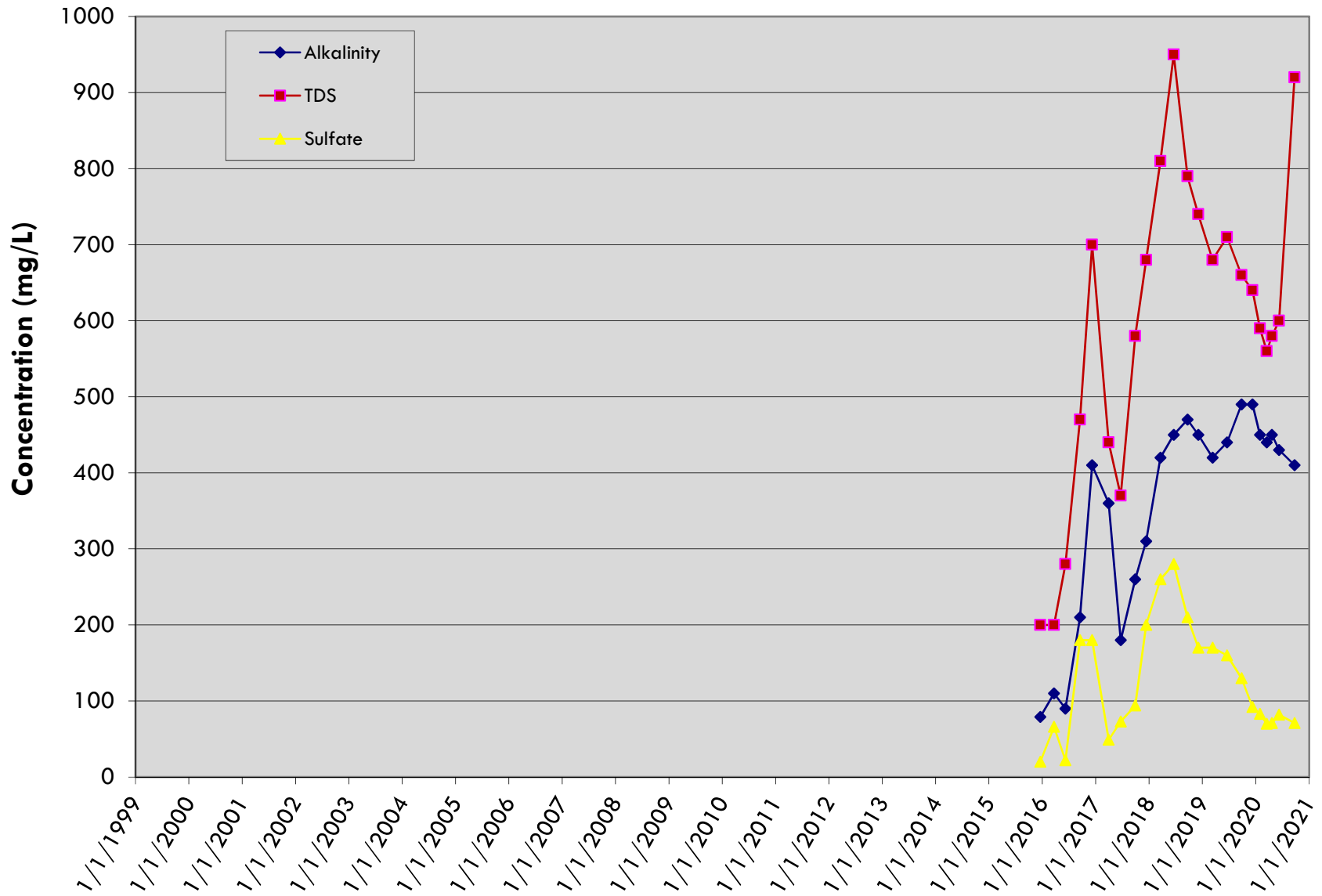
LDCS-5

LRI Landfill, Pierce County, Washington



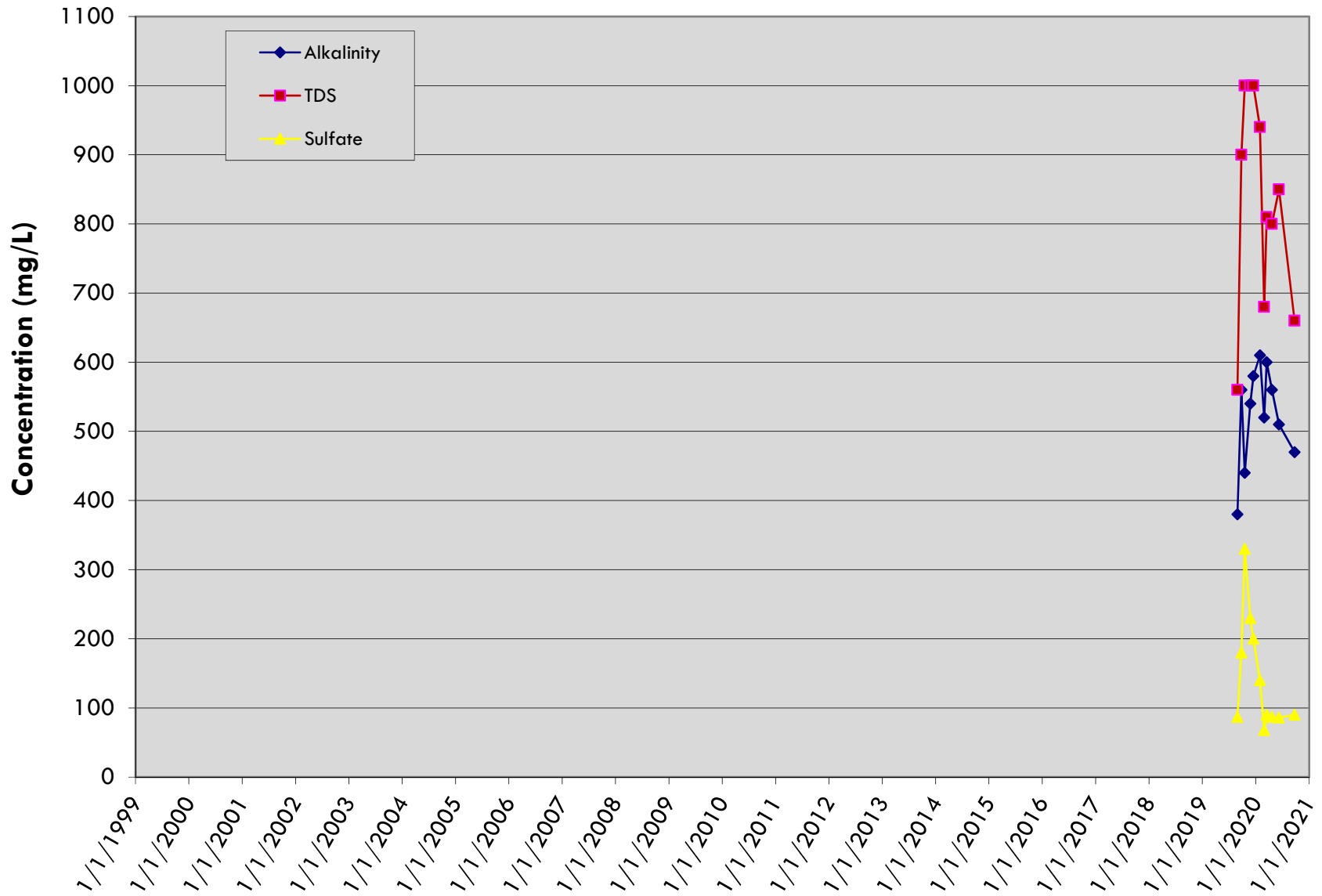
LDCS-6A

LRI Landfill, Pierce County, Washington



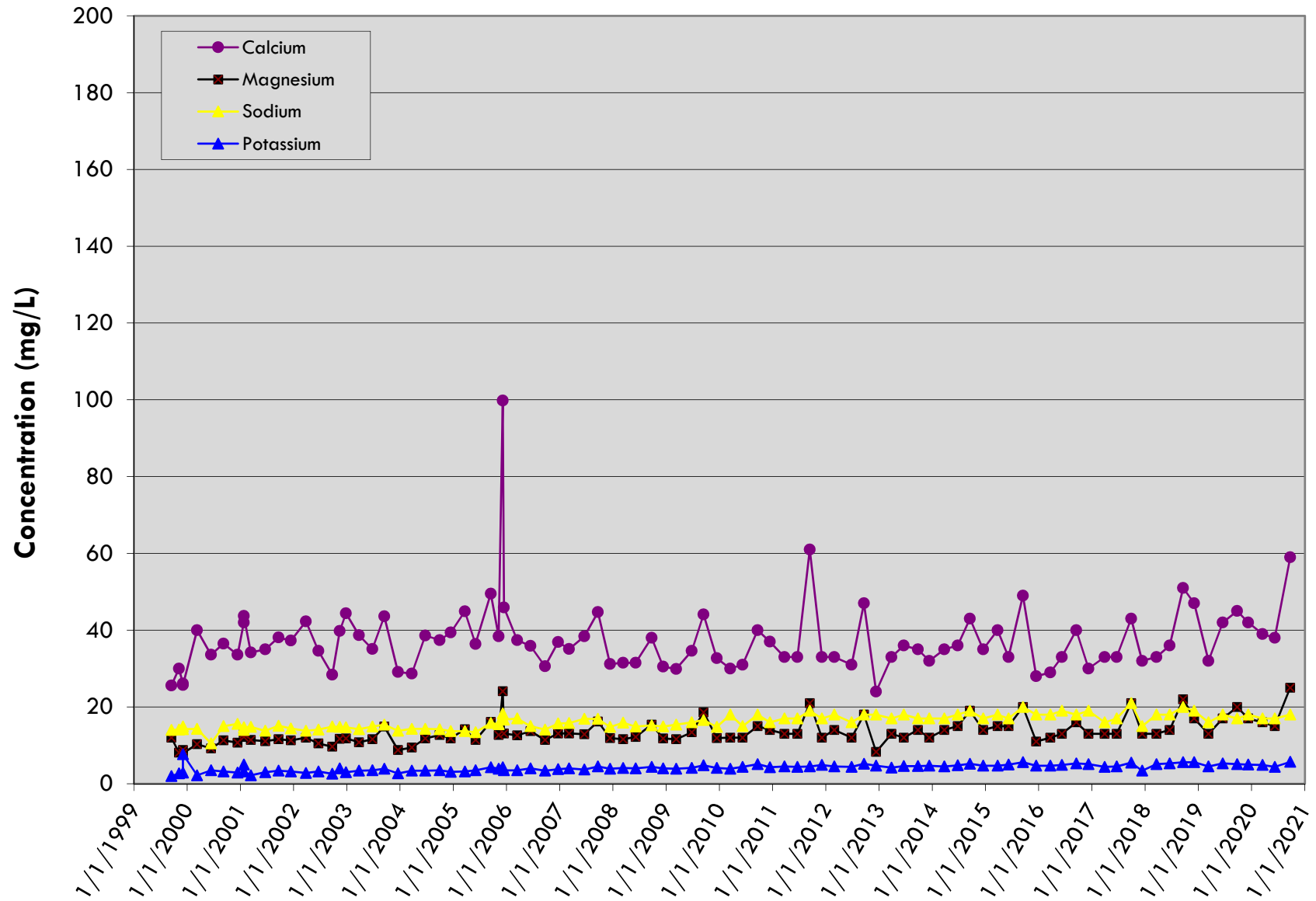
LDCS-7

LRI Landfill, Pierce County, Washington



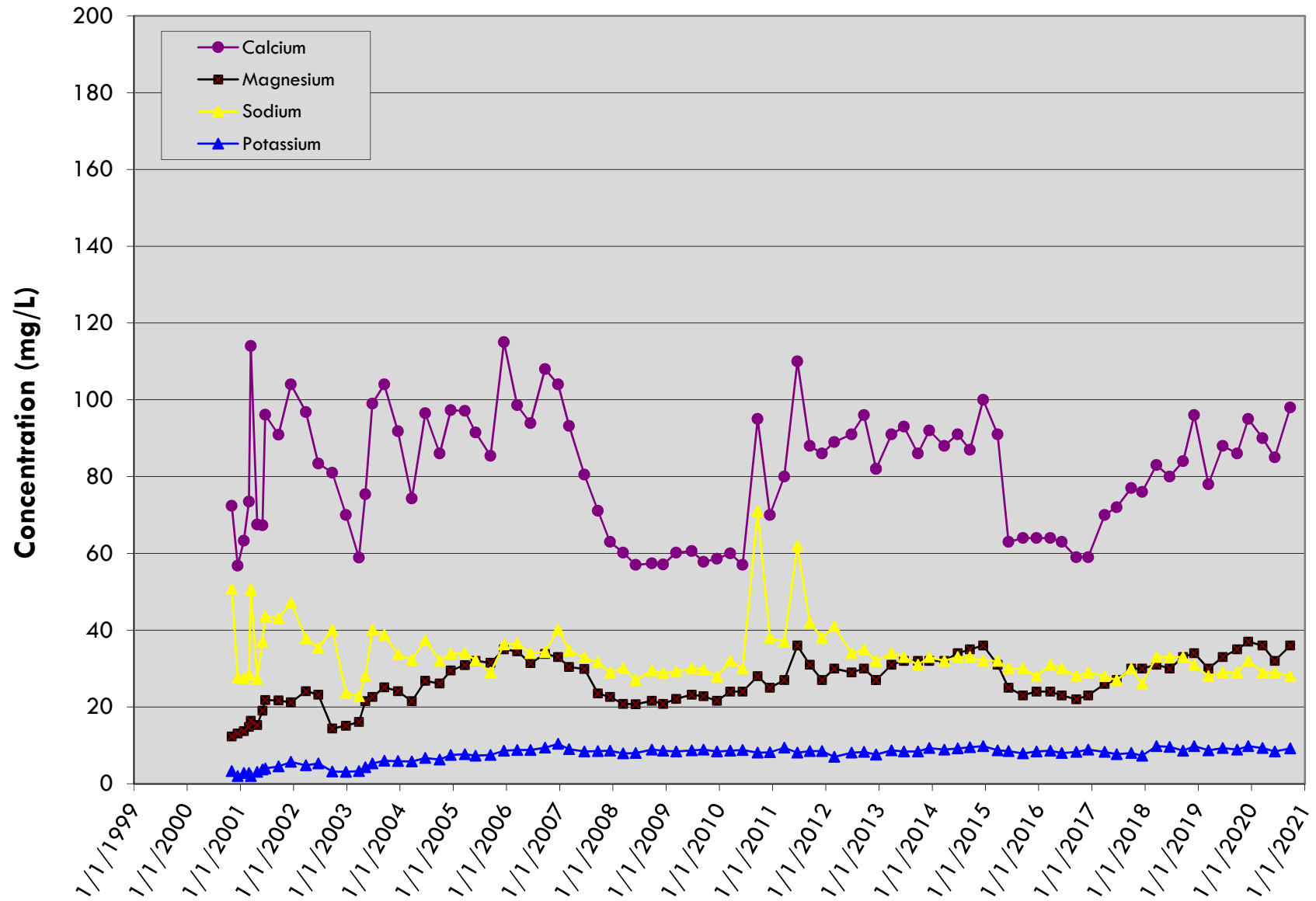
LDCS-1

LRI Landfill, Pierce County, Washington



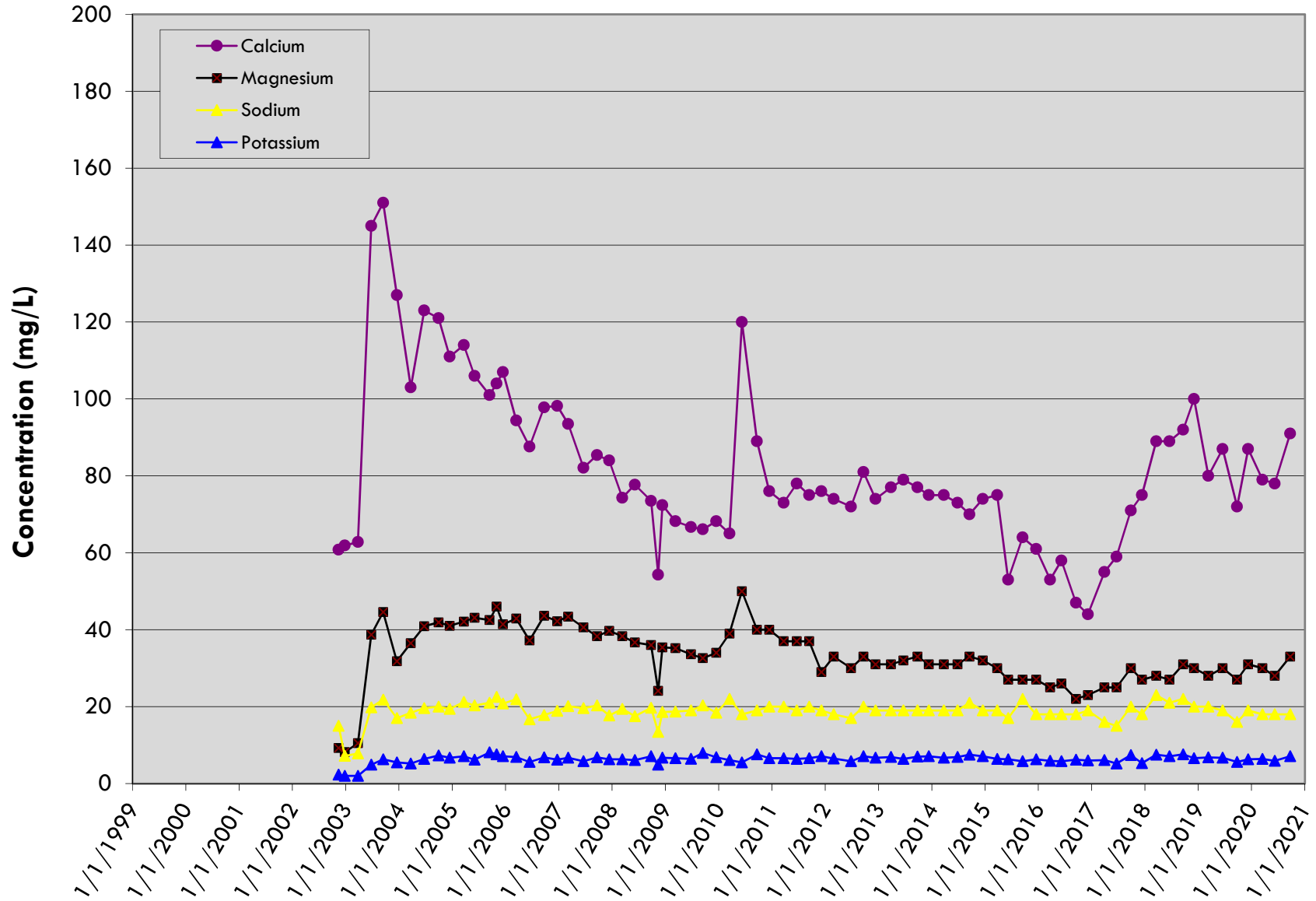
LDCS-2A

LRI Landfill, Pierce County, Washington



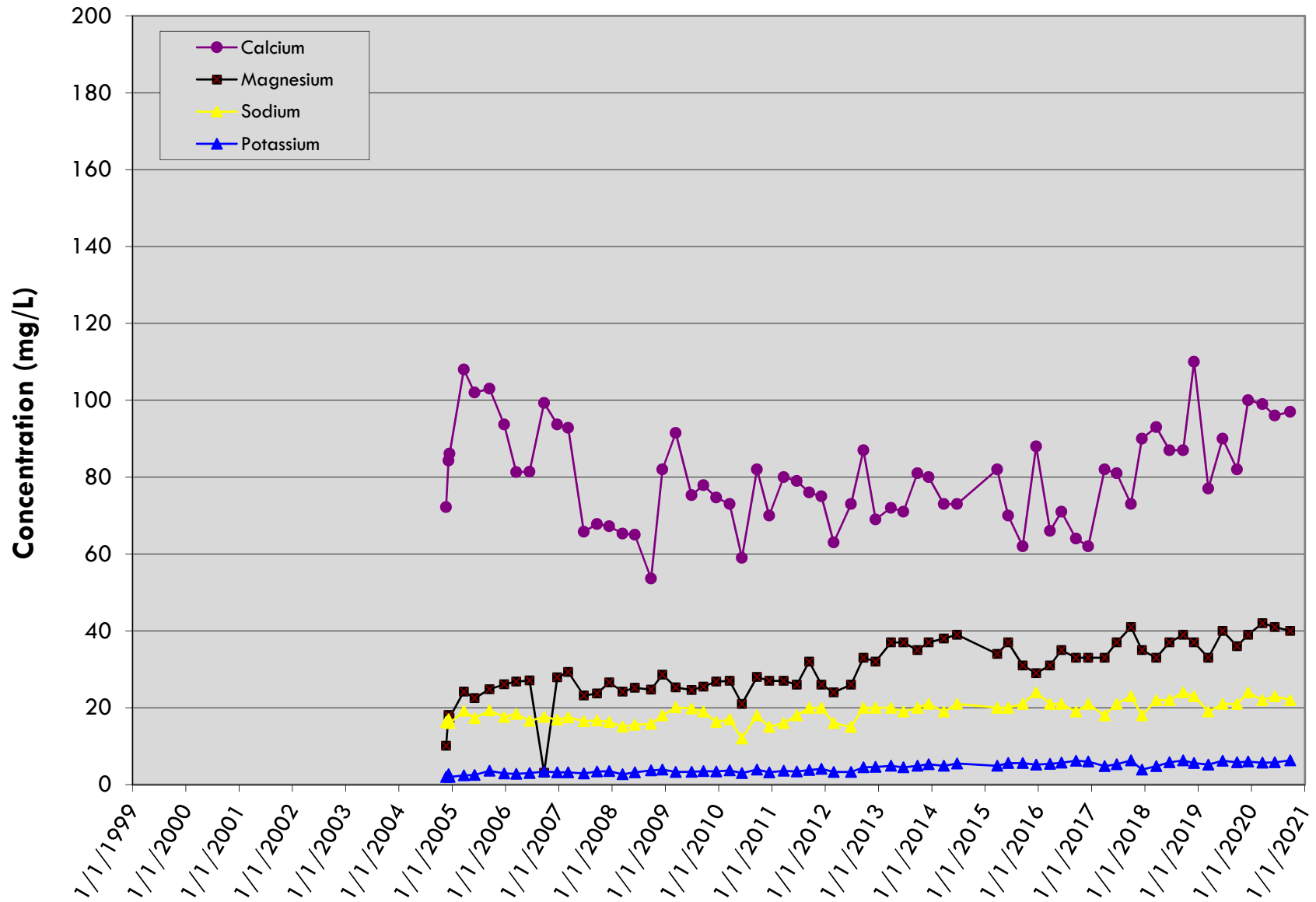
LDCS-2B

LRI Landfill, Pierce County, Washington



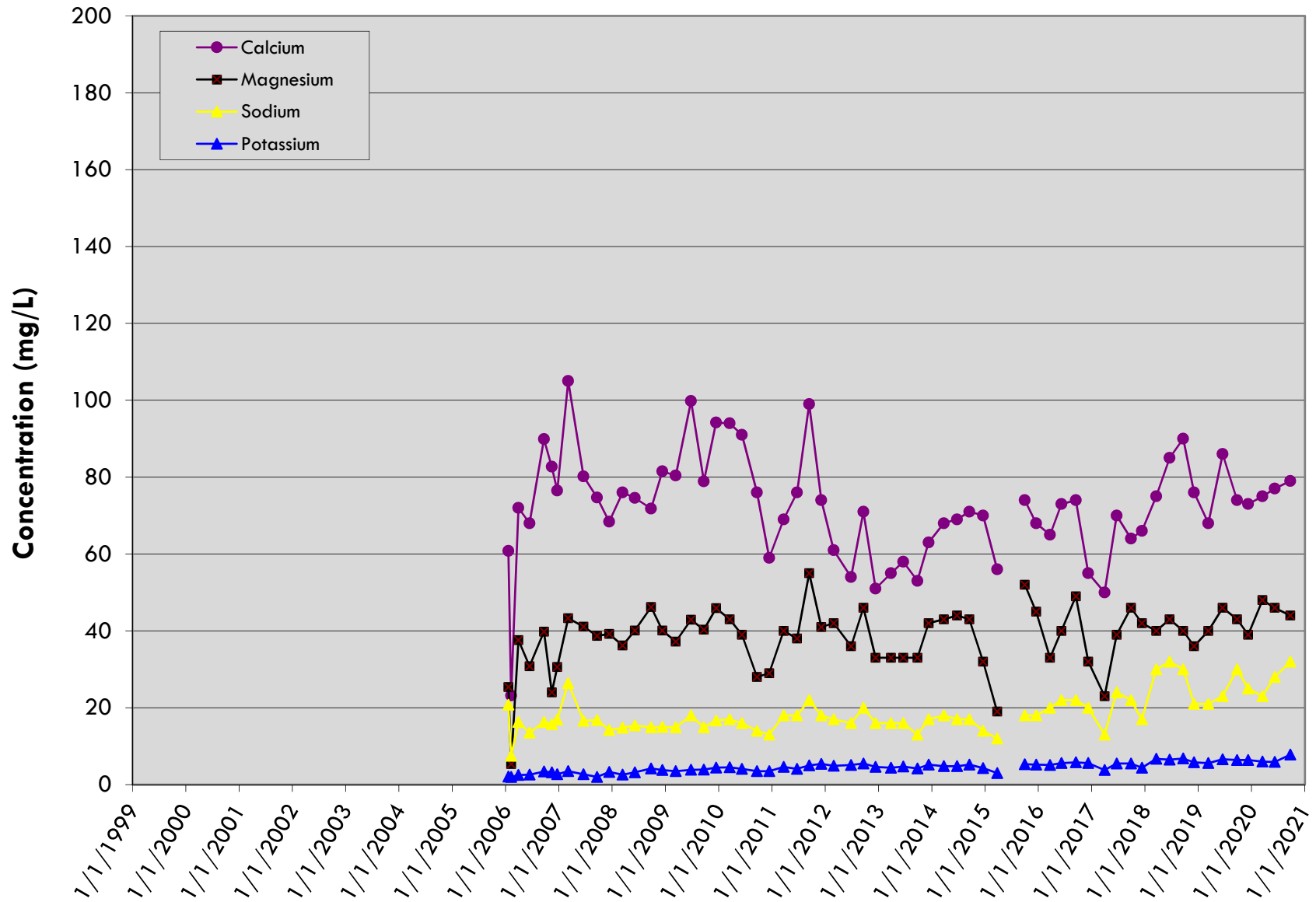
LDCS-3A

LRI Landfill, Pierce County, Washington



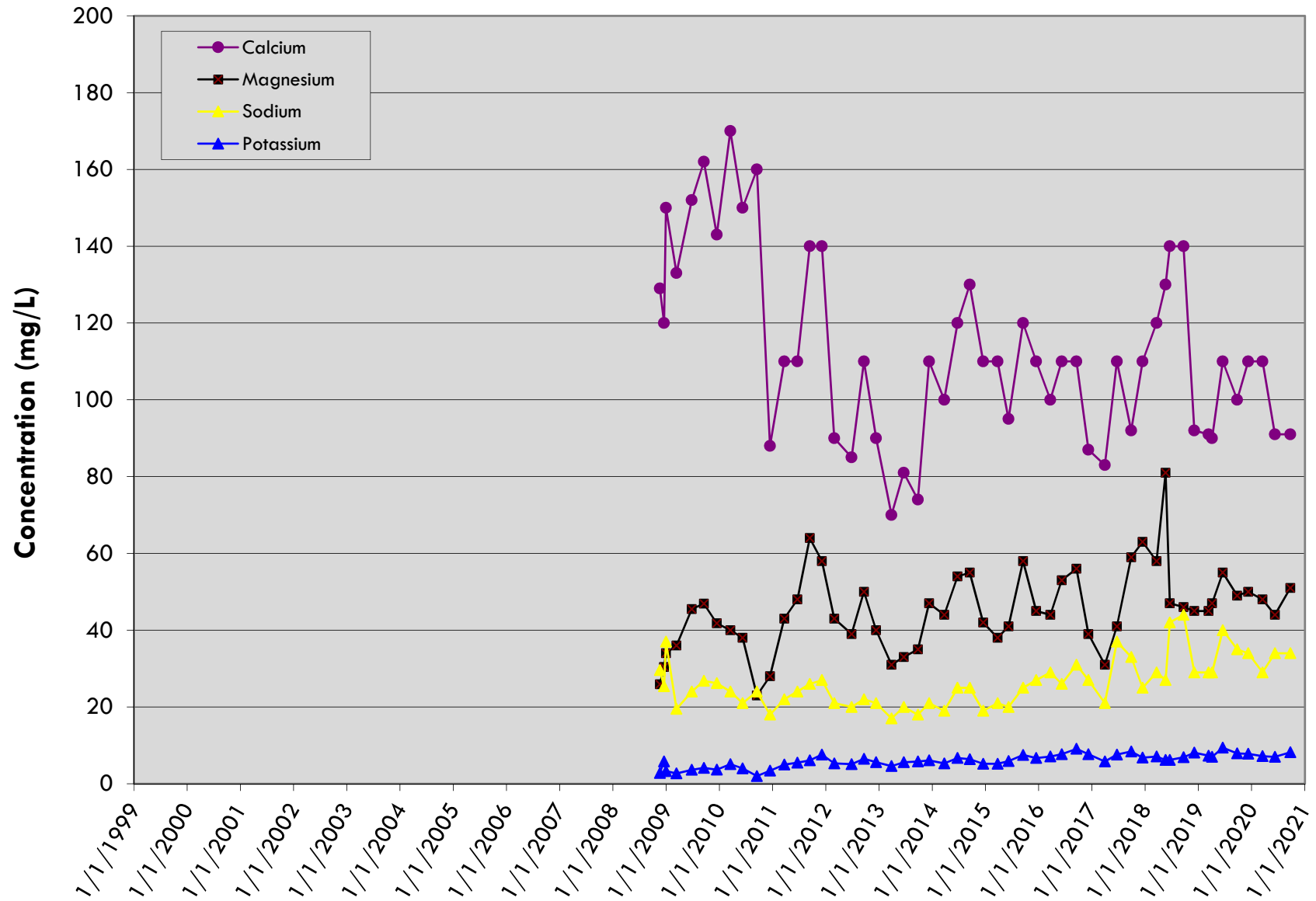
LDCS-4A

LRI Landfill, Pierce County, Washington



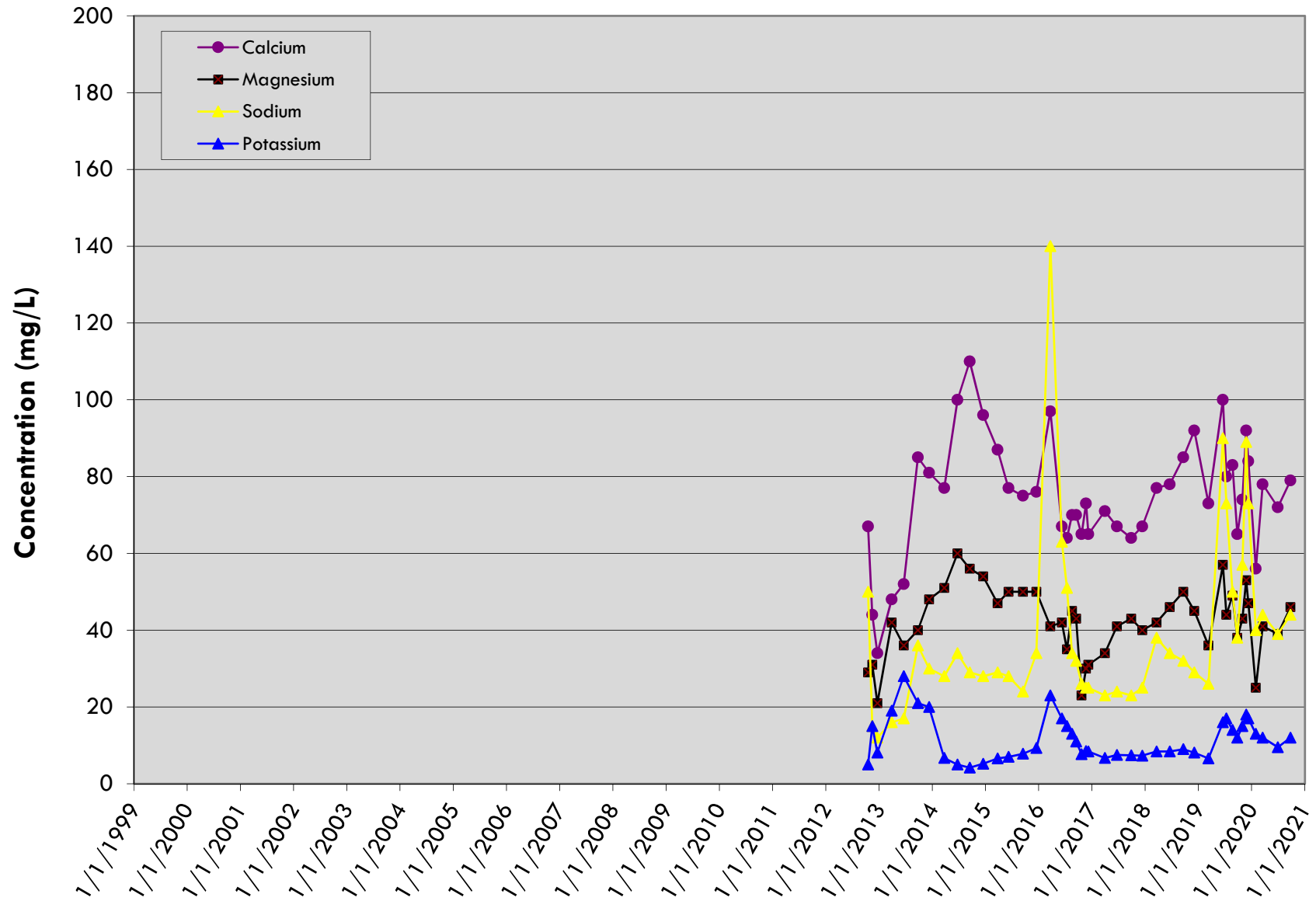
LDCS-4B

LRI Landfill, Pierce County, Washington



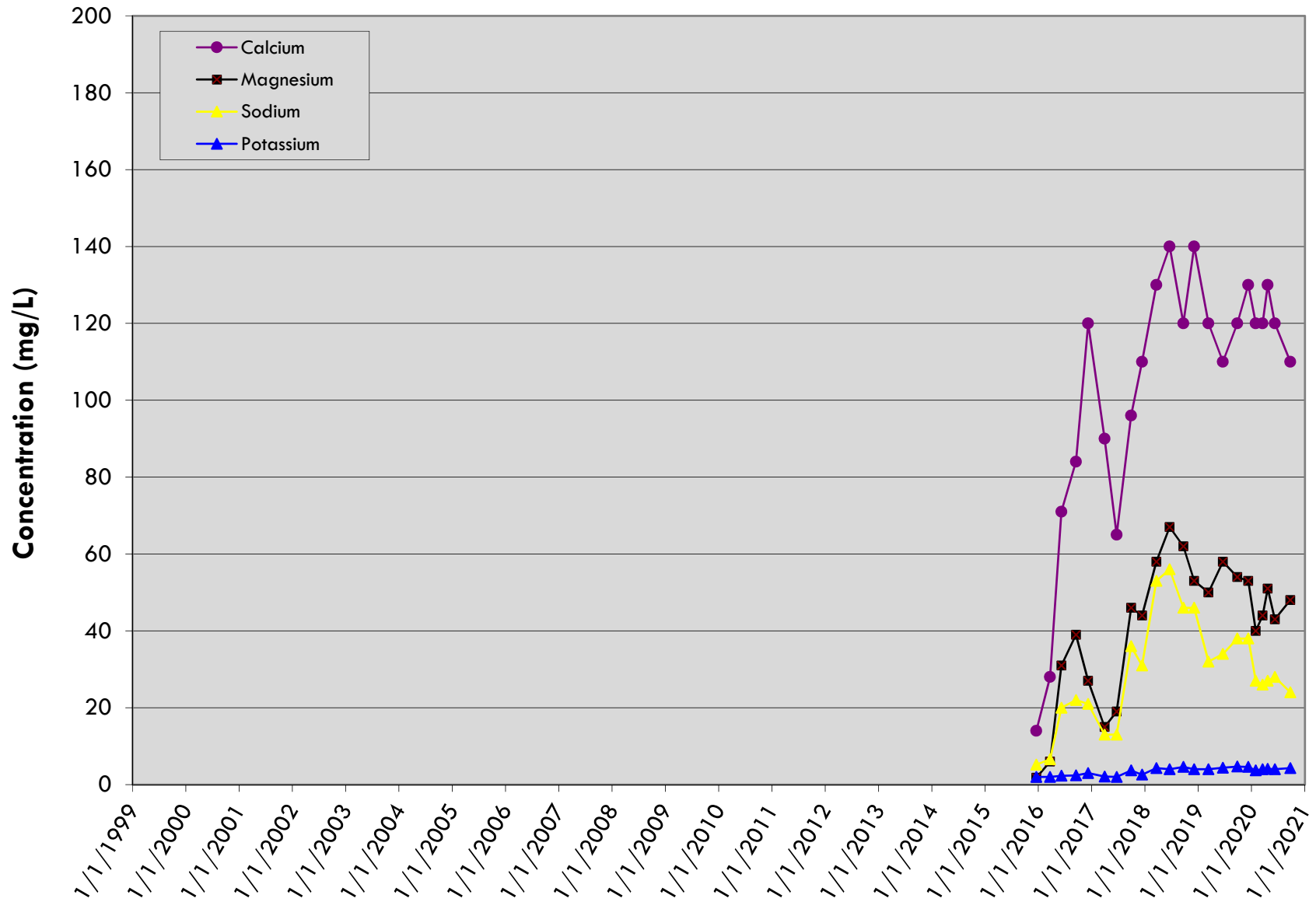
LDCS-5

LRI Landfill, Pierce County, Washington



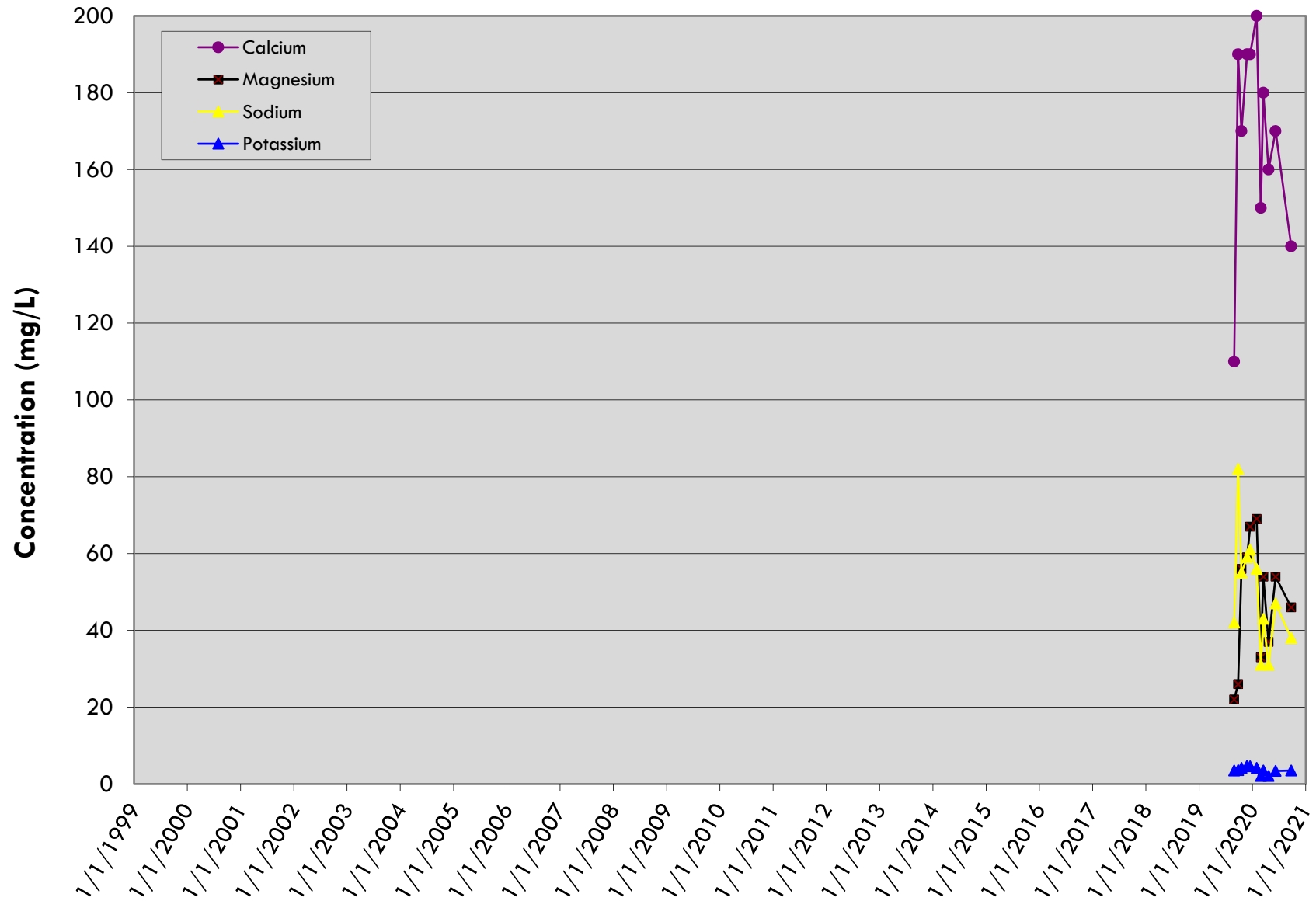
LDCS-6A

LRI Landfill, Pierce County, Washington



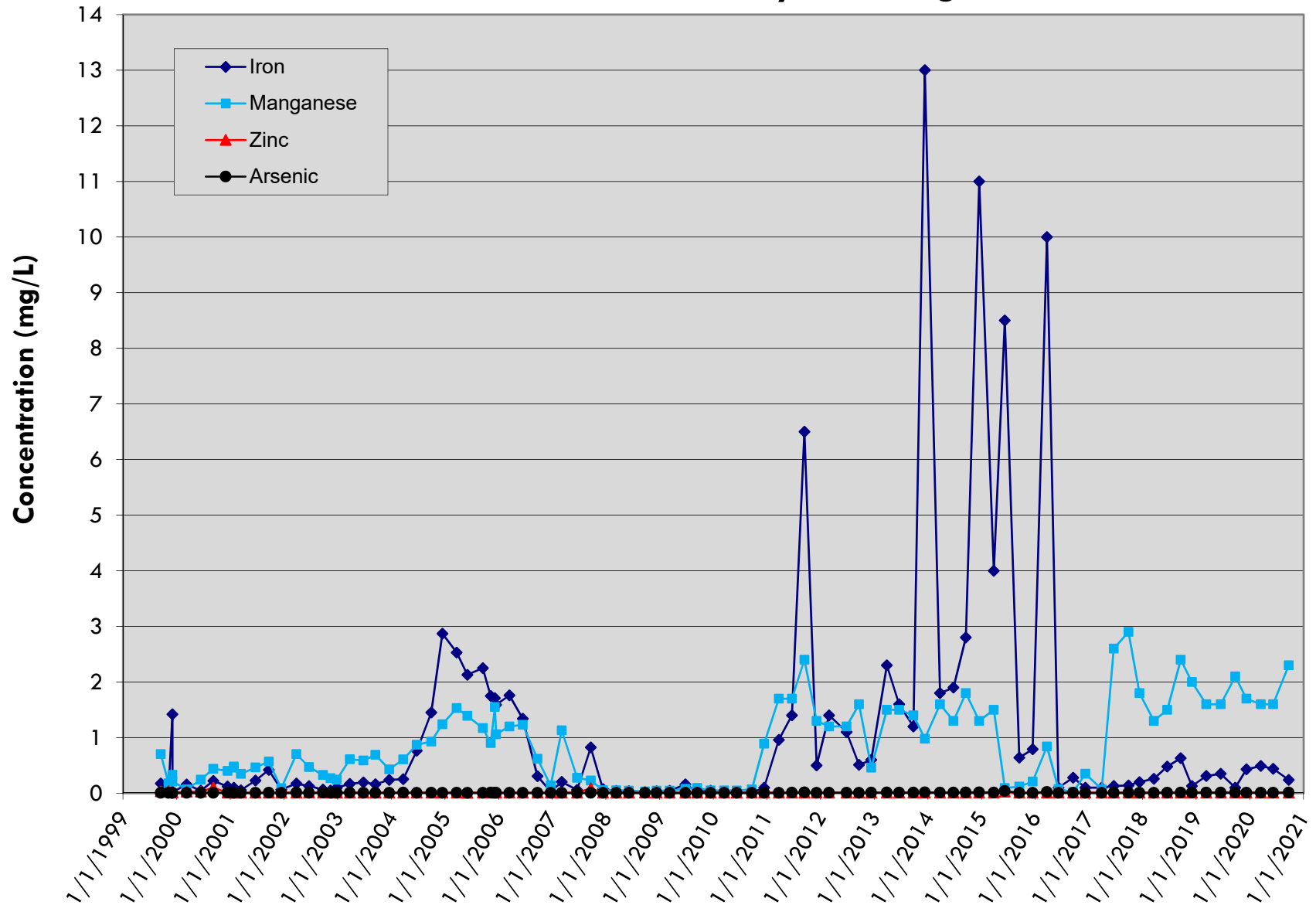
LDCS-7

LRI Landfill, Pierce County, Washington



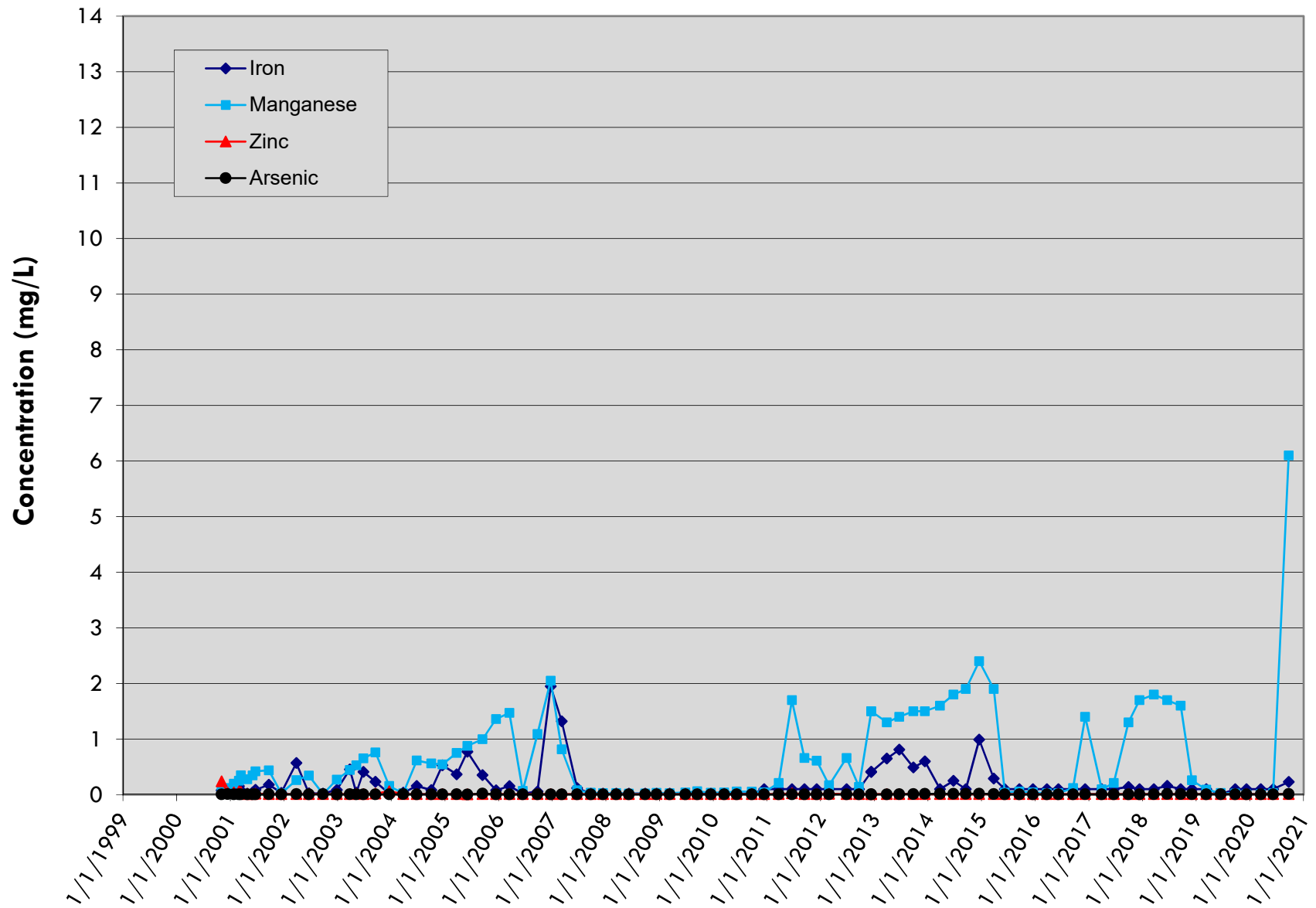
LDCS-1

LRI Landfill, Pierce County, Washington



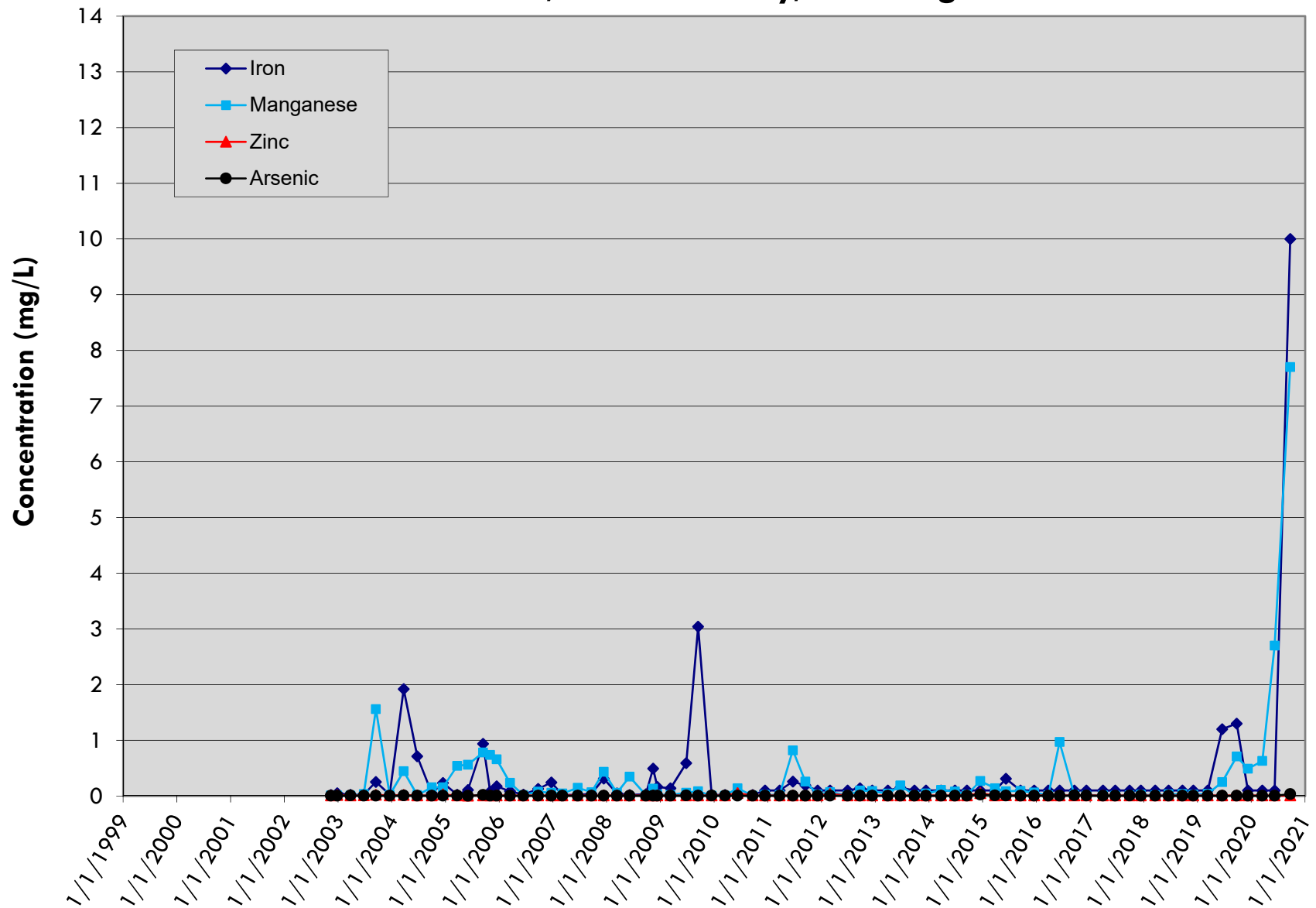
LDCS-2A

LRI Landfill, Pierce County, Washington



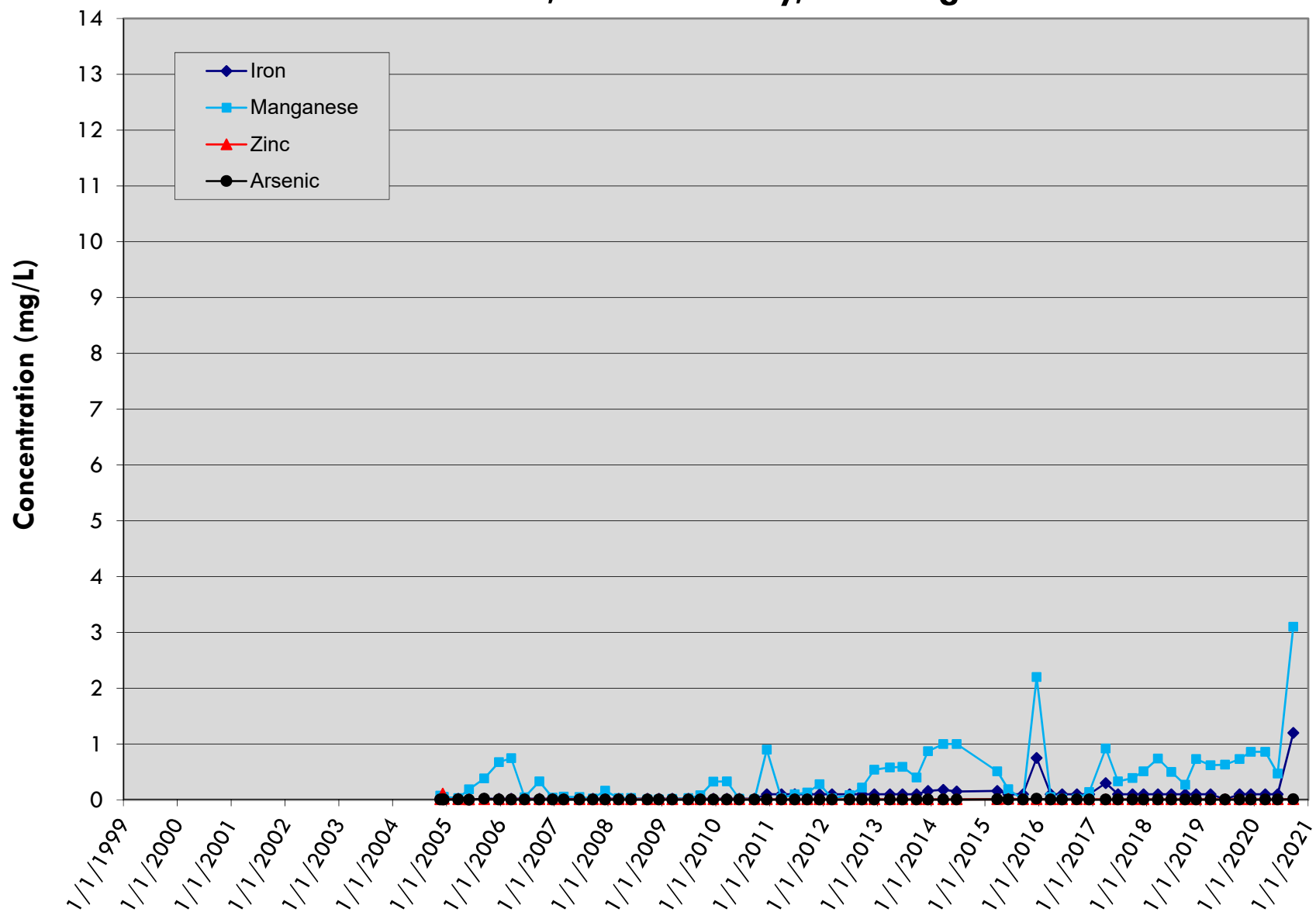
LDCS-2B

LRI Landfill, Pierce County, Washington



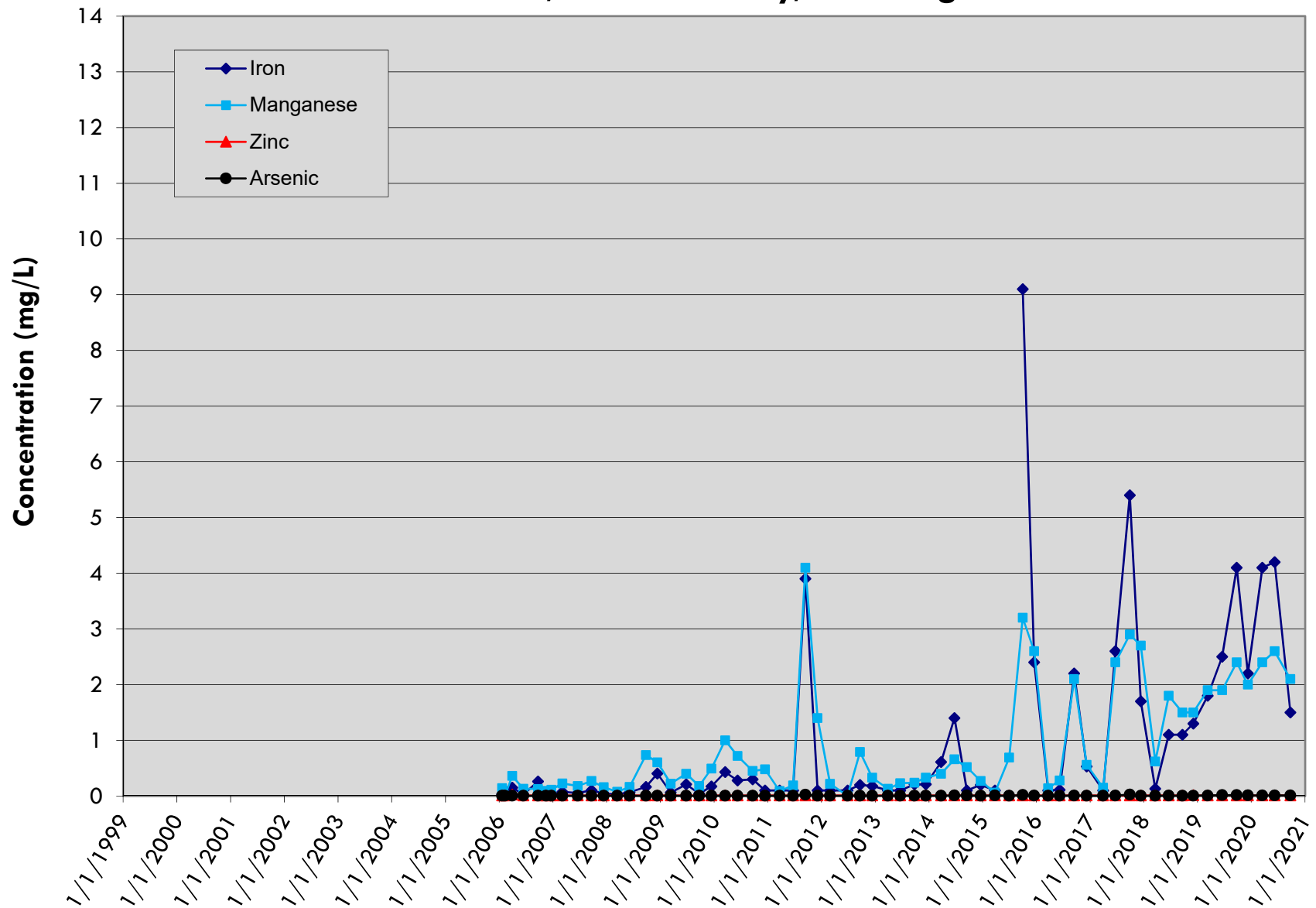
LDCS-3A

LRI Landfill, Pierce County, Washington



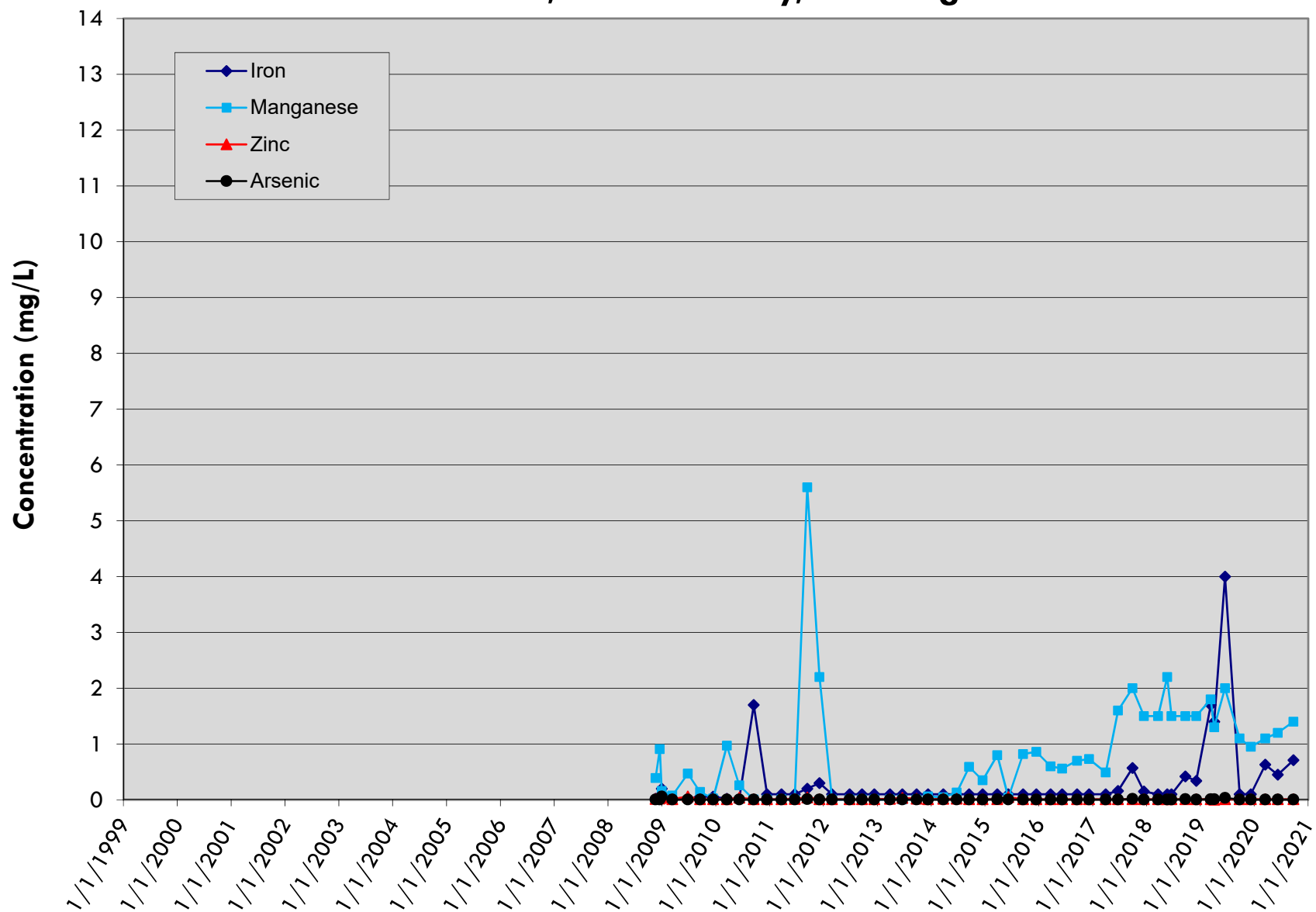
LDCS-4A

LRI Landfill, Pierce County, Washington



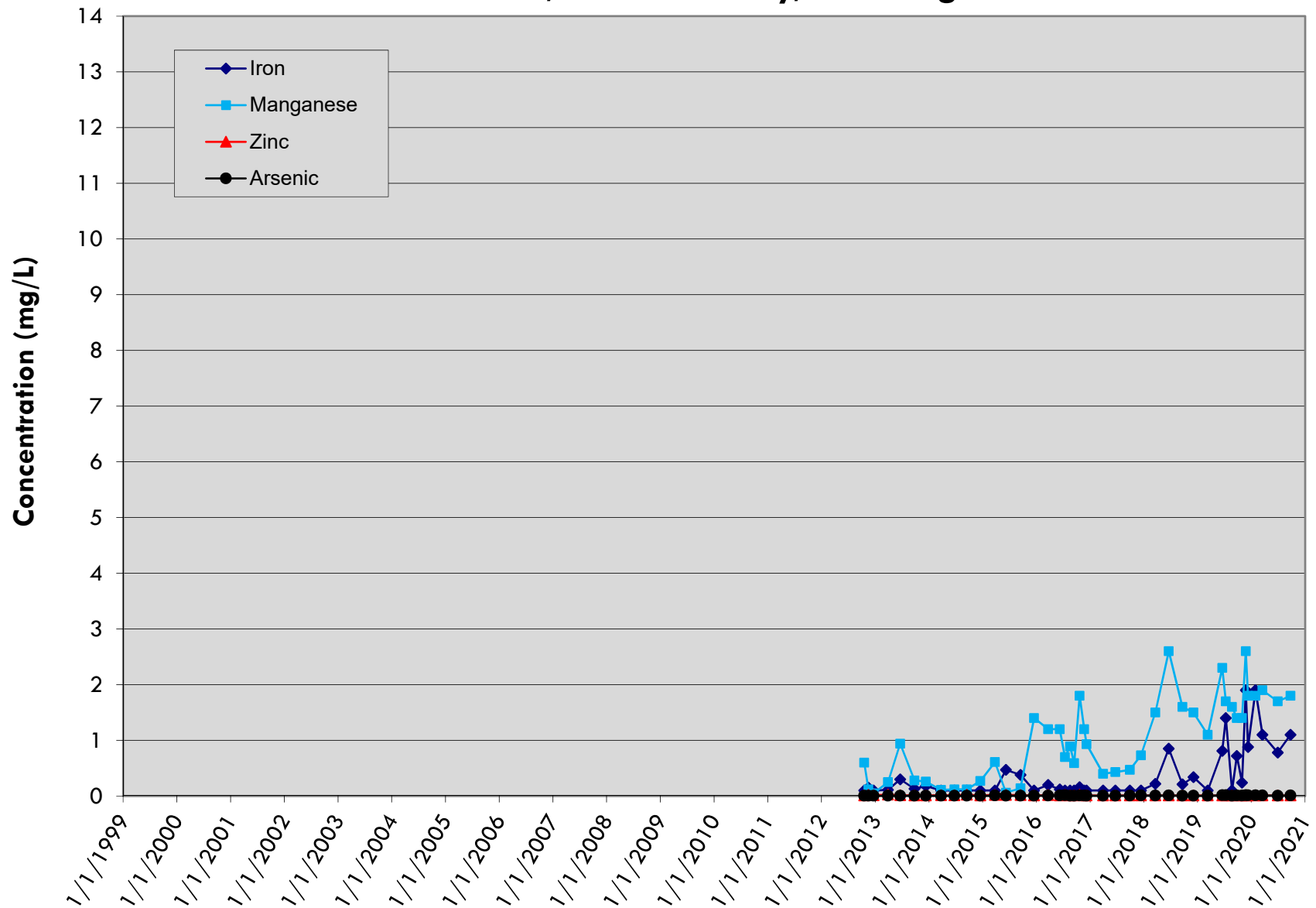
LDCS-4B

LRI Landfill, Pierce County, Washington



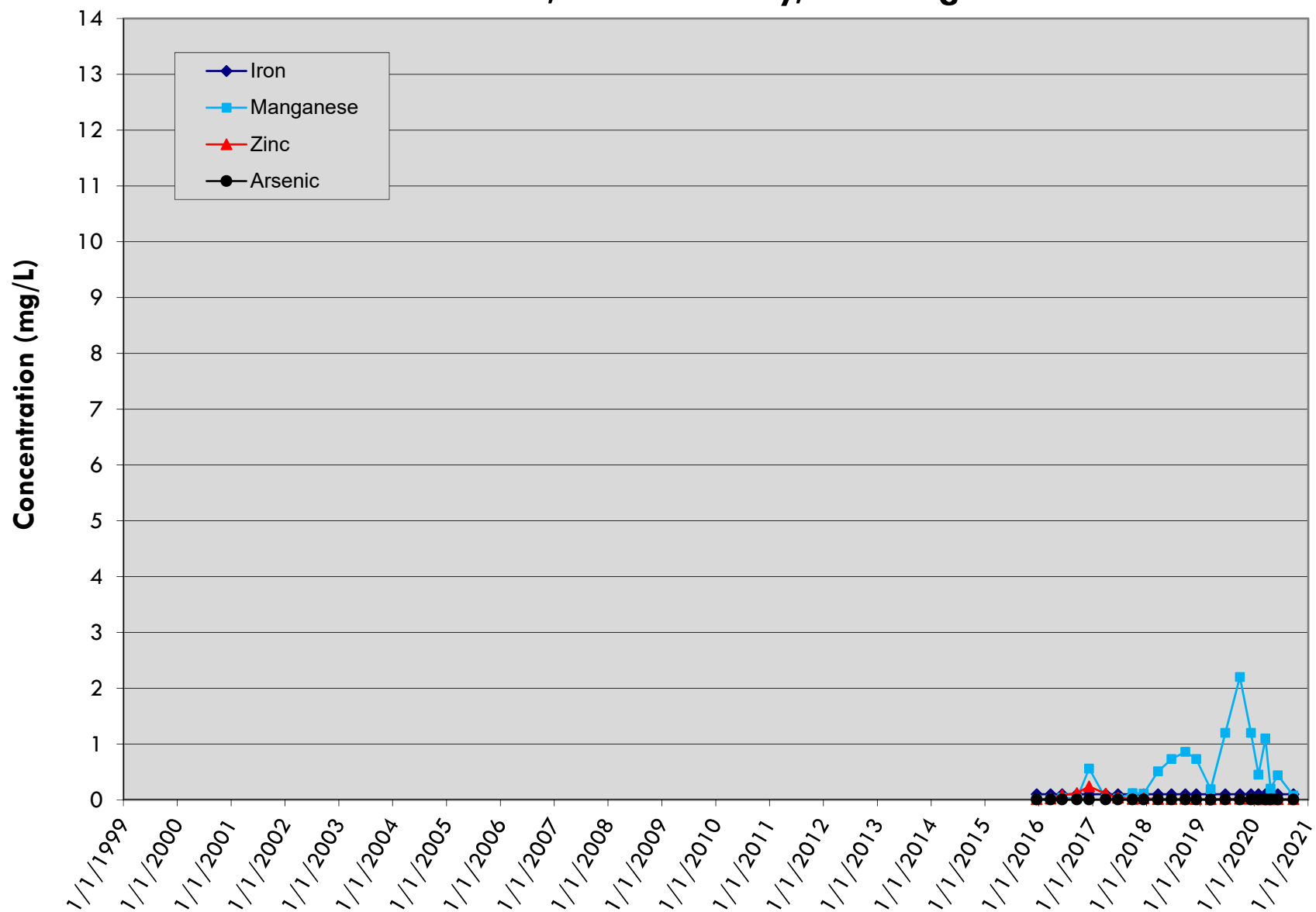
LDCS-5

LRI Landfill, Pierce County, Washington



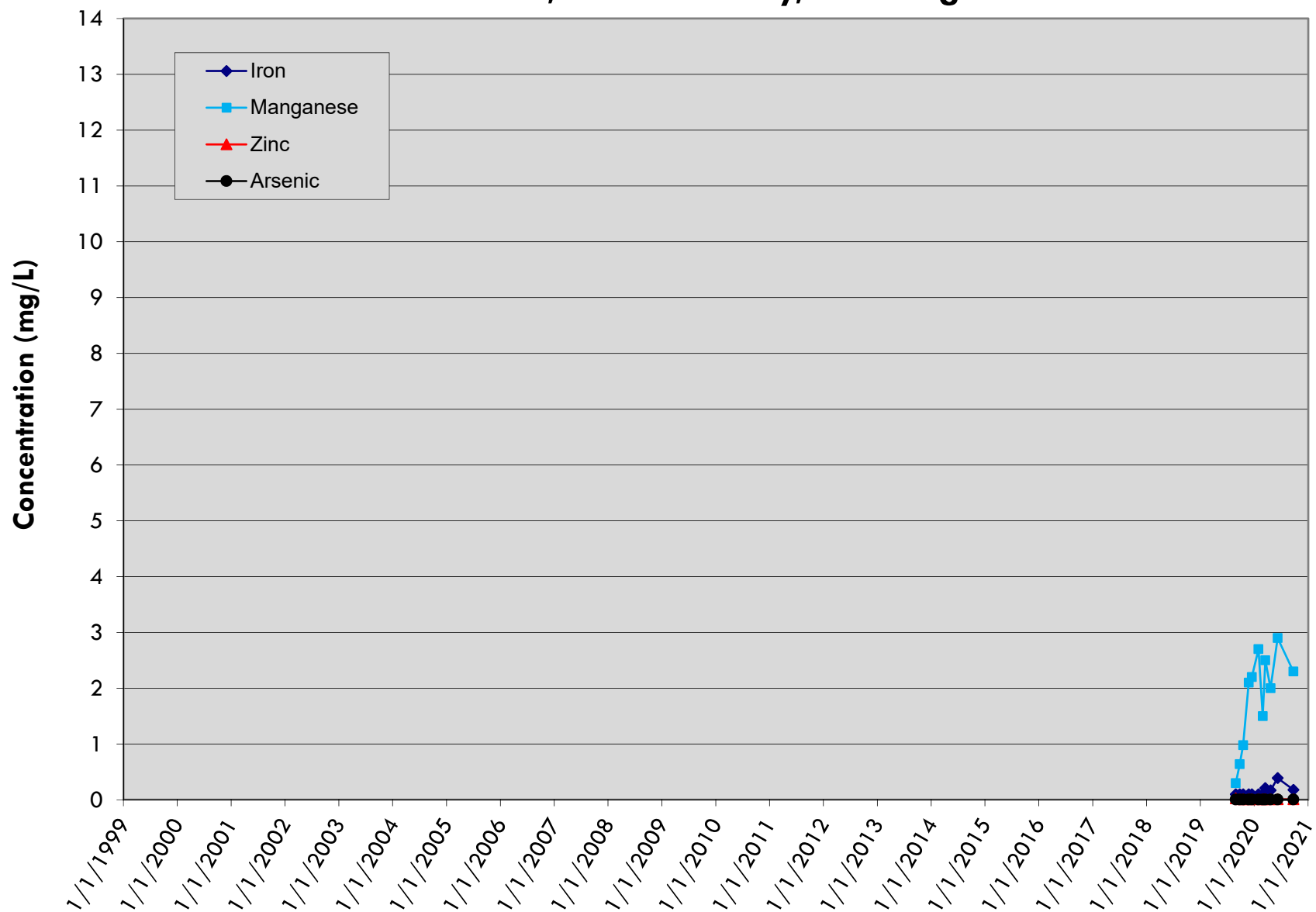
LDCS-6A

LRI Landfill, Pierce County, Washington



LDCS-7

LRI Landfill, Pierce County, Washington





Attachment H

LDCS & Leachate Pumping Records and Conductivity Measurements

**Summary of Leachate Volume and Depth Data
Third Quarter 2020
LRI Landfill, Pierce County, Washington**

Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 4B Leachate Volume (GPD)	Cell 4B Leachate Level (in.)	Cell 5 Leachate Volume (GPD)	Cell 5 Leachate Level (in.)	Cell 6 Leachate Volume (GPD)	Cell 6 Leachate Level (in.)	Cell 7 Leachate Volume (GPD)	Cell 7 Leachate Level (in.)
7/1/2020	5,528	10.7	0	10.0	2,654	8.9	5,023	9.1	9,300	8.4	12,939	10.4	10,584	14.9	11,525	8.9	0	16.1
7/2/2020	1,184	11.0	0	10.6	3,653	8.6	10,113	8.9	15,497	10.0	12,669	10.4	10,837	14.9	10,228	9.0	0	16.9
7/3/2020	2,914	10.6	7,621	7.7	3,286	9.3	5,067	8.6	13,343	9.7	12,669	10.4	10,867	14.3	10,142	9.0	2,334	17.7
7/4/2020	2,095	10.9	0	7.8	2,845	8.7	5,254	8.8	15,205	8.9	11,501	10.4	10,321	14.3	11,090	8.8	9,567	14.7
7/5/2020	2,519	10.9	0	9.1	4,032	9.3	5,294	8.9	10,190	8.1	11,501	10.5	10,321	14.3	11,090	8.7	9,567	15.1
7/6/2020	2,328	10.9	0	9.9	3,833	8.7	5,267	9.0	13,377	9.1	11,501	10.5	10,321	14.7	10,156	8.8	13	15.8
7/7/2020	1,019	11.3	0	10.7	2,567	8.8	5,171	9.0	21,966	9.6	11,022	10.4	10,376	14.9	11,301	8.7	13	16.5
7/8/2020	3,538	11.2	7,775	8.8	3,279	9.1	8,721	9.1	11,150	9.6	12,460	10.3	10,562	14.9	11,407	8.9	5	17.1
7/9/2020	1,188	11.2	3	7.8	2,873	8.7	6,255	8.6	16,717	9.5	11,501	12.2	10,636	14.9	10,870	8.8	0	17.8
7/10/2020	1,433	11.2	0	9.1	2,208	9.2	4,649	8.7	8,288	9.9	3,355	16.0	10,354	14.6	10,870	8.5	6,824	17.8
7/11/2020	2,758	10.9	0	10.3	3,635	9.3	5,265	9.1	9,065	9.7	12,819	15.3	10,124	14.6	10,425	8.9	7,553	14.7
7/12/2020	3,387	11.1	7,584	9.0	1,424	8.2	8,648	9.3	12,601	8.9	12,819	15.4	10,124	14.6	9,783	8.9	7,553	15.1
7/13/2020	1,690	10.9	0	6.8	3,369	9.0	4,798	8.7	6,386	10.0	12,819	16.0	10,124	14.9	9,097	8.7	15	15.8
7/14/2020	938	11.5	0	8.3	2,360	8.9	8,271	9.2	16,787	8.9	12,819	15.6	0	14.9	9,098	8.6	12,131	14.4
7/15/2020	3,644	11.0	0	9.3	3,396	9.3	5,746	8.6	10,124	9.5	3,834	15.7	20,310	14.9	9,197	8.2	12,131	12.7
7/16/2020	2,531	10.8	0	10.5	2,181	8.6	5,353	8.9	11,677	10.0	16,773	15.0	10,094	14.9	9,370	8.5	0	13.5
7/17/2020	3,325	10.5	0	11.0	2,666	8.8	6,173	9.0	15,507	6.9	11,501	15.0	10,050	14.9	10,746	8.9	0	14.2
7/18/2020	2,960	10.7	7,852	8.6	2,919	8.7	5,953	8.7	9,432	6.6	13,738	15.1	9,887	14.9	10,802	8.7	0	14.9
7/19/2020	2,827	10.8	0	7.6	2,851	8.6	4,675	9.1	9,774	6.6	13,738	15.4	9,887	14.9	8,316	8.3	0	15.5
7/20/2020	2,718	10.6	0	8.7	2,733	8.8	8,824	9.2	10,037	6.7	13,738	15.0	9,887	12.0	8,032	7.8	11,051	14.4
7/21/2020	2,675	10.8	0	10.2	3,973	8.6	5,064	8.8	11,017	6.8	16,773	15.7	10,276	14.9	8,320	8.2	11,051	12.6
7/22/2020	2,420	10.8	0	11.3	2,644	8.8	4,424	9.3	10,622	7.0	18,690	14.7	10,470	14.9	11,048	8.7	0	13.3
7/23/2020	1,346	11.0	7,571	8.4	3,116	8.5	8,576	9.2	10,017	6.4	16,773	15.3	10,792	14.9	11,107	8.9	6,956	12.6
7/24/2020	3,946	10.7	0	7.9	2,754	8.5	6,951	9.0	10,486	6.4	11,501	15.0	9,780	11.6	9,870	9.0	6,956	11.9
7/25/2020	2,637	10.9	0	9.7	2,413	8.9	5,202	8.9	9,800	6.9	12,619	15.3	10,525	11.6	8,782	8.5	1,238	12.5
7/26/2020	3,210	10.7	0	10.5	3,964	9.0	5,724	9.2	10,214	6.5	12,619	15.3	10,525	11.6	8,649	7.3	1,791	12.7
7/27/2020	2,981	10.6	2,020	10.9	4,230	9.0	5,358	9.7	10,391	6.7	12,619	15.2	10,525	14.9	6,690	5.6	1,791	13.1
7/28/2020	0	11.7	0	11.1	3,070	11.7	4,884	9.5	3,970	8.4	14,856	18.2	11,238	14.9	7,139	8.3	63	13.7
7/29/2020	5,178	10.9	0	12.3	3,600	11.6	9,569	17.0	11,587	15.8	4,792	17.0	10,511	20.0	13,848	13.1	0	14.3
7/30/2020	1,954	11.0	0	13.6	2,631	8.7	5,185	8.9	12,474	7.0	35,942	16.1	10,511	13.1	13,953	7.0	0	14.8
7/31/2020	2,964	10.6	0	14.4	6,105	9.0	9,336	9.2	10,145	7.0	11,200	16.1	0	13.1	11,531	8.3	0	15.4
8/1/2020	1,832	11.1	0	15.3	3,919	9.3	4,780	8.7	9,845	6.8	0	16.2	33,602	14.9	11,652	8.4	71	15.9
8/2/2020	1,902	10.9	0	16.0	1,326	8.8	7,835	9.2	9,878	6.9	479	16.1	0	14.9	9,284	8.2	0	16.4
8/3/2020	5,813	10.0	15,346	10.6	3,227	10.9	1,718	11.2	10,190	6.5	13,418	16.2	11,976	14.9	8,349	8.6	0	16.8
8/4/2020	104	11.6	1,705	7.5	0	14.0	0	22.8	10,208	6.7	13,418	16.2	12,258	12.5	8,349	7.6	173	14.4
8/5/2020	1,083	11.1	6,191	8.6	0	8.4	0	27.9	3,904	8.4	13,418	16.1	12,108	14.9	8,504	7.5	0	12.8
8/6/2020	2,539	11.0	5,295	9.6	0	8.4	0	30.4	3,345	16.5	14,856	16.1	12,108	14.9	12,186	8.7	1,650	13.1
8/7/2020	479	11.9	7,370	10.2	75	13.9	0	29.9	0	20.4	19,968	16.4	12,618	12.7	12,354	8.5	0	13.1
8/8/2020	245	12.0	3,545	10.2	2	8.4	0	22.6	0	23.0	19,968	16.8	12,618	12.7	8,180	10.6	0	12.7
8/9/2020	10,624	10.0	642	11.0	118	10.3	0	9.1	0	24.7	19,968	17.3	12,618	12.7	11,271	16.1	5,842	12.7
8/10/2020	4,648	10.2	8,590	8.1	45	8.6	4,916	8.5	27,996	17.4	22,044	16.1	14,786	13.1	11,276	7.9	8	13.2
8/11/2020	3,030	10.7	3	7.7	0	8.7	4,526	8.8	14,596	7.7	23,961	15.9	12,980	13.4	8,974	9.9	6	13.6
8/12/2020	14,058	8.1	0	8.9	0	8.6	7,529	11.3	13,517	7.0	18,210	15.7	12,212	14.5	10,223	9.0	0	14.0
8/13/2020	0	10.2	0	10.2	86	8.8	7,709	8.4	12,171	7.0	29,232	16.3	12,212	14.5	10,223	8.6	3	14.5
8/14/2020	2,910	10.6	7,717	9.3	0	8.6	5,510	8.6	12,086	7.2	18,370	15.7	12,277	14.5	8,590	8.9	0	14.8
8/15/2020	2,759	10.5	0	7.4	0	8.3	0	14.9	14,051	7.1	18,370	16.0	12,277	14.5	7,077	7.8	0	11.7
8/16/2020	1,706	11.0	0	9.4	0	8.8	0	25.6	15,599	7.2	18,370	15.9	12,277	14.5	8,123	7.3	12,958	11.7
8/17/2020	799	10.8	159	10.4	0	9.5	5,892	25.9	4,159	9.8	21,565	17.3	11,472	14.9	10,403	9.2	1,646	11.9
8/18/2020	0	11.6	0	11.6	10,474	14.2	7,745	15.7	18,279	7.3	20,127	15.7	11,662	14.9	10,487	8.5	28,823	12.0
8/19/2020	4,008	11.1	10,894	9.5	39,721	11.4	0	9.3	10,152	6.7	17,252	16.4	12,000	14.9	9,738	8.4	230	0.5
8/20/2020	2,728	11.0	242	7.9	22,871	9.2	0	9.1	8,380	7.1	12,939	16.8	14,575	11.2	7,636	9.1	0	1.3
8/21/2020	1,226	11.1	898	9.3	29,041	9.6	0	9.1	18	13.7	18,690	17.0	14,575	11.2	22,603	10.2	0	1.3
8/22/2020	2,669	10.9	6,615	9.8	32,417	9.3	0	9.1	3	20.7	18,690	17.0	14,575	11.2	22,955	9.3	0	1.3
8/23/2020	2,626	11.1	124	7.6	4,238	8.8	0	9.1	3	23.4	18,690	17.0	14,575	11.2	20,680	8.7	1,247	1.3
8/24/2020	1,746	11.1	0	9.1	0	9.7	0	8.8	16	19.3	479	17.0	12,644	14.9	8,152	8.7	24	4.5
8/25/2020	2,261	11.3	0	10.2	6	9.3	0	8.1	2	13.8	22,523	17.0	12,220	14.9	8,607	8.6	164	5.2
8/26/2020	2,642	10.8	18	10.9	0	9.4	68,936	9.0	4	14.8	10,543	17.7	11,900	13.5	8,646	8.7	182	5.8
8/27/2020	2,208	10.7	8,129	9.2	0	9.4	0	9.9	13,428	13.0	12,939	17.9	11,828	14.4	8,335	8.6	52	6.4
8/28/2020	2,246	10.9	0	7.7	0	9.3	83,520	8.9	29,643	5.3	14,057	17.7	11,586	14.9	8,232	8.5	0	7.3
8/29/2020	869	11.0	0	9.3	0	9.5	7,354	8.9	20,766	0.5	14,057	18.2	11,380	14.9	9,616	8.6	0	7.7
8/30/2020	2,228	11.1	0	10.5	0	9.3	7,603	9.0	8,696	0.6	14,057	17.8	10,994	14.9	9,784	8.7	86	8.3
8/31/2020	2,470	10.9	7,734	10.2	0	9.4	8,111	9.2	16,888	4.0	10,543	18.0	11,202	14.9	9,083	8.7	60	8.8

Summary of Leachate Volume and Depth Data
Third Quarter 2020
LRI Landfill, Pierce County, Washington

Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 4B Leachate Volume (GPD)	Cell 4B Leachate Level (in.)	Cell 5 Leachate Volume (GPD)	Cell 5 Leachate Level (in.)	Cell 6 Leachate Volume (GPD)	Cell 6 Leachate Level (in.)	Cell 7 Leachate Volume (GPD)	Cell 7 Leachate Level (in.)
9/1/2020	1,961	11.0	46	7.9	0	9.5	4,040	9.0	4,959	2.0	10,543	17.6	11,150	13.8	9,184	8.6	60	10.2
9/2/2020	2,711	10.7	0	9.1	0	9.3	8,226	9.0	15,223	3.7	11,022	17.4	11,040	13.8	7,950	8.6	79	11.1
9/3/2020	2,634	11.0	0	10.3	0	9.2	8,224	9.2	3,608	5.3	18,210	17.8	11,092	13.8	8,109	8.5	0	11.7
9/4/2020	4,510	10.9	7,243	7.9	0	9.1	4,551	9.3	14,815	8.9	9,105	17.2	11,674	13.7	8,647	8.6	13	12.3
9/5/2020	1,067	11.0	21	7.6	152	8.6	8,478	8.9	19,319	0.9	14,696	17.6	10,558	13.8	10,924	8.5	0	12.8
9/6/2020	2,590	11.0	0	9.2	587	9.0	8,314	9.2	10,909	11.7	14,696	18.2	10,704	13.8	10,998	14.1	0	13.2
9/7/2020	2,366	11.0	14	10.1	0	9.3	6,554	9.5	9,005	0.4	14,696	16.8	11,090	13.8	11,650	13.9	0	13.6
9/8/2020	3,176	11.1	7,536	7.5	0	9.1	14,918	9.3	0	4.9	13,418	17.9	10,704	13.8	11,767	8.6	0	14.0
9/9/2020	4,246	10.6	399	7.5	1,102	9.1	8,223	9.5	4	9.9	11,501	17.9	11,326	13.7	7,616	8.1	0	14.4
9/10/2020	2,254	10.8	426	8.4	3,791	9.2	7,830	9.4	1	11.8	8,147	18.0	11,314	13.7	8,461	7.9	0	14.8
9/11/2020	1,779	10.9	359	9.1	3,972	9.1	6,581	9.1	8	13.6	13,418	18.0	10,708	13.7	9,804	8.9	0	14.9
9/12/2020	2,346	10.9	295	10.4	3,973	9.0	9,561	8.9	22,336	9.5	15,495	17.2	10,850	13.7	9,892	8.8	35,900	14.3
9/13/2020	1,643	10.9	260	11.2	3,975	9.2	8,790	9.2	26,186	3.5	15,495	18.1	11,050	13.6	9,189	8.9	35,900	14.5
9/14/2020	2,920	10.7	4,838	8.1	3,634	9.1	10,782	9.2	2,018	5.2	15,495	16.8	11,356	13.6	8,223	9.0	35,900	14.3
9/15/2020	2,482	11.3	35	8.1	599	9.2	9,204	9.1	17,709	6.7	12,939	17.5	13,404	13.5	9,681	8.9	36,000	13.7
9/16/2020	2,469	10.8	0	9.3	0	9.3	9,926	9.1	6,921	2.5	9,584	18.0	11,186	13.5	9,754	9.1	12,000	14.1
9/17/2020	1,748	11.0	7,046	9.0	515	9.2	7,931	9.2	13,335	7.2	23,003	17.8	10,998	13.9	9,091	9.1	0	14.5
9/18/2020	2,163	11.1	427	6.8	1,616	8.5	9,440	9.7	7,142	5.4	15,016	16.8	13,548	13.6	13,145	8.8	600	15.0
9/19/2020	1,044	11.4	306	8.0	3,969	8.6	10,472	9.1	0	12.0	15,016	17.6	10,806	13.6	13,270	9.3	0	14.0
9/20/2020	2,757	10.9	262	9.7	3,970	9.2	9,954	9.1	0	13.6	15,016	16.9	10,830	13.7	13,813	22.0	0	13.8
9/21/2020	3,234	11.0	321	10.7	3,960	9.4	10,885	9.2	19,431	11.2	13,418	17.0	10,458	13.7	13,971	8.9	0	14.3
9/22/2020	3,212	10.5	4,222	8.0	3,970	9.0	11,939	9.1	19,849	7.4	0	17.3	10,508	13.7	9,912	8.9	0	13.8
9/23/2020	4,558	10.7	190	7.7	2,128	8.6	9,070	9.3	7,903	11.6	11,022	16.8	23,500	13.3	21,921	27.4	13,500	11.5
9/24/2020	292	11.0	41	8.6	2,721	8.6	13,534	9.7	0	17.0	14,856	16.9	17,368	13.1	37,518	62.1	11,425	15.1
9/25/2020	9,501	11.5	3	10.3	3,090	8.6	15,486	10.1	9,041	15.7	14,856	16.8	19,202	13.4	38,069	55.5	11,425	15.7
9/26/2020	19,787	10.3	0	10.8	1,490	9.3	10,087	10.3	19,771	10.6	15,016	17.3	15,478	13.2	31,651	69.9	11,425	17.2
9/27/2020	2,250	10.1	0	11.0	0	7.7	14,348	10.1	5,915	14.3	15,016	17.0	13,770	13.2	41,905	58.2	11,425	11.5
9/28/2020	1,670	10.6	10,105	8.6	1,600	8.7	9,316	15.7	8,685	16.4	15,016	15.9	11,158	13.4	41,905	54.6	11,425	9.5
9/29/2020	2,290	10.5	4	7.4	3,090	9.8	11,843	15.4	5,748	15.7	28,274	16.4	10,446	14.5	32,836	43.7	11,425	11.0
9/30/2020	1,540	10.7	6	8.2	1,490	10.1	18,117	15.5	3,894	17.5	17,252	16.3	10,618	14.9	40,618	36.0	0	12.2

- = No data collected

**Summary of LDCS Volumes Pumped and Conductivity Data
Third Quarter 2020
LRI Landfill, Pierce County, Washington**

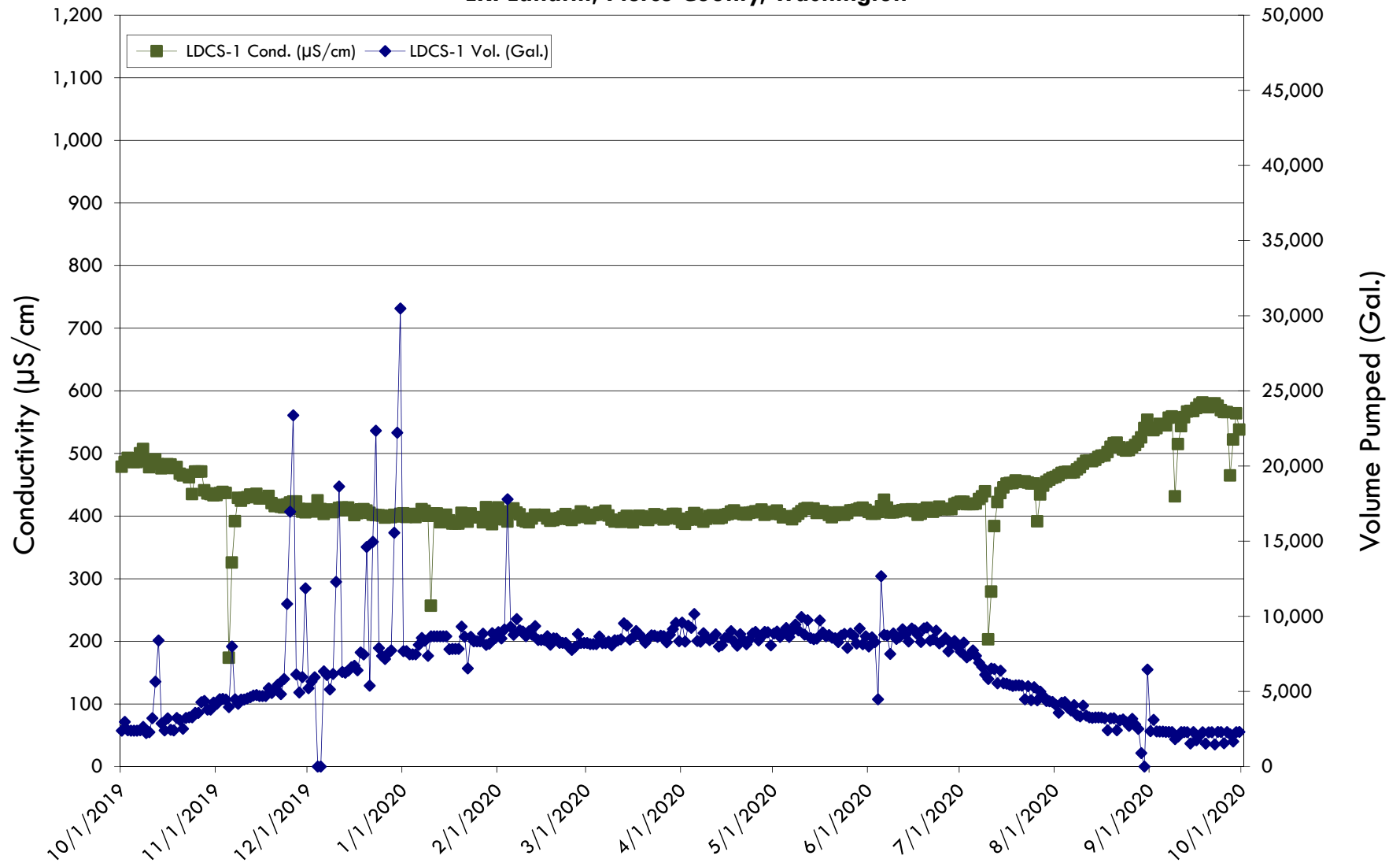
Date	Rainfall	LDCS-1 Vol. (Gal.)	LDCS-1 Cond. (µS/cm)	LDCS-2A Vol. (Gal)	LDCS-2A Cond. (µS/cm)	LDCS-2B Vol. (Gal)	LDCS-2B Cond. (µS/cm)	LDCS-3A Vol. (Gal)	LDCS-3A Cond. (µS/cm)	LDCS-4A Vol. (Gal)	LDCS-4A Cond. (µS/cm)	LDCS-4B Vol. (Gal)	LDCS-4B Cond. (µS/cm)	LDCS-5 Vol. (Gal)	LDCS-5 Cond. (µS/cm)	LDCS-6 Vol. (Gal)	LDCS-6 Cond. (µS/cm)	LDCS-7 Vol. (Gal)	LDCS-7 Cond. (µS/cm)
7/1/2020	0.01	7,640	423	690	726	1150	737	609	717	2,560	887	3,056	964	478	705	1,690	963	4,889	845
7/2/2020	0.01	8,250	423	610	744	1100	748	609	726	2,540	887	2,725	966	478	705	1,690	985	1,473	845
7/3/2020	0.00	7,270	419	690	745	1150	754	593	729	2,360	785	2,651	968	399	730	1,635	992	6,379	901
7/4/2020	0.00	7,420	419	630	720	1100	753	593	732	2,330	785	2,592	968	399	730	1,545	994	6,379	901
7/5/2020	0.00	7,730	419	600	728	1100	752	593	733	2,000	785	2,547	970	399	730	1,483	995	5,250	901
7/6/2020	0.00	7,370	420	660	745	1100	757	654	733	2,150	879	2,489	971	388	726	1,432	995	5,301	917
7/7/2020	0.01	6,910	427	580	752	1050	759	609	733	2,150	866	2,437	969	388	800	1,368	995	934	935
7/8/2020	0.00	6,640	431	590	752	1050	761	608	733	2,150	844	2,359	969	424	844	1,365	997	3,879	942
7/9/2020	0.01	6,110	439	610	761	1000	764	541	732	2,140	808	2,426	969	473	836	1,341	999	5,642	941
7/10/2020	0.00	5,830	203	620	716	1000	760	586	726	2,010	813	2,312	968	398	836	1,243	999	5,642	957
7/11/2020	0.00	6,520	279	550	716	1000	760	586	726	2,090	813	2,338	969	398	836	601	999	6,204	957
7/12/2020	0.00	6,490	384	530	634	950	665	586	634	1,970	813	2,100	970	398	836	0	799	6,204	957
7/13/2020	0.00	5,540	422	560	709	950	731	542	696	1,810	789	2,109	970	384	854	3,336	929	1	1,088
7/14/2020	0.00	6,380	437	550	735	950	756	541	718	1,960	696	2,010	971	384	860	3,336	975	6,218	1,094
7/15/2020	0.00	5,540	446	560	738	900	767	541	726	1,960	778	1,934	973	418	862	1,243	991	6,218	1,144
7/16/2020	0.00	5,520	452	560	754	900	772	542	727	2,100	784	1,881	975	359	862	1,175	998	2,575	1,206
7/17/2020	0.00	5,440	453	550	758	850	776	539	726	1,980	816	2,110	977	460	847	1,082	1,000	3,527	927
7/18/2020	0.00	5,370	452	540	726	900	776	539	730	2,140	816	2,171	982	460	847	1,067	1,000	3,527	927
7/19/2020	0.00	5,410	457	490	734	850	776	539	735	2,330	816	1,903	994	460	847	1,041	1,000	4,842	927
7/20/2020	0.00	5,410	455	550	779	850	779	679	735	2,670	860	1,678	999	480	847	978	999	4,883	905
7/21/2020	0.00	5,380	455	540	761	800	782	555	734	2,700	845	1,664	999	479	870	958	998	1,258	920
7/22/2020	0.00	4,480	455	470	766	800	784	550	734	2,910	879	2,301	1,002	479	870	947	995	6,096	928
7/23/2020	0.00	5,350	453	550	748	750	783	541	737	2,900	889	2,179	999	420	847	1,394	1,007	6,096	1,023
7/24/2020	0.00	4,420	452	500	726	800	778	541	740	2,880	890	2,261	996	390	843	1,394	996	79	1,129
7/25/2020	0.00	5,280	452	490	724	800	776	541	742	2,720	890	2,087	995	390	843	947	926	79	1,129
7/26/2020	0.00	4,410	392	550	737	750	778	540	744	2,710	890	1,830	995	450	843	787	967	7,281	1,129
7/27/2020	0.00	4,990	434	490	756	750	787	541	745	2,700	918	1,435	997	390	854	778	986	7,338	894
7/28/2020	0.00	4,690	448	500	757	750	792	540	747	2,690	935	1,888	1,003	410	862	1,126	993	1,434	1,155
7/29/2020	0.00	4,360	455	490	748	750	793	540	750	2,700	885	1,797	1,005	411	862	1,126	988	5,918	1,187
7/30/2020	0.00	4,340	458	500	746	750	794	540	753	2,680	872	2,062	1,008	411	903	795	799	5,963	1,194
7/31/2020	0.00	4,300	461	510	747	700	794	1,484	753	2,520	872	2,023	1,013	1,435	903	725	920	5,648	1,194
8/1/2020	0.00	4,110	462	500	729	700	791	674	753	2,490	893	1,957	1,016	657	903	725	962	614	1,114
8/2/2020	0.00	3,580	465	470	733	750	788	674	755	2,500	893	1,926	1,018	657	903	679	976	0	1,012
8/3/2020	0.00	4,250	469	440	739	650	790	674	758	2,320	893	2,021	1,020	657	899	676	981	0	1,075
8/4/2020	0.00	4,290	470	520	744	300	790	407	760	2,330	837	1,920	1,020	480	811	639	982	2,027	1,104
8/5/2020	0.00	3,920	471	430	758	0	787	274	760	2,500	957	1,950	1,020	438	824	639	980	3,698	1,069
8/6/2020	0.07	3,740	469	490	760	1350	785	274	764	2,490	813	1,942	1,018	438	828	832	978	3,698	1,079
8/7/2020	0.00	4,090	470	430	727	650	795	568	803	2,130	813	1,975	1,014	376	828	832	978	1,411	1,122
8/8/2020	0.00	3,420	474	490	727	650	793	568	821	2,060	813	1,895	1,014	376	828	618	978	4,418	1,067
8/9/2020	0.00	3,340	478	430	730	600	790	568	789	2,070	813	1,931	1,014	376	828	567	978	4,418	1,050
8/10/2020	0.00	4,060	484	430	766	600	779	568	765	2,270	846	1,794	1,016	357	826	555	905	0	1,098
8/11/2020	0.00	3,390	488	500	773	650	792	419	749	2,150	832	1,895	1,017	356	867	765	950	5,982	1,085
8/12/2020	0.00	3,280	489	480	629	650	662	402	650	2,300	874	1,903	1,017	267	878	765	966	5,982	1,036
8/13/2020	0.00	3,250	488	430	689	550	746	402	722	2,150	720	1,978	1,016	267	884	529	971	0	1,094
8/14/2020	0.00	3,270	490	430	709	600	776	449	748	2,290	720	1,728	1,016	276	884	519	972	4,572	1,119
8/15/2020	0.00	3,270	494	490	736	550	790	449	757	2,150	720	1,506	1,018	276	884	513	972	4,632	1,032
8/16/2020	0.00	3,270	496	430	759	600	801	449	756	2,290	720	1,413	1,021	276	884	505	972	1,228	1,054
8/17/2020	0.00	3,220	497	430	755	550	807	350	757	2,130	949	1,284	1,022	236	928	512	972	214	1,085
8/18/2020	0.00	2,420	502	430	744	500	807	350	769	1,970	905	1,674	1,021	237	822	512	970	5,587	1,056
8/19/2020	0.00	3,210	511	420	746	550	806	539	761	2,130	859	1,778	1,021	295	884	480	968	1	1,062
8/20/2020	0.05	3,220	516	440	760	550	809	371	750	1,980	943	854	1,020	266	875	484	967	0	1,100
8/21/2020	0.42	2,420	517	430	774	450	811	371	750	2,100	943	2,206	1,017	266	875	484	964	0	1,100
8/22/2020	0.00	3,070	510	420	746	500	811	371	750	2,120	943	2,206	1,017	266	875	242	964	0	1,100
8/23/2020	0.01	3,140	506	430	743	450	809	371	750	1,790	943	2,206	1,016	266	875	0	780	6,264	1,100
8/24/2020	0.00	2,960	504	430	761	500	811	402	761	1,870	943	1,835	1,016	177	837	2,323	905	2,948	1,119
8/25/2020	0.00	2,710	505	370	769	400	813	401	758	1,790	790	1,960	1,016	235	836	2,323	948	3,222	953
8/26/2020	0.00	3,180	510	430	768	500	815	402	751	1,950	763	1,874	1,015	177	831	730	966	0	1,044
8/27/2020	0.00	2,790	513	420	767	400	816	269	745	1,810	759	1,703	1,009	236	855	1,001	971	0	1,109
8/28/2020	0.00	2,510	519	420	765	400	818	358	694	1,930	768	1,703	1,007	157	842	1,001	969	4,420	1,109
8/29/2020	0.01	900	526	370	770	450	820	358	728	1,780	768	1,646	1,007	157	842	613	902	4,498	1,023
8/30/2020	0.00	0	540	440	754	400	822	358	747	1,780	768	1,665	1,007	157	842	558	941	1,643	1,035
8/31/2020	0.00	6,460	554	370	748	450	823	413	756	1,780	817	1,592	1,010	118	835	519	953	1	1,057

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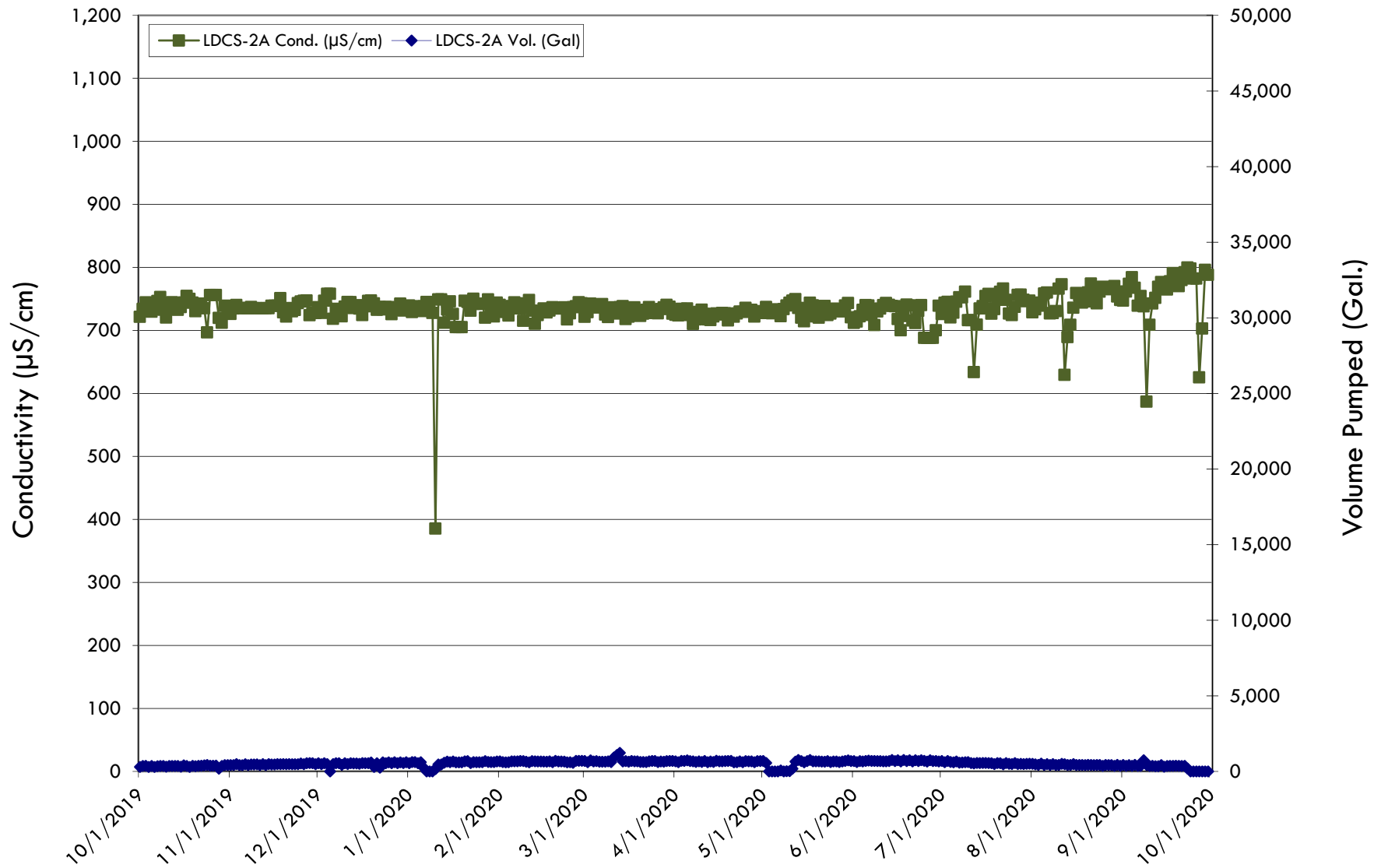
Date	Rainfall	LDCS-1 Vol. (Gal.)	LDCS-1 Cond. (µS/cm)	LDCS-2A Vol. (Gal)	LDCS-2A Cond. (µS/cm)	LDCS-2B Vol. (Gal)	LDCS-2B Cond. (µS/cm)	LDCS-3A Vol. (Gal)	LDCS-3A Cond. (µS/cm)	LDCS-4A Vol. (Gal)	LDCS-4A Cond. (µS/cm)	LDCS-4B Vol. (Gal)	LDCS-4B Cond. (µS/cm)	LDCS-5 Vol. (Gal)	LDCS-5 Cond. (µS/cm)	LDCS-6 Vol. (Gal)	LDCS-6 Cond. (µS/cm)	LDCS-7 Vol. (Gal)	LDCS-7 Cond. (µS/cm)
9/1/2020	0.00	2,360	541	430	747	400	824	413	761	1,780	757	1,543	1,012	117	--	476	957	6,025	1,018
9/2/2020	0.00	3,110	537	370	762	400	826	402	764	1,630	848	1,531	1,016	118	--	476	958	6,025	971
9/3/2020	0.00	2,340	540	420	774	400	830	271	766	1,760	742	1,526	1,018	176	--	440	958	3	1,052
9/4/2020	0.00	2,330	547	370	784	400	832	326	767	1,770	819	1,519	1,019	117	--	434	955	3	1,029
9/5/2020	0.00	2,330	545	440	768	400	834	326	762	1,610	819	1,410	1,020	118	--	442	955	5,720	1,012
9/6/2020	0.00	2,310	545	370	739	400	834	325	757	1,470	819	1,378	1,025	117	--	442	955	5,720	978
9/7/2020	0.00	2,310	557	370	754	350	835	251	676	1,610	766	1,368	1,026	118	--	395	965	2	1,011
9/8/2020	0.00	2,300	559	740	738	800	826	418	722	1,610	802	1,376	1,040	117	--	395	965	2	1,007
9/9/2020	0.00	1,830	431	430	587	350	827	295	752	1,600	780	1,274	1,040	176	--	554	973	5,812	1,002
9/10/2020	0.00	2,000	515	360	709	450	771	404	698	1,450	729	1,244	1,038	58	--	554	971	5,812	988
9/11/2020	0.00	2,300	543	370	743	350	819	315	744	1,310	825	1,256	1,036	118	--	400	896	0	1,047
9/12/2020	0.00	2,300	558	350	751	400	834	315	762	1,440	825	1,389	1,031	117	--	400	942	1,983	1,075
9/13/2020	0.00	2,290	567	350	769	350	840	314	767	1,450	825	1,334	1,029	118	--	405	961	3,657	1,016
9/14/2020	0.00	1,540	568	420	777	350	846	402	768	1,300	911	1,235	1,033	116	--	405	968	3,657	1,007
9/15/2020	0.00	2,300	568	310	767	400	851	270	768	1,770	872	1,463	1,037	117	--	401	971	0	1,046
9/16/2020	0.00	1,750	572	360	765	300	853	677	765	1,780	767	1,703	1,027	193	--	401	972	2,396	1,069
9/17/2020	0.02	2,060	578	370	778	300	854	272	768	1,770	942	1,578	1,020	19	--	401	975	3,130	1,008
9/18/2020	0.00	2,290	581	370	791	400	857	272	769	1,660	897	1,643	1,021	54	1,033	398	975	3,130	1,005
9/19/2020	0.00	1,530	577	380	787	350	847	273	770	2,070	897	2,922	1,003	117	1,033	389	906	4	1,000
9/20/2020	0.14	2,280	574	370	770	300	833	406	771	2,130	897	2,744	981	117	1,033	389	946	2,913	1,026
9/21/2020	0.02	2,290	579	360	780	400	849	138	773	2,060	858	1,928	964	117	1,052	570	956	2,995	986
9/22/2020	0.01	1,480	580	370	792	300	862	138	771	2,030	892	2,003	972	118	1,057	570	954	2,652	974
9/23/2020	0.03	2,310	576	190	800	350	875	450	755	4,750	903	6,103	948	177	1,068	682	947	1,239	994
9/24/2020	0.01	2,300	569	0	798	350	883	450	755	4,620	903	7,766	766	502	1,068	6,982	947	6,175	1,139
9/25/2020	1.70	1,550	566	0	782	350	883	403	801	4,900	852	8,545	545	548	633	7,028	957	6,175	1,717
9/26/2020	0.07	2,300	566	0	782	350	883	403	801	3,860	852	8,165	550	615	633	6,470	957	29	1,913
9/27/2020	0.25	2,150	465	0	625	300	750	404	801	3,140	852	6,792	646	553	633	5,449	957	3,109	1,951
9/28/2020	0.29	1,670	522	0	703	350	834	437	844	2,820	852	5,042	713	426	616	2,609	848	3,494	1,610
9/29/2020	0.01	2,290	564	0	796	350	881	402	818	2,910	852	4,585	770	304	610	1,595	847	3,494	1,490
9/30/2020	0.00	2,310	538	0	788	350	891	345	800	2,780	741	3,814	797	242	605	1,265	819	0	1,487

-- = No data collected

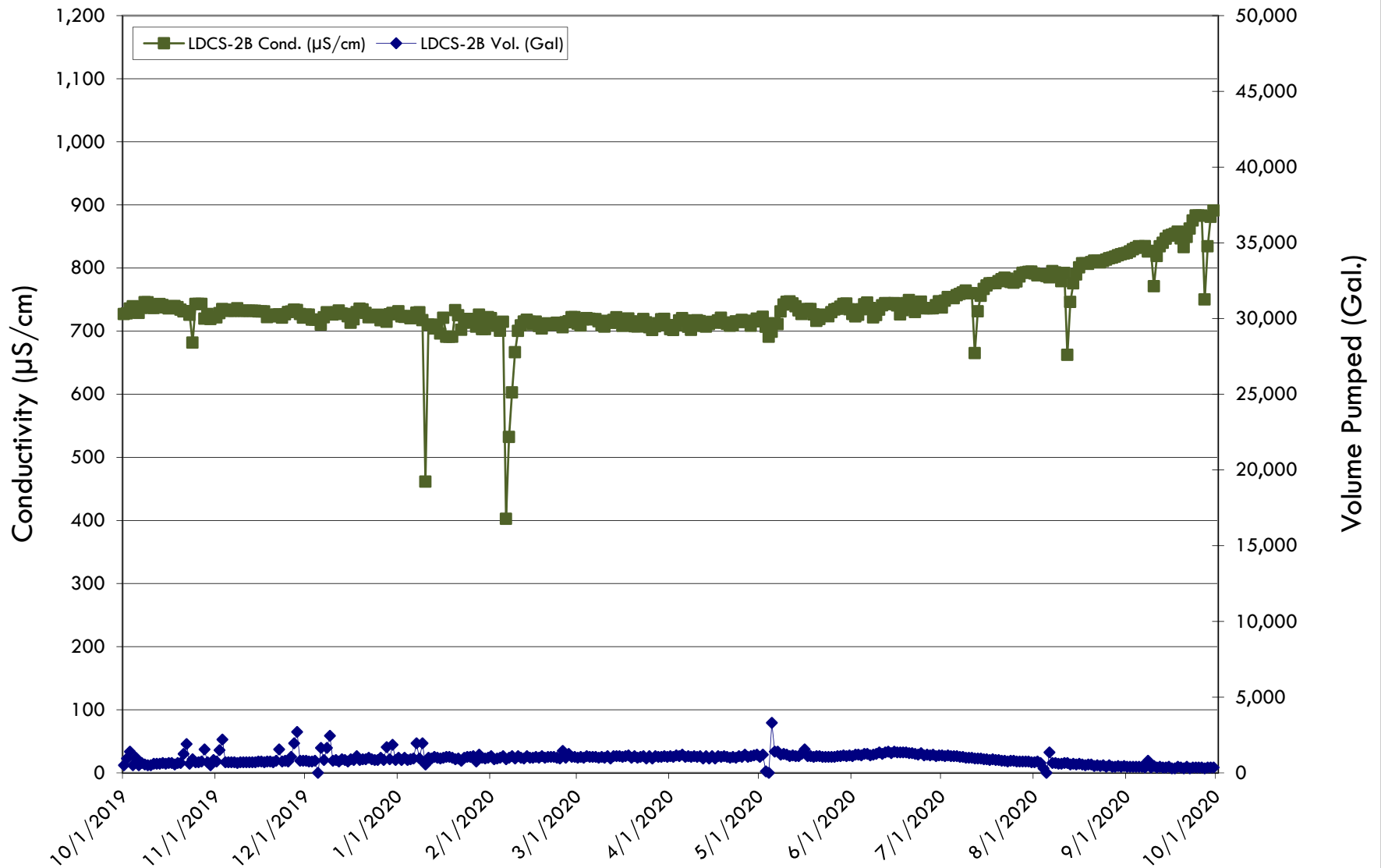
LDCS-1 (DailyTotals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



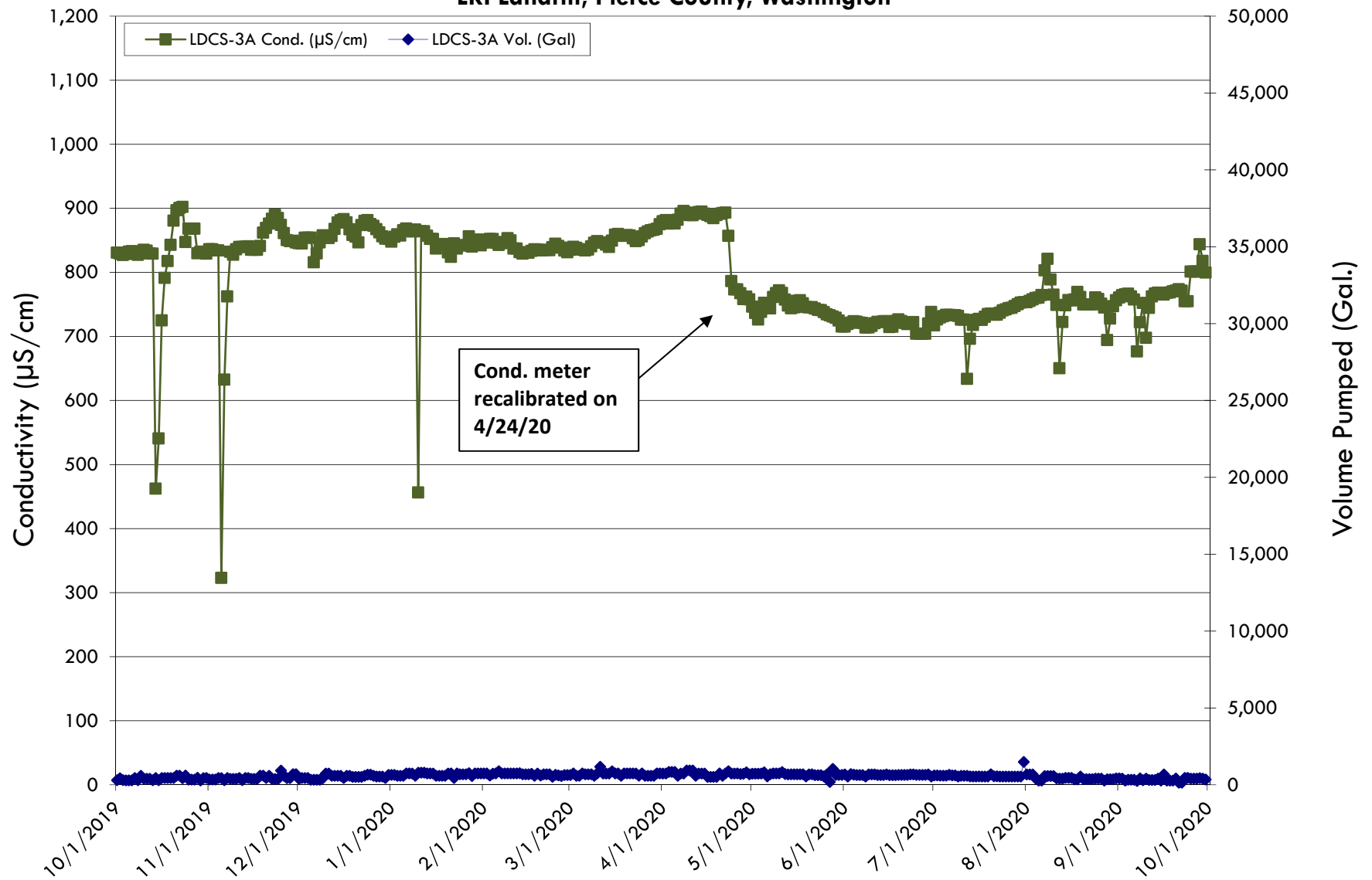
LDCS-2A (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



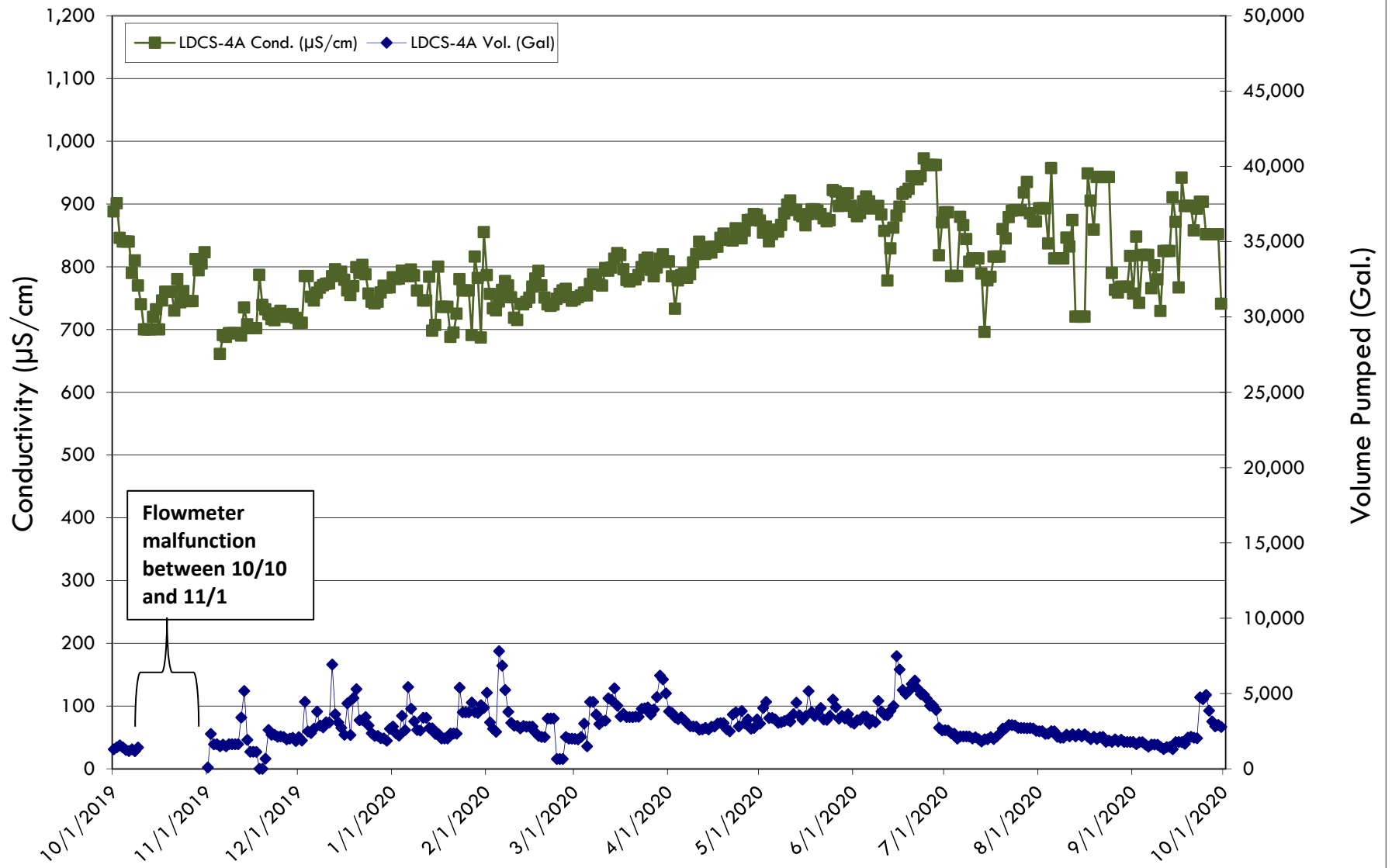
LDCS-2B (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



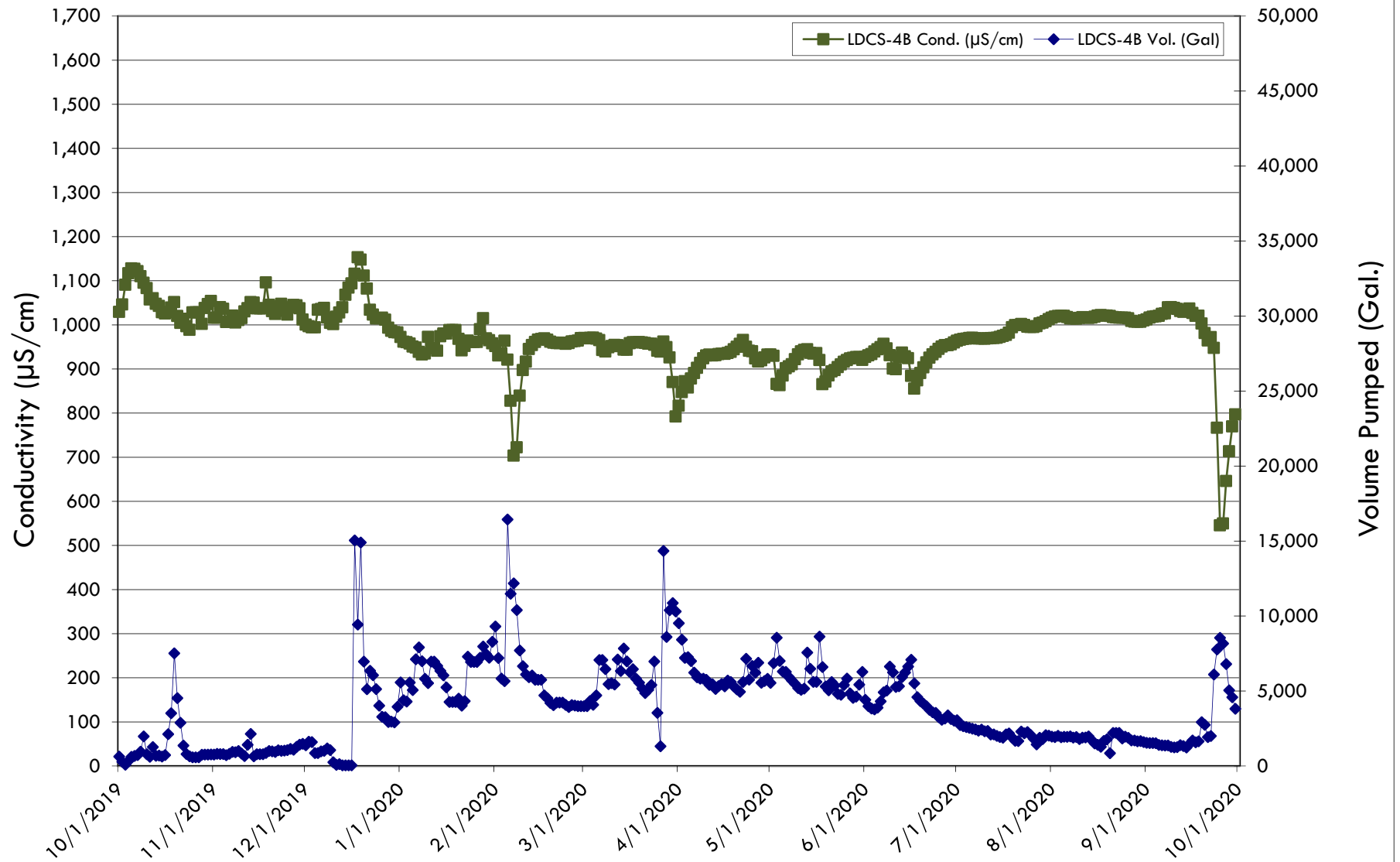
LDCS-3A (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



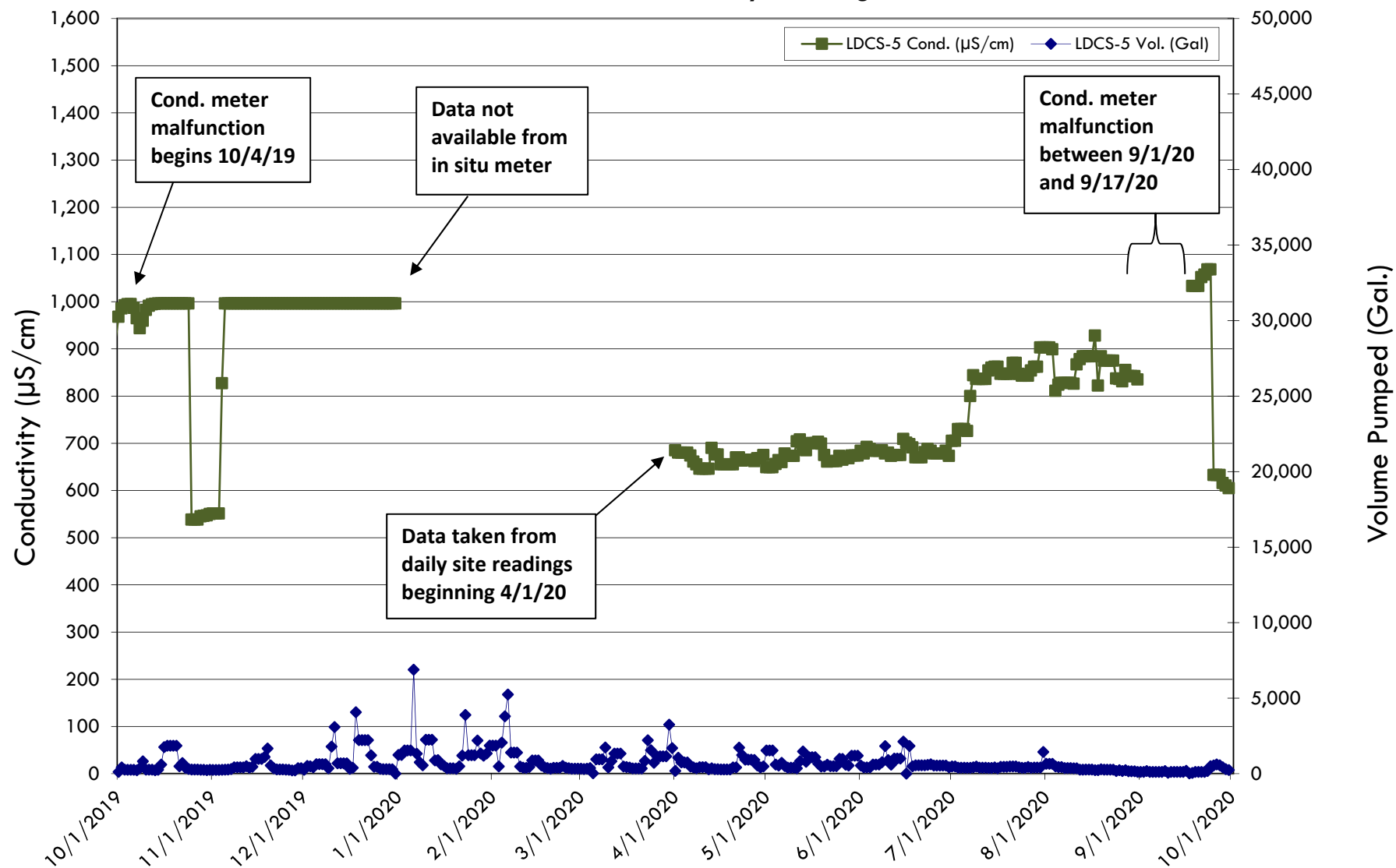
LDCS-4A (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



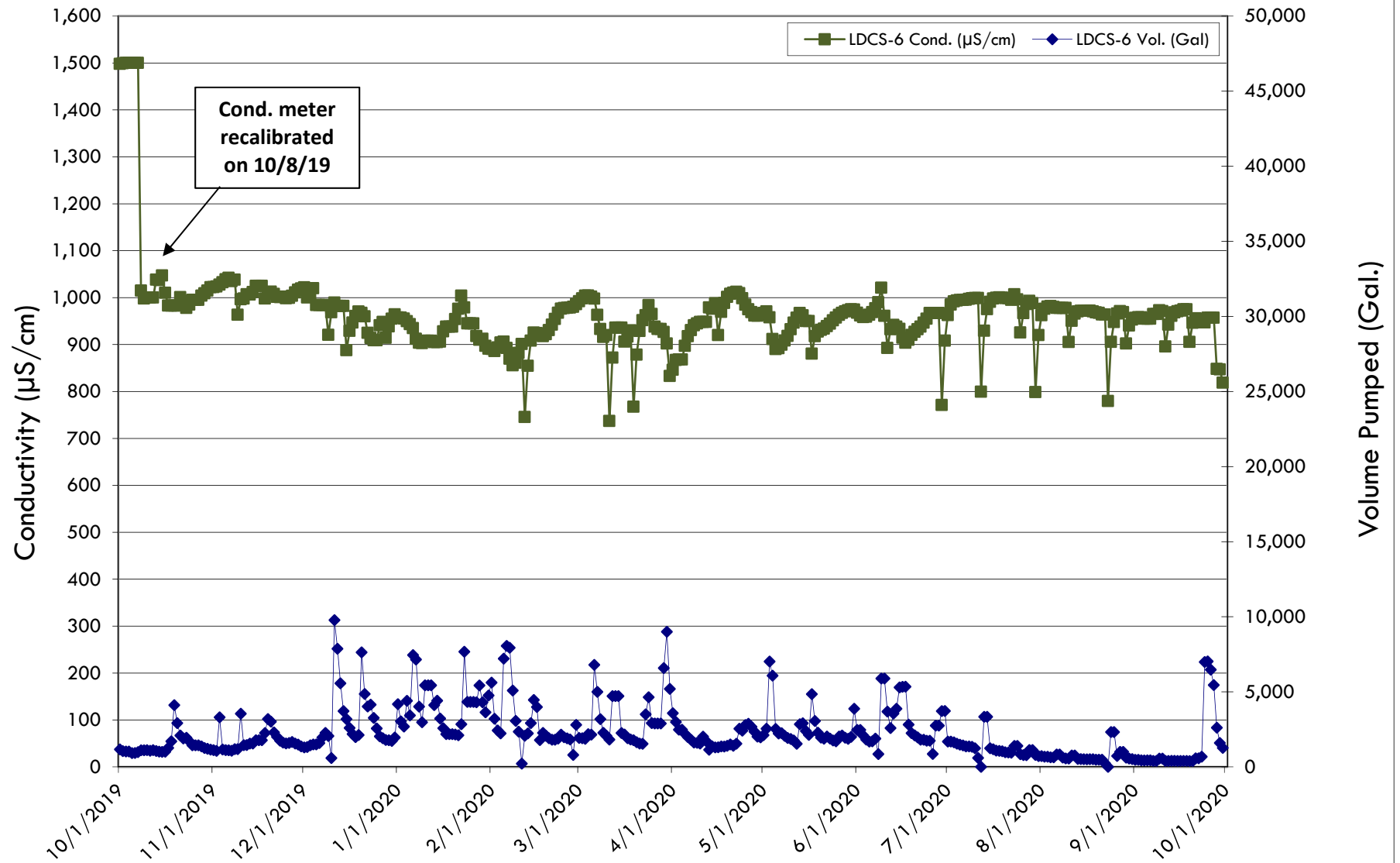
LDCS-4B (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



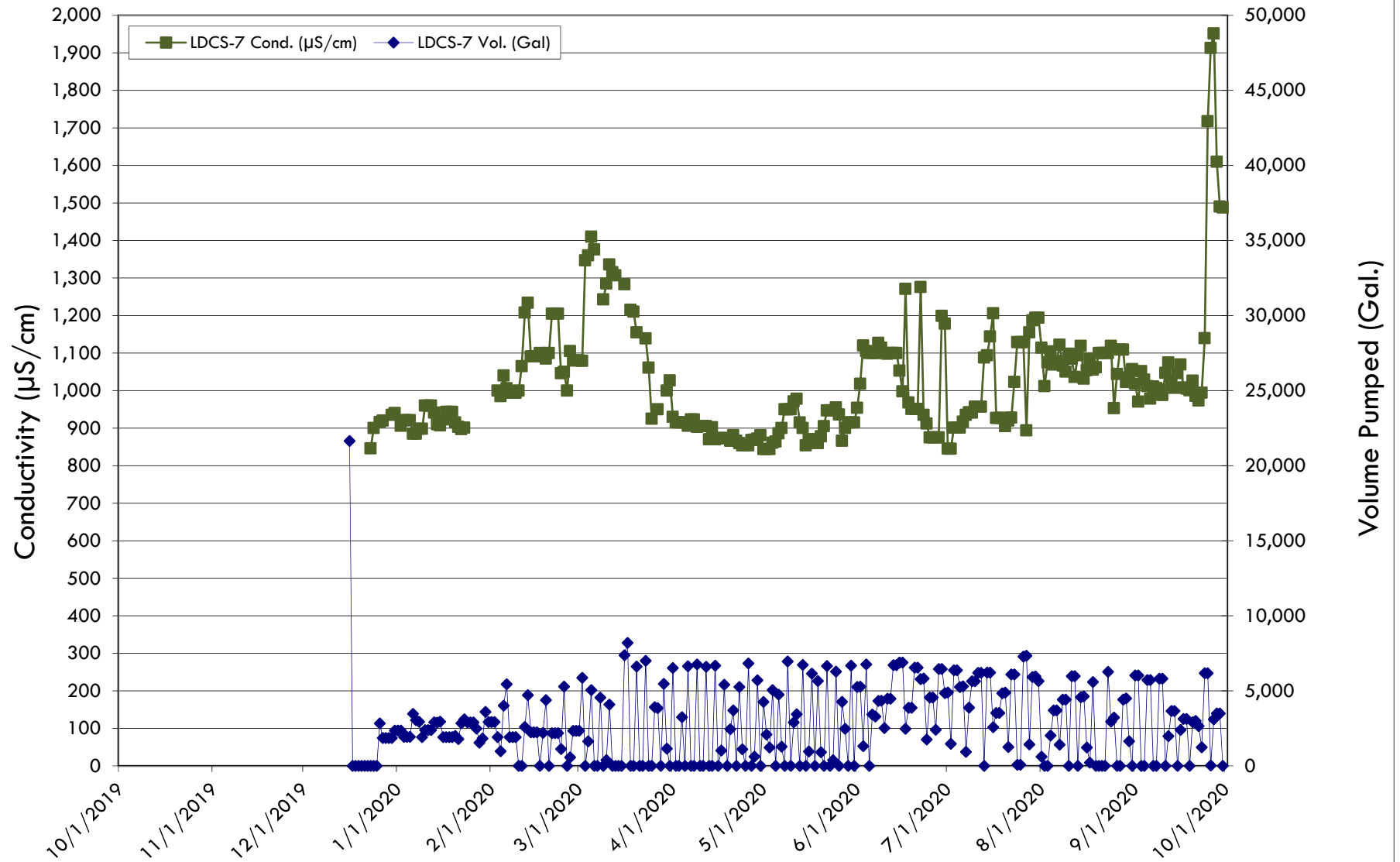
**LDCS-5 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington**



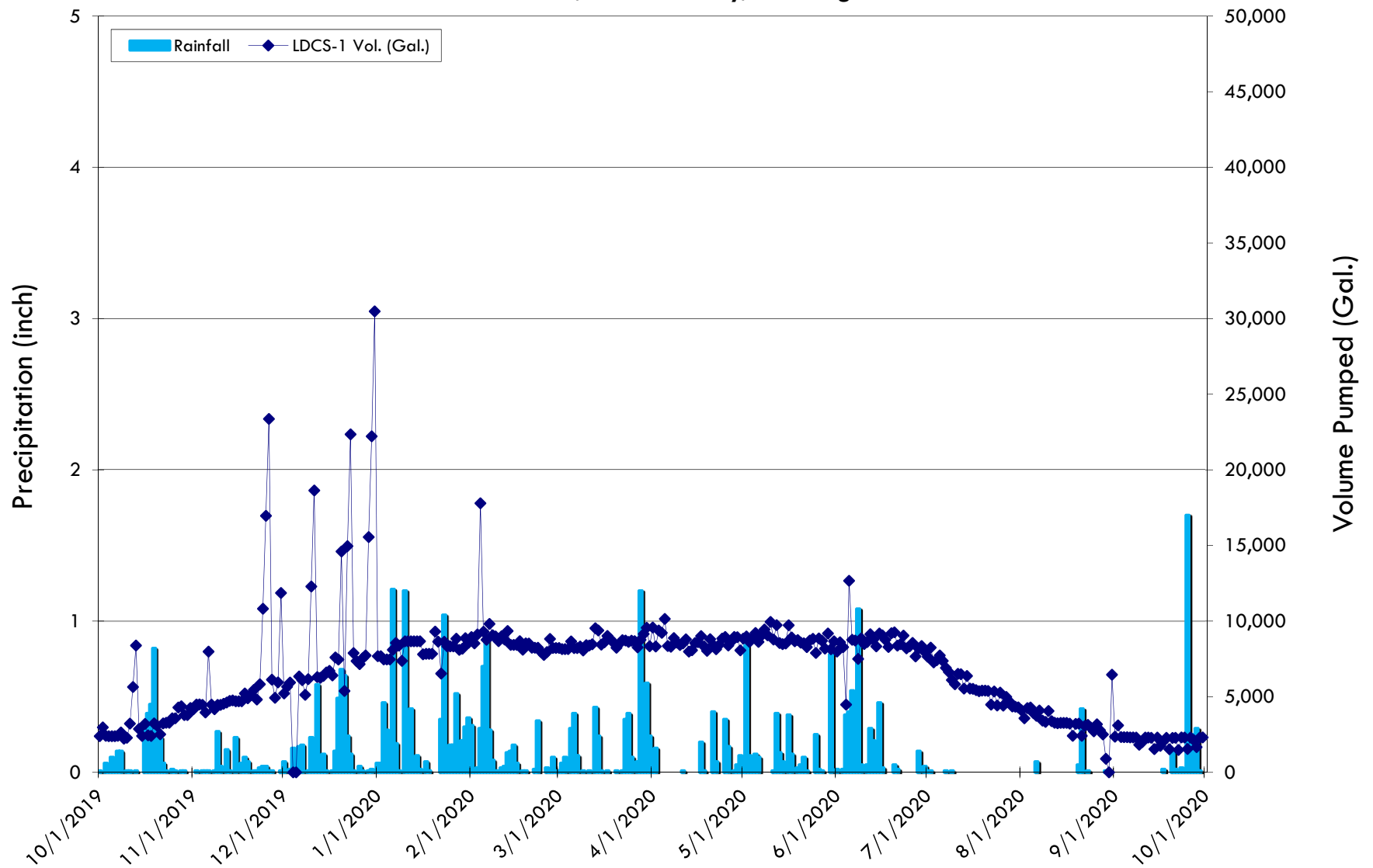
LDCS-6 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



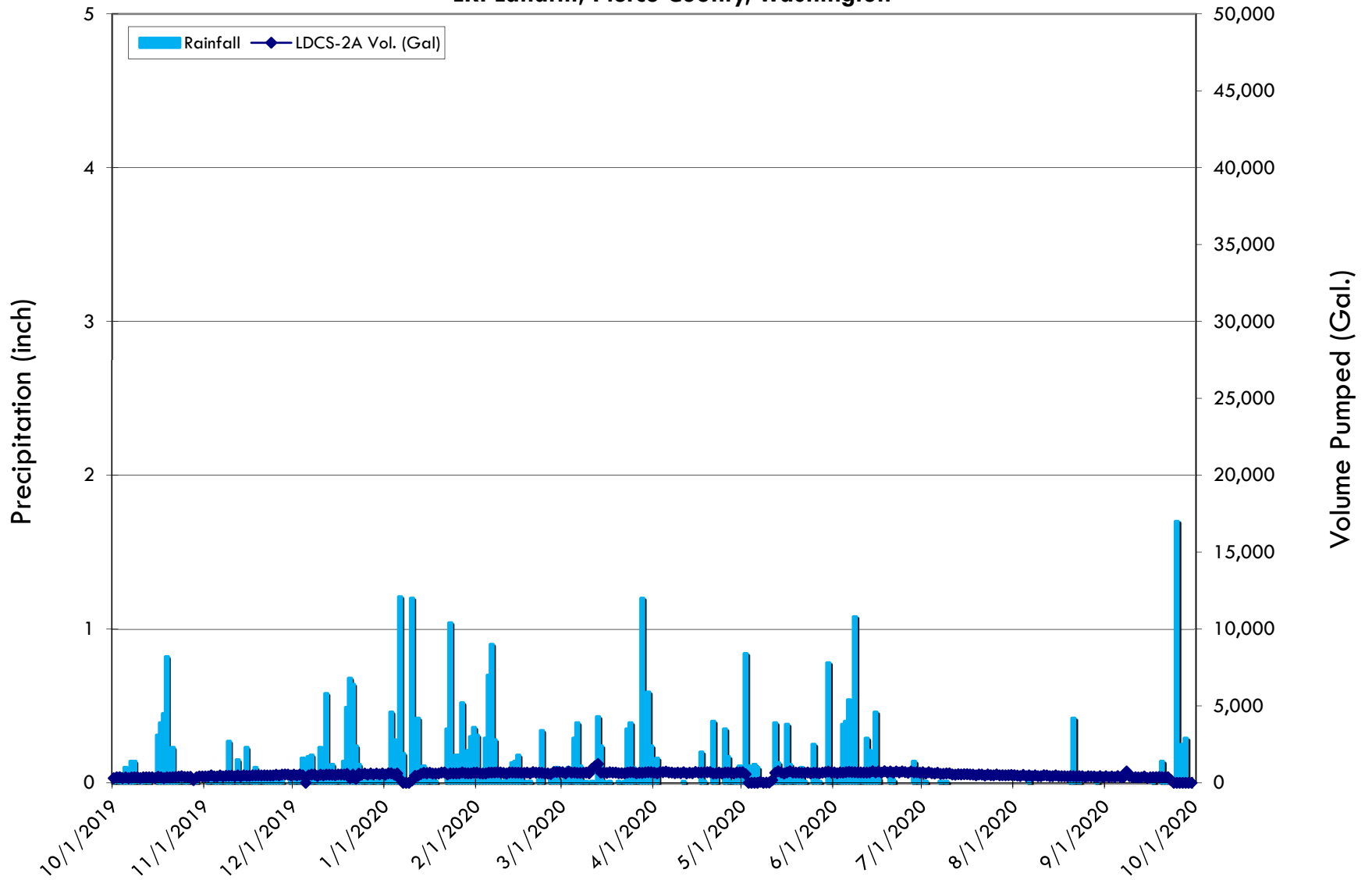
LDCS-7 (Daily Totals)
Conductivity vs Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



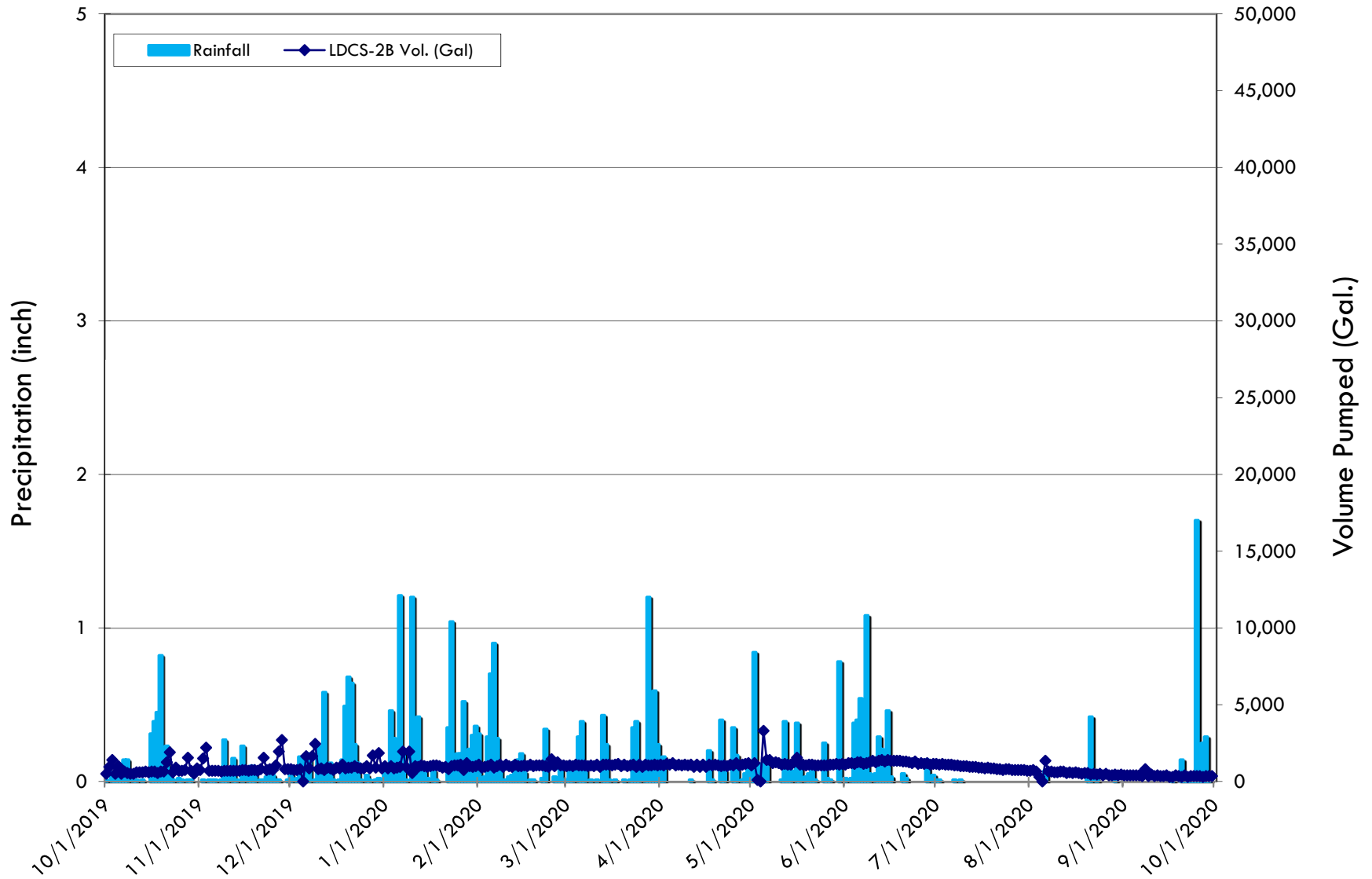
LDCS-1 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



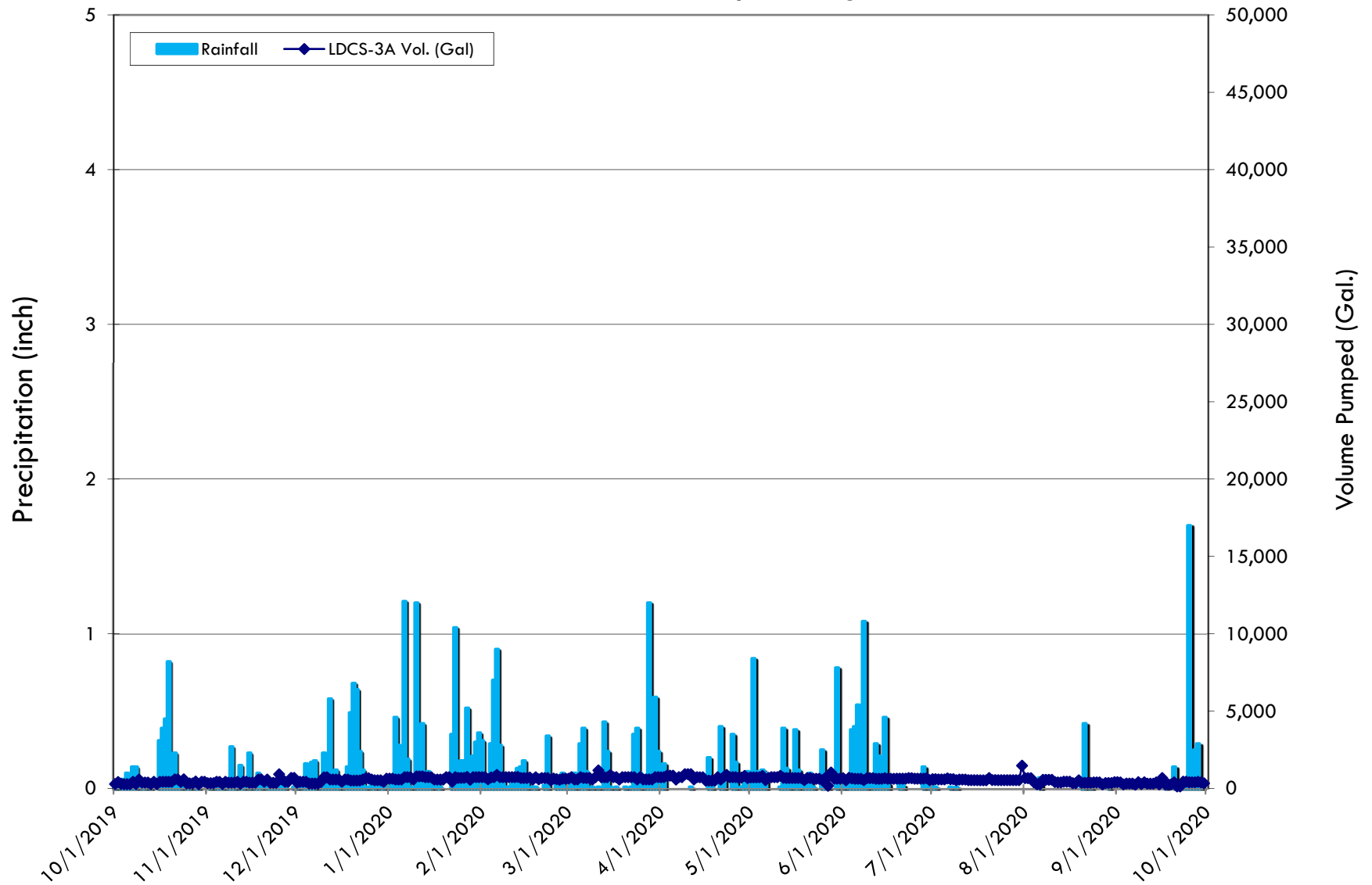
LDCS-2A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



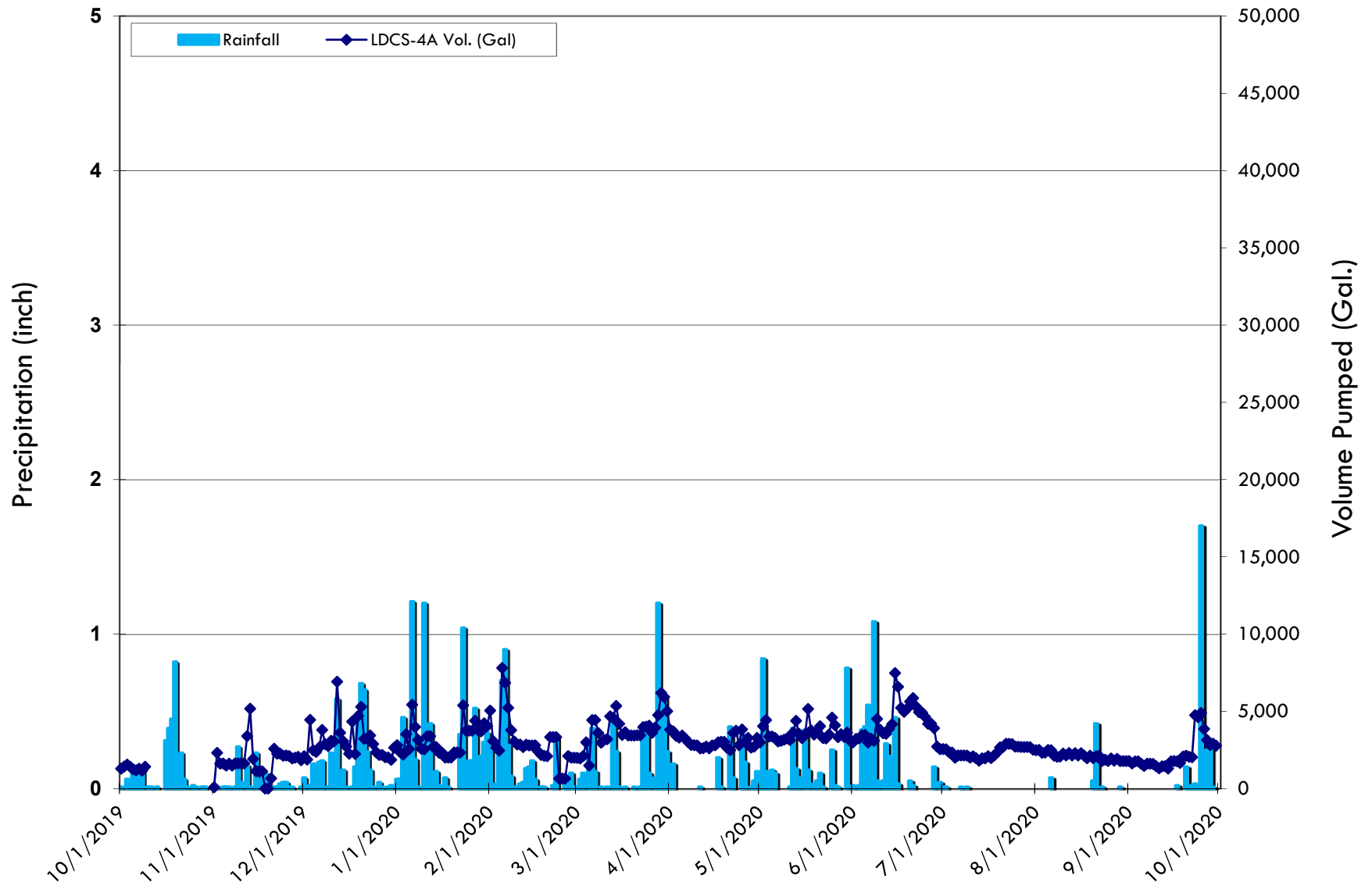
LDCS-2B (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



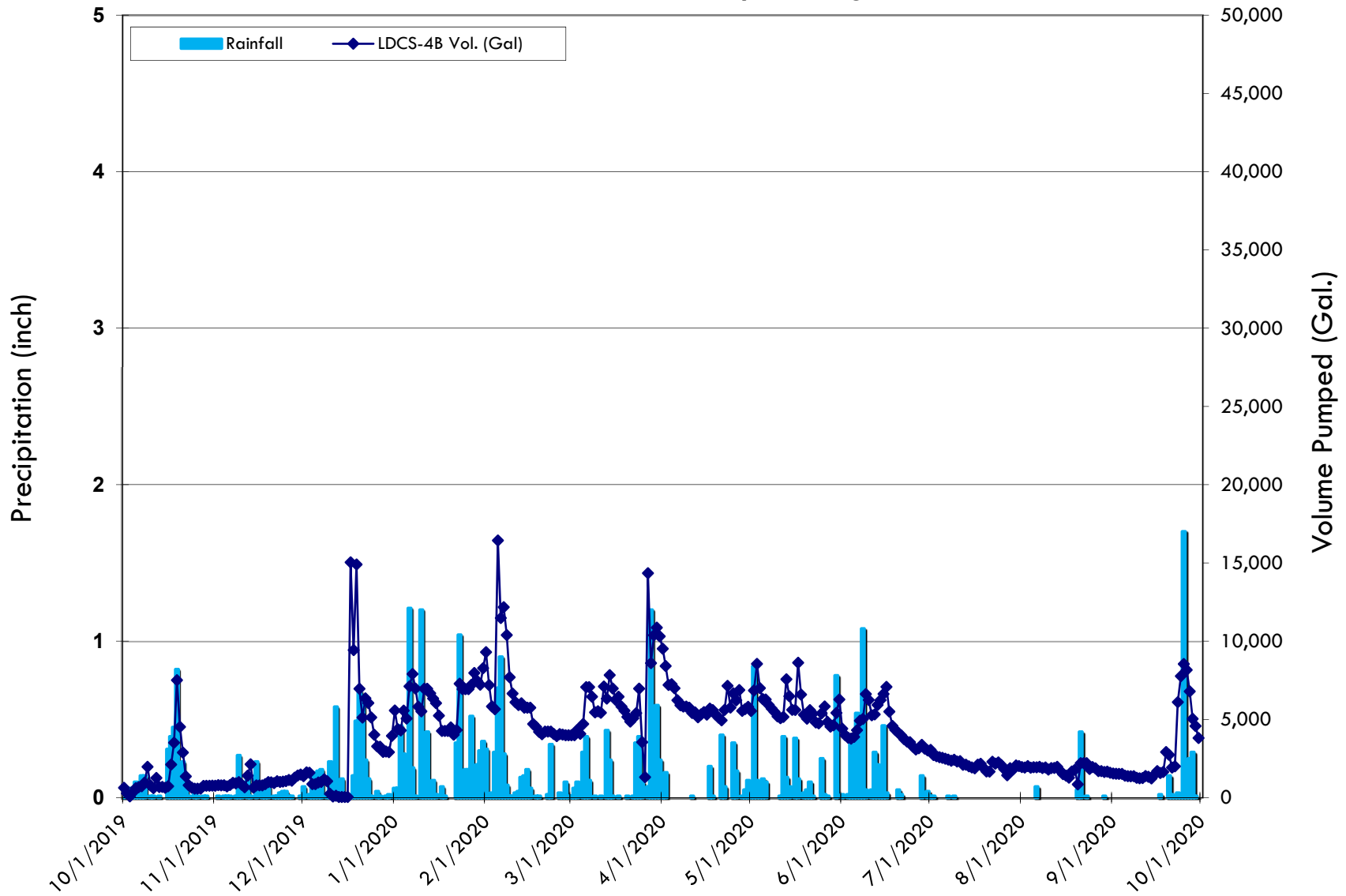
LDCS-3A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



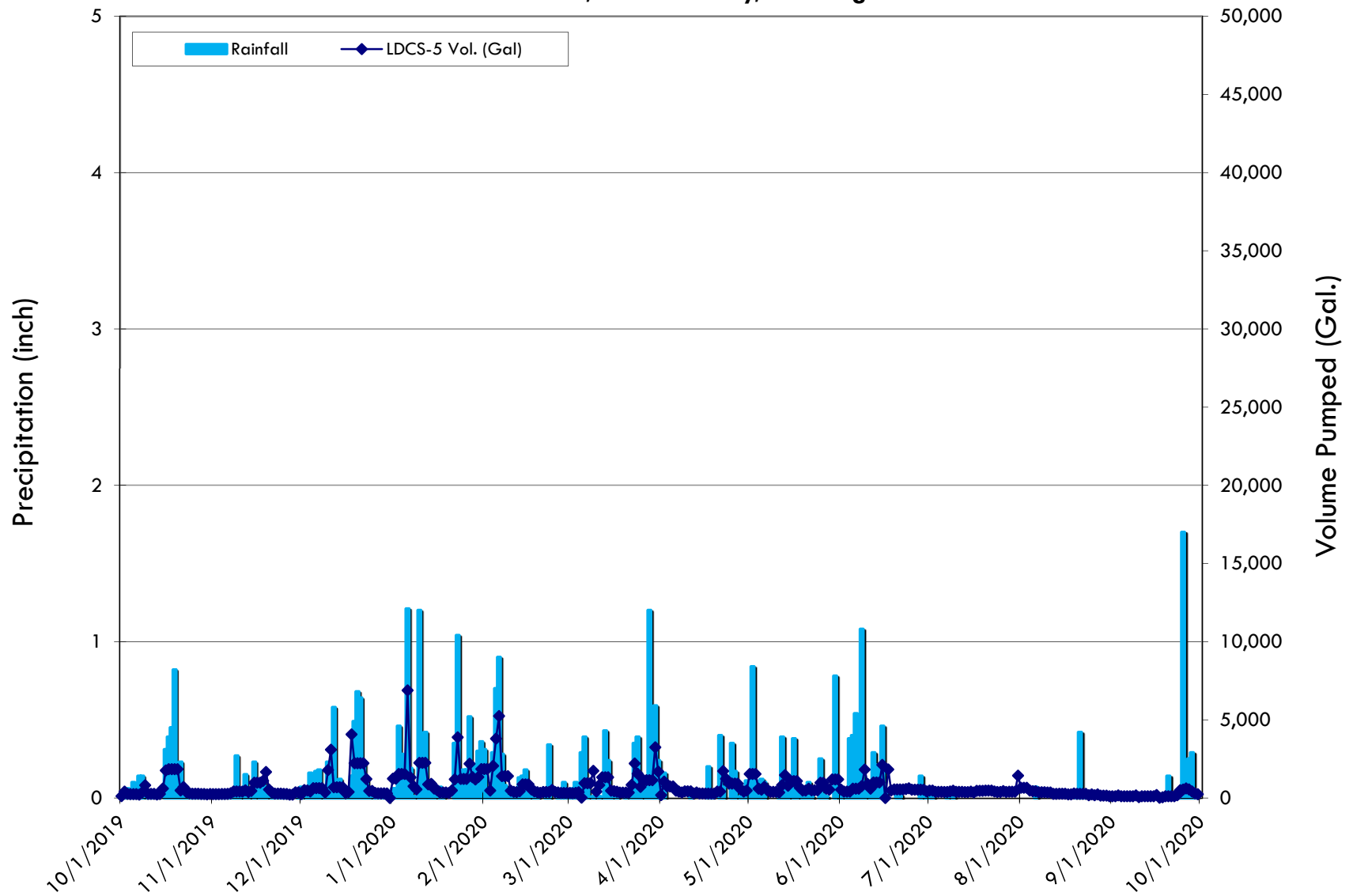
LDCS-4A (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



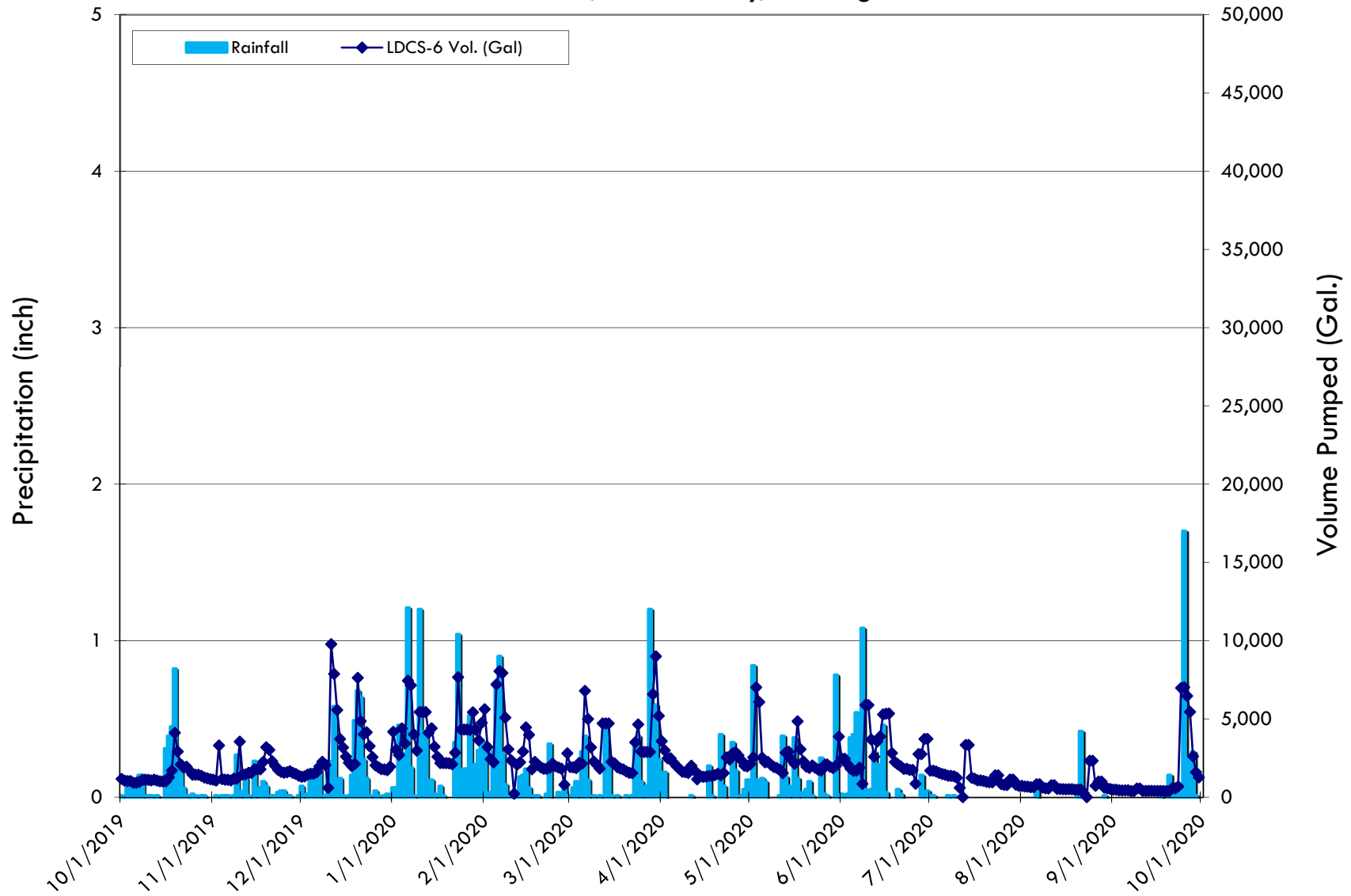
LDCS-4B (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



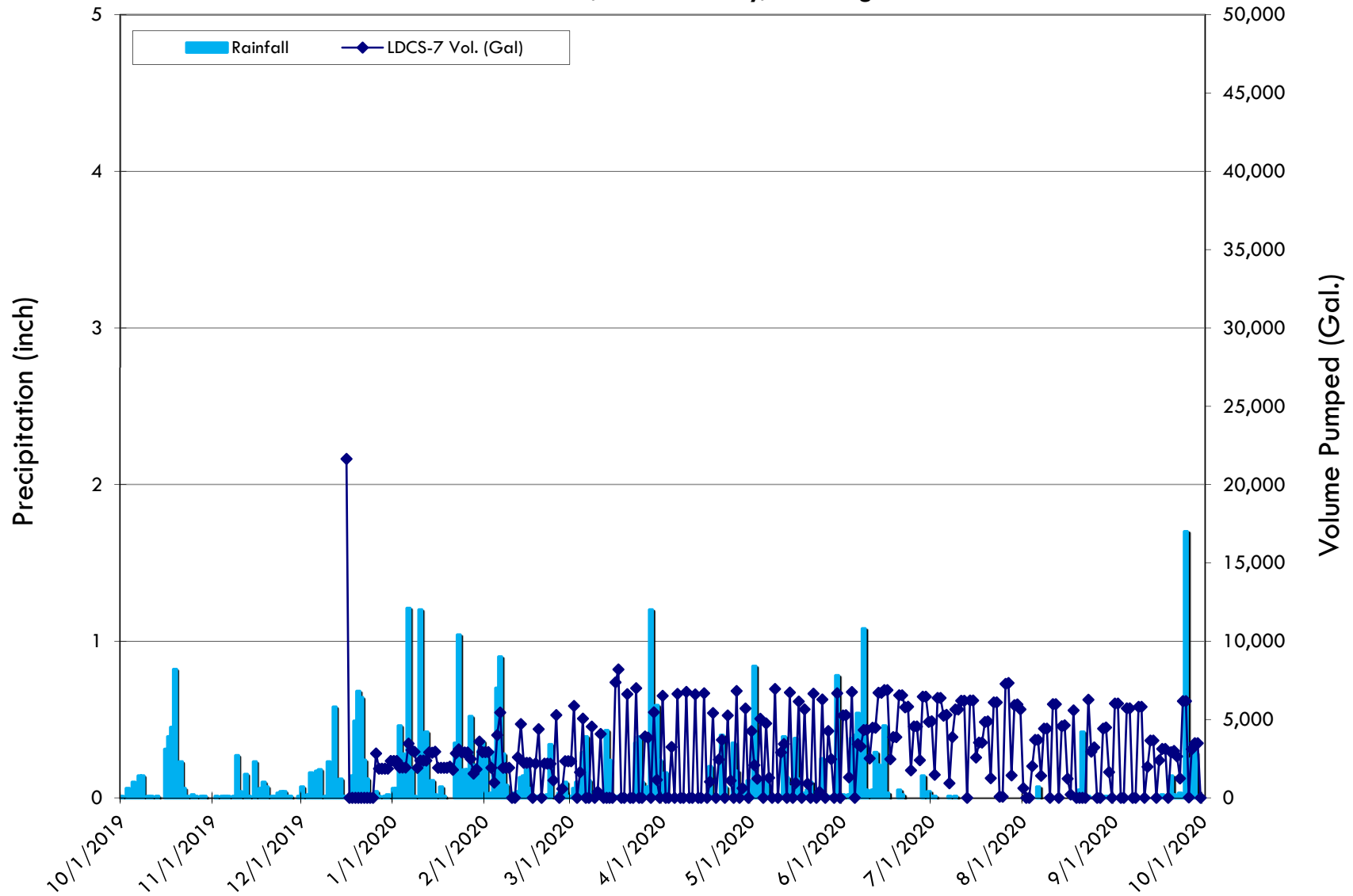
LDCS-5 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



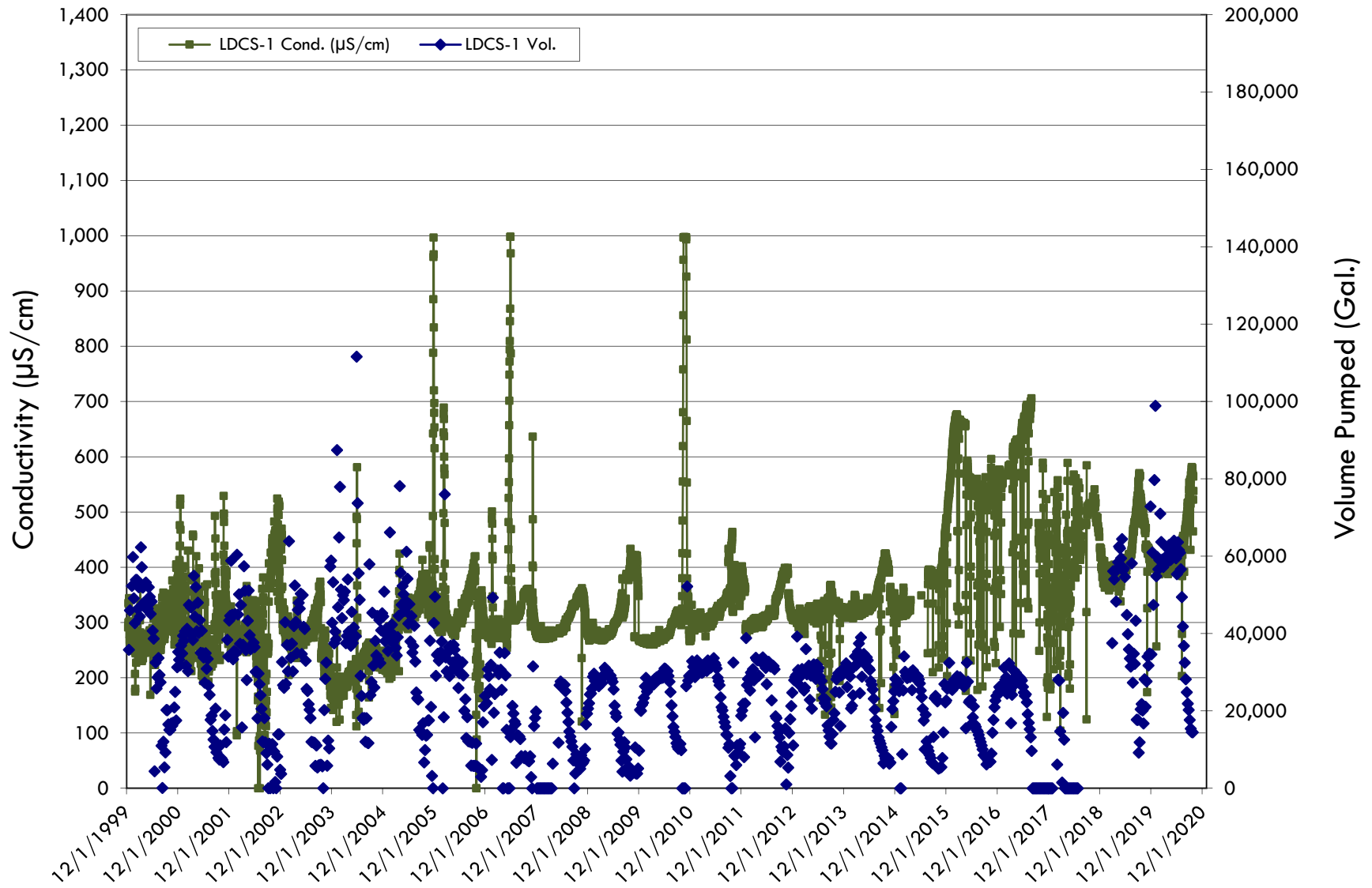
LDCS-6 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



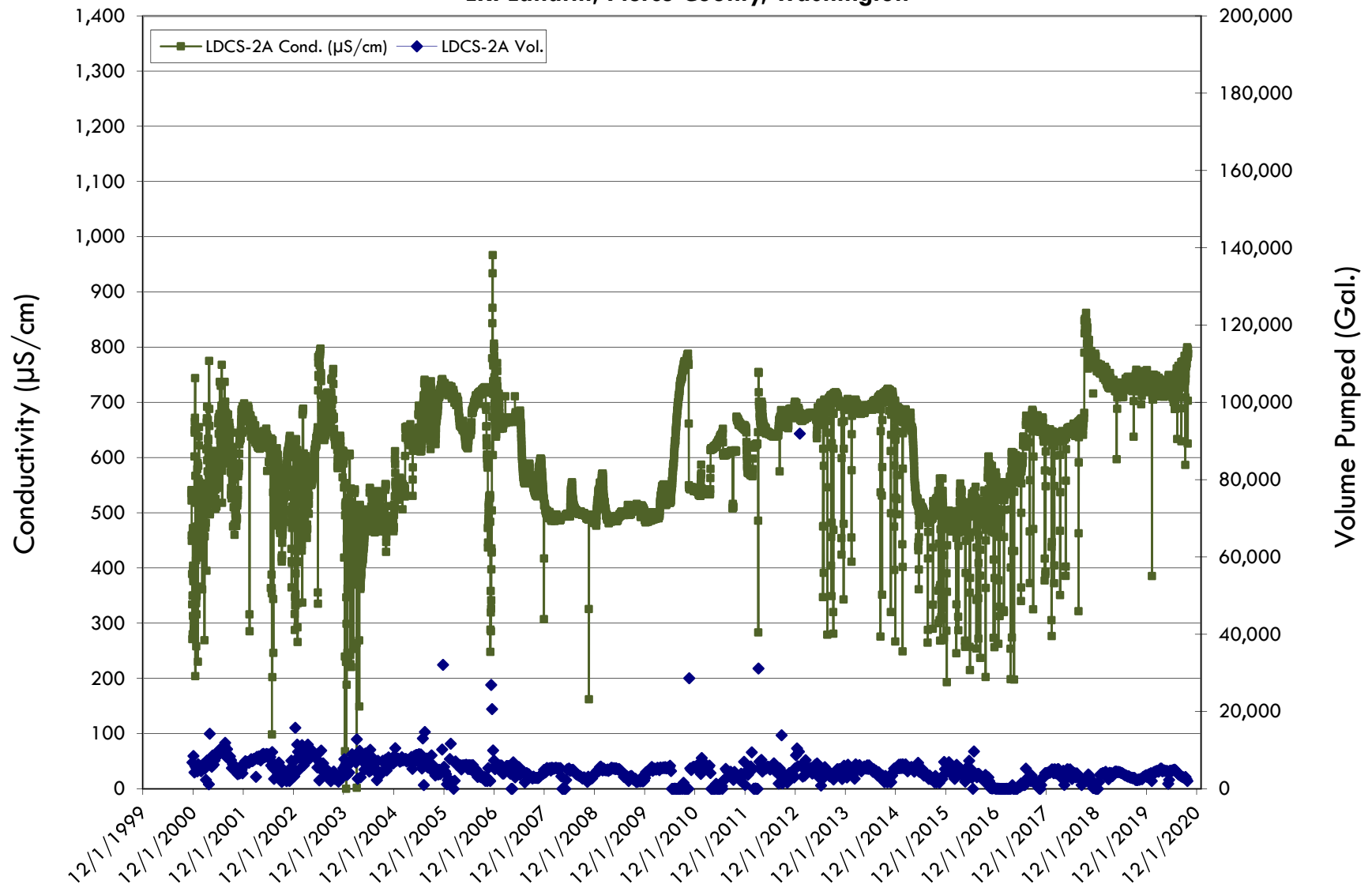
LDCS-7 (Daily Totals)
Volume Pumped vs Precipitation
Third Quarter 2020
LRI Landfill, Pierce County, Washington



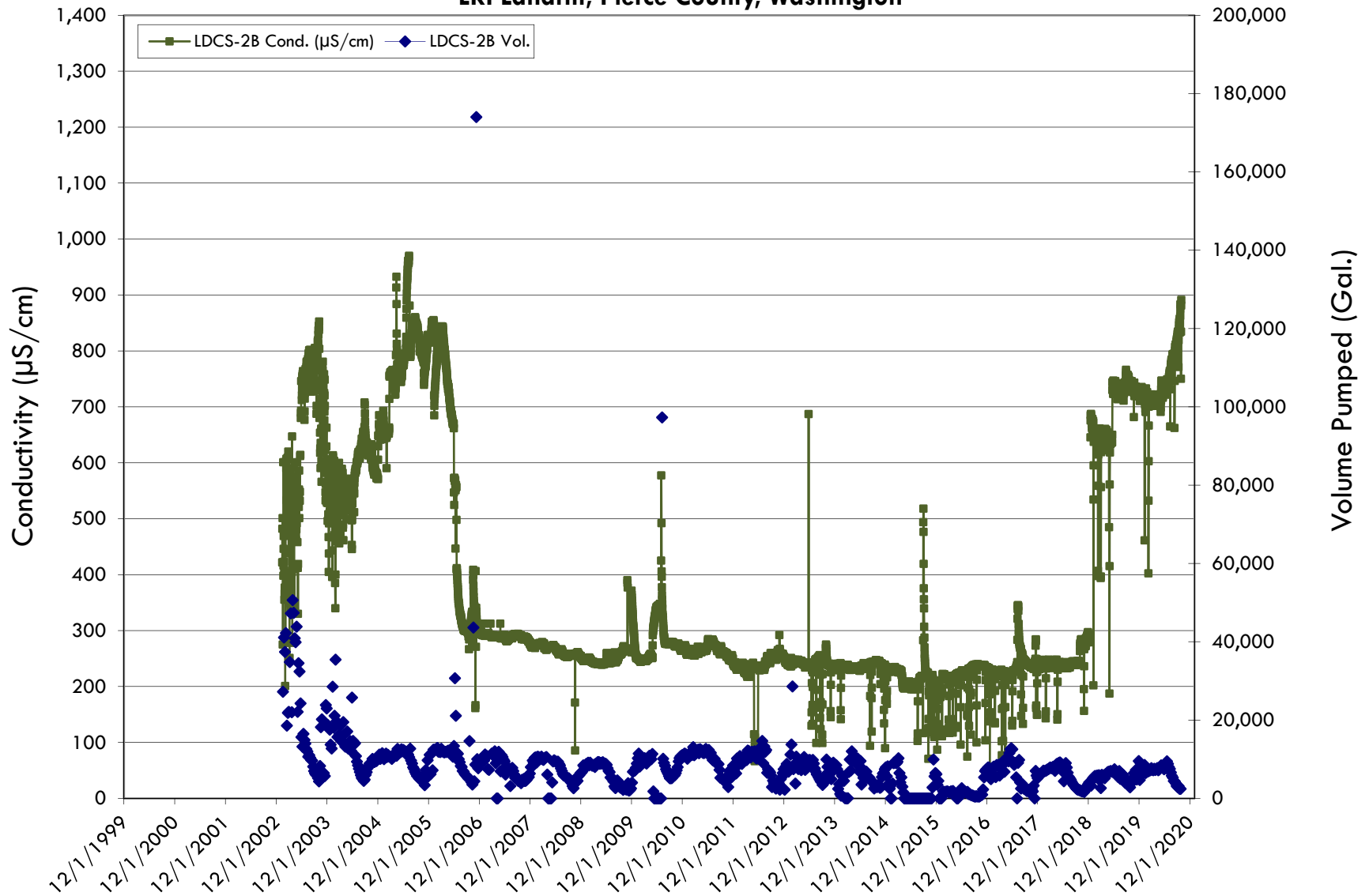
LDCS-1
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



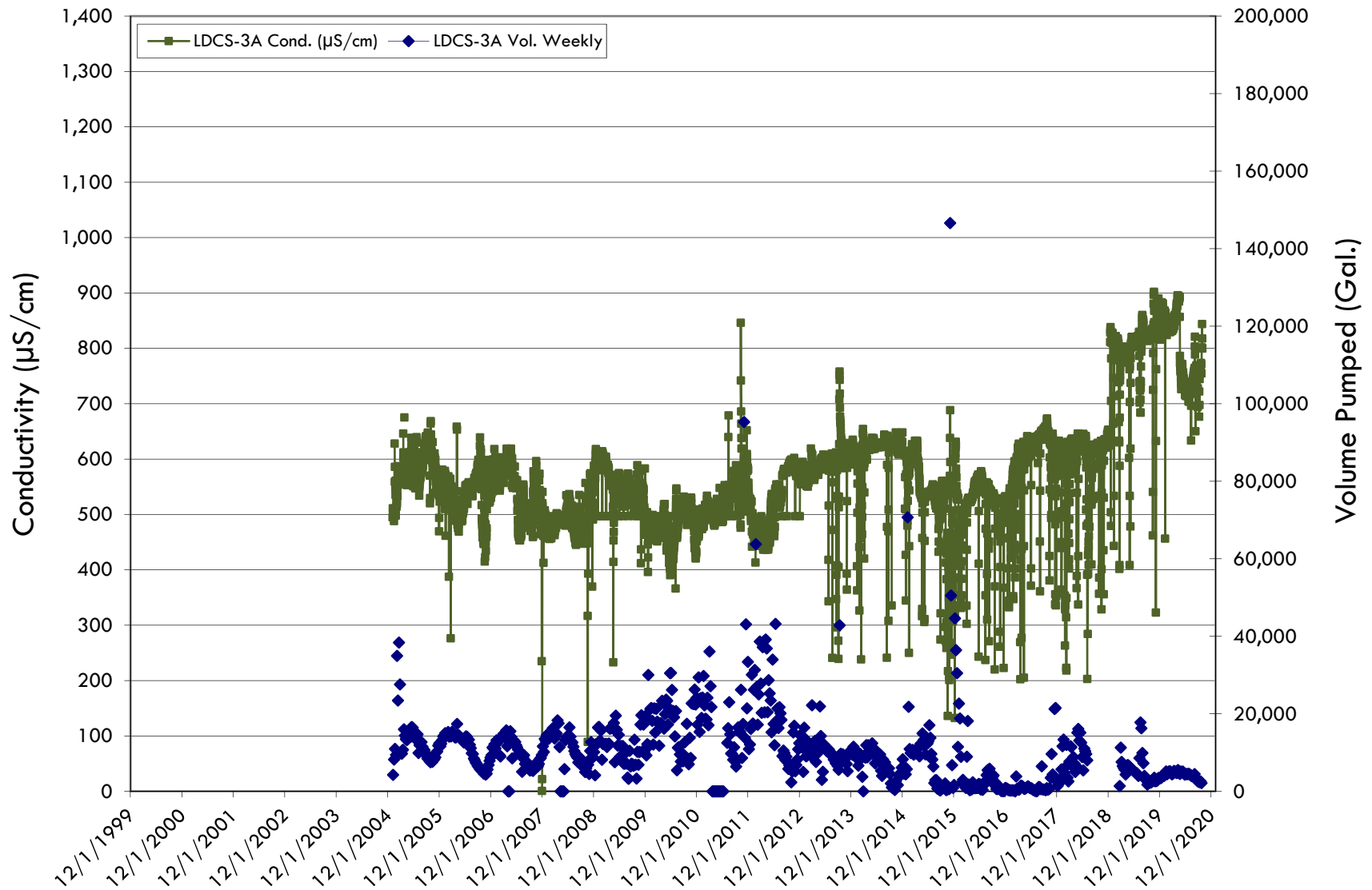
LDCS-2A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



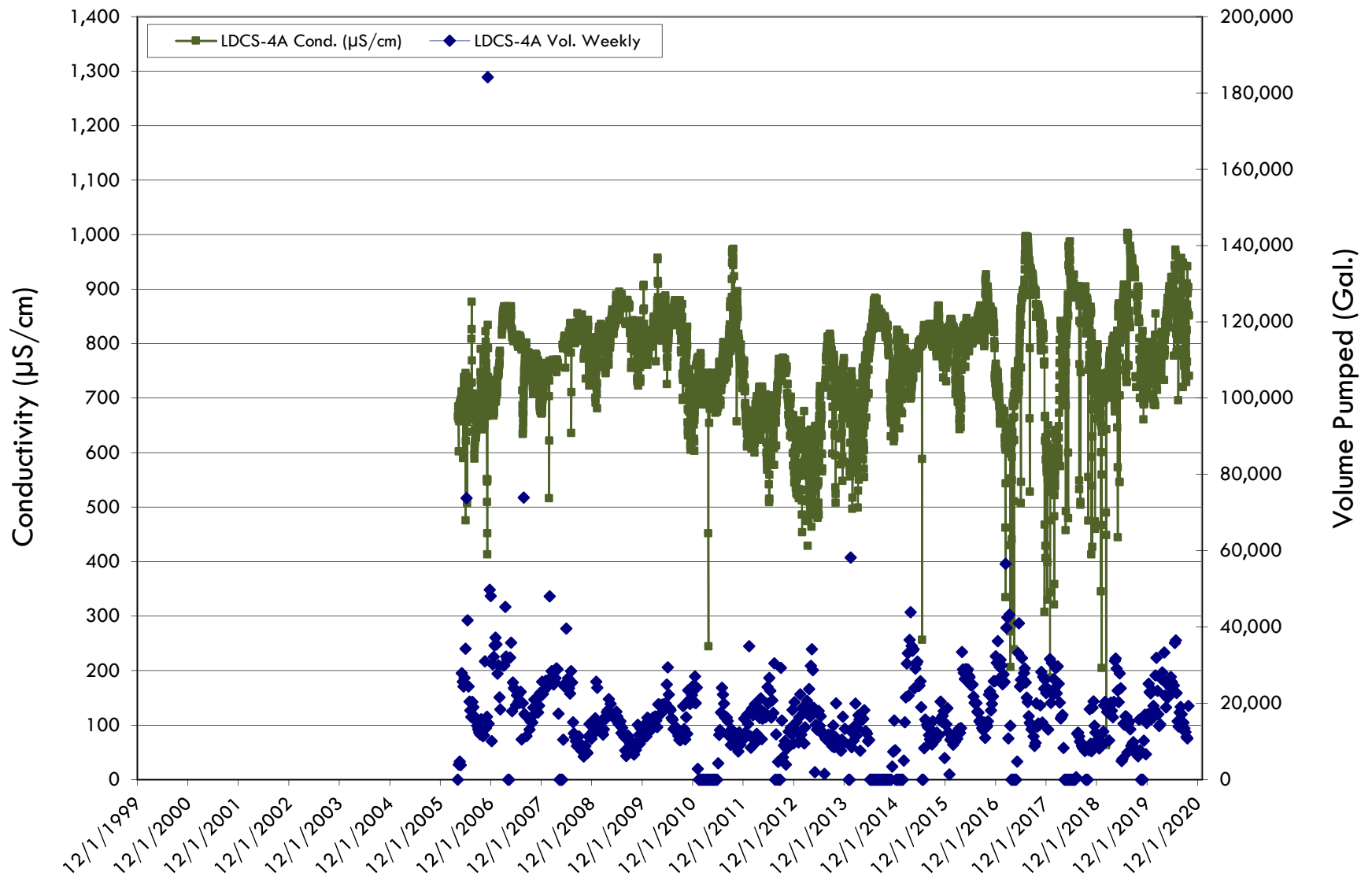
LDCS-2B
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



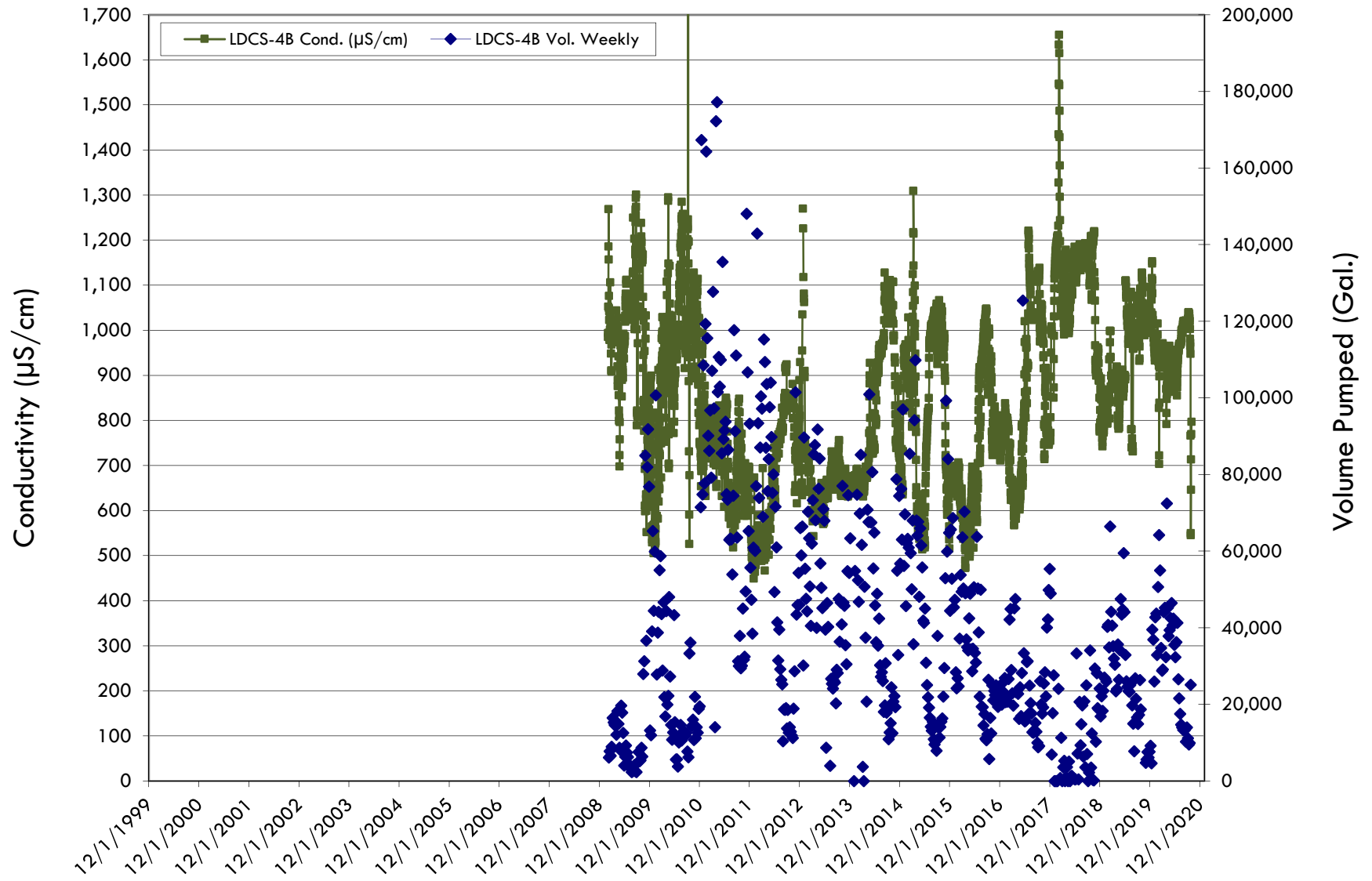
LDCS-3A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



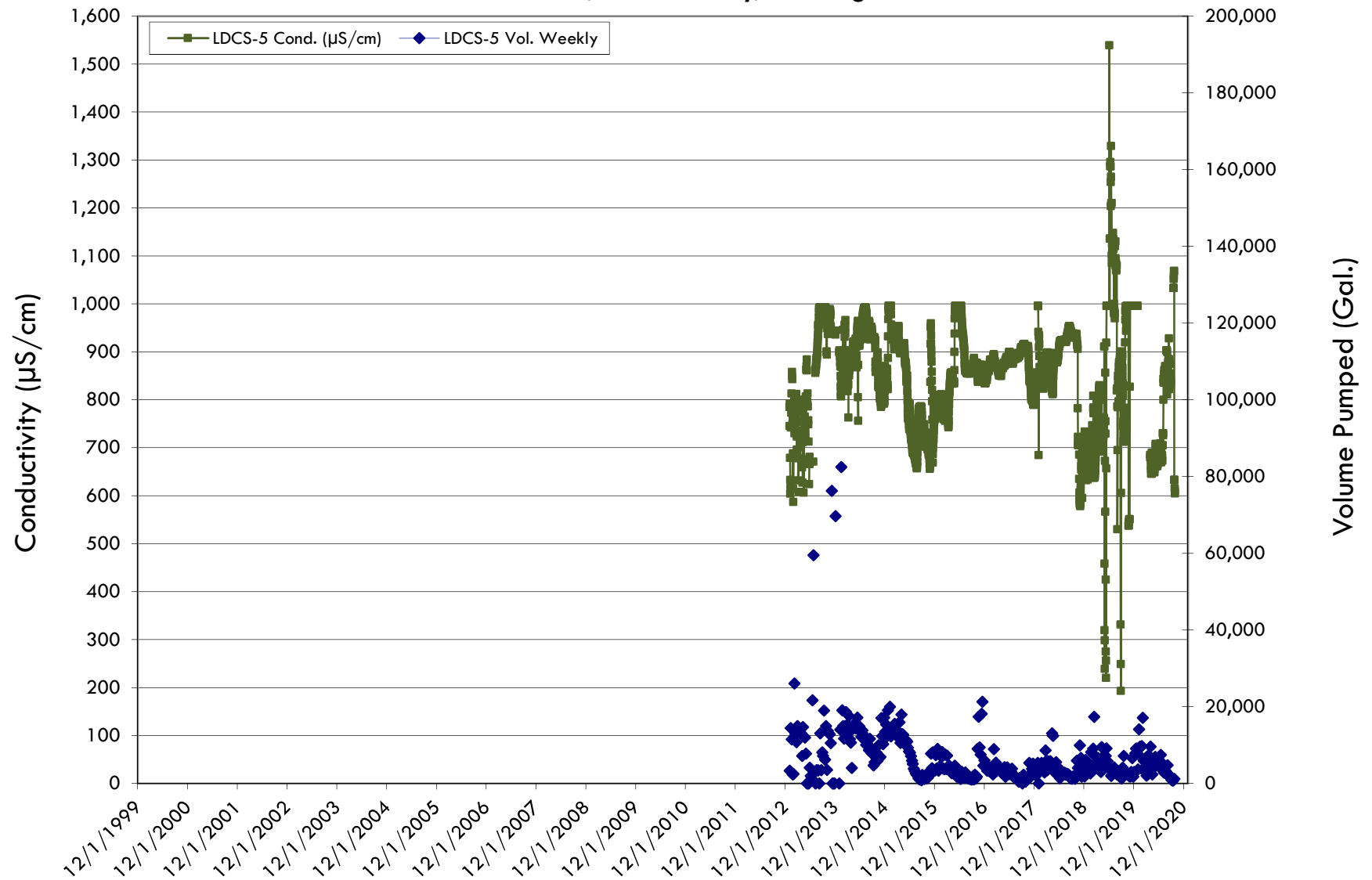
LDCS-4A
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



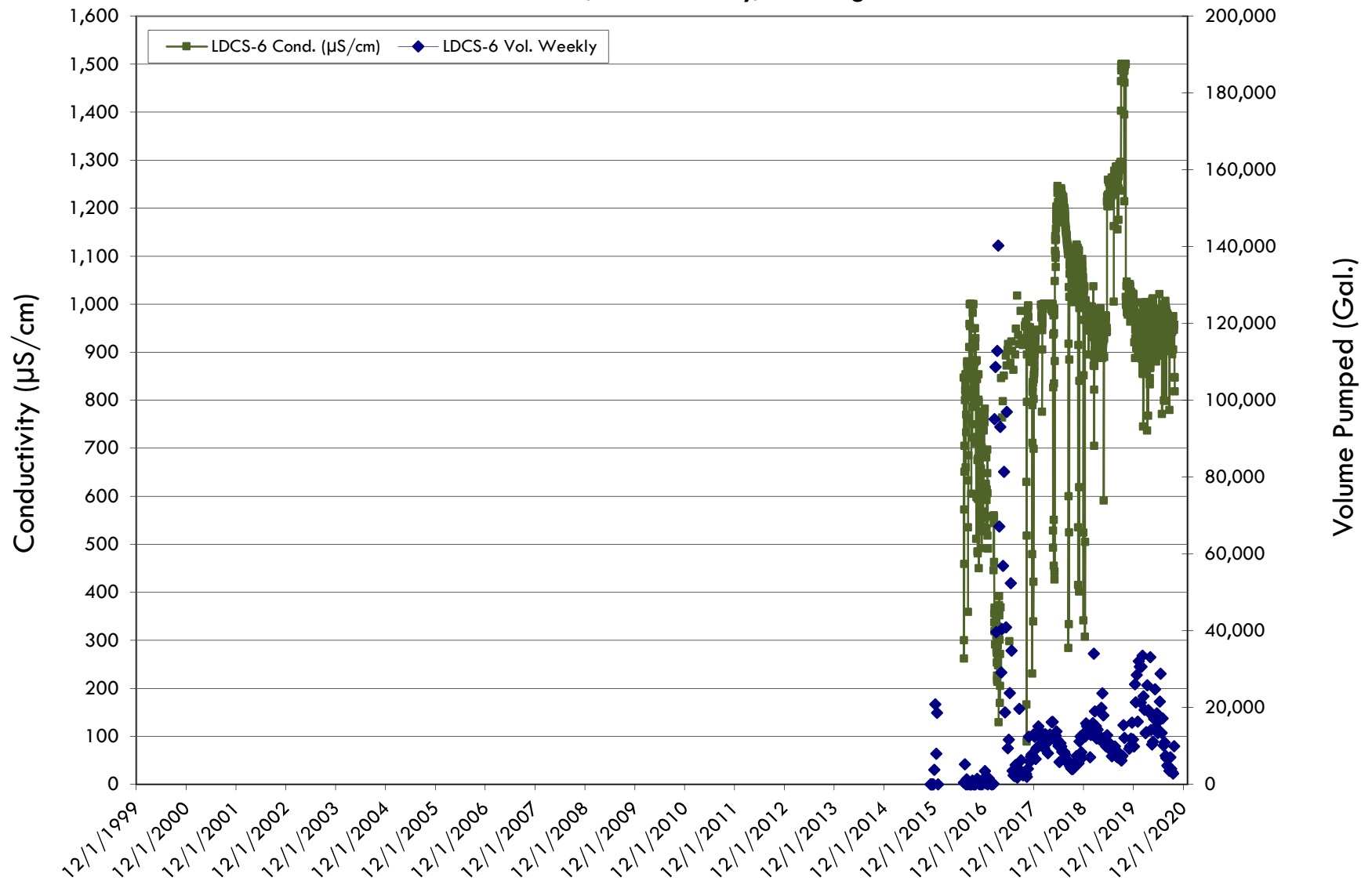
LDCS-4B
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



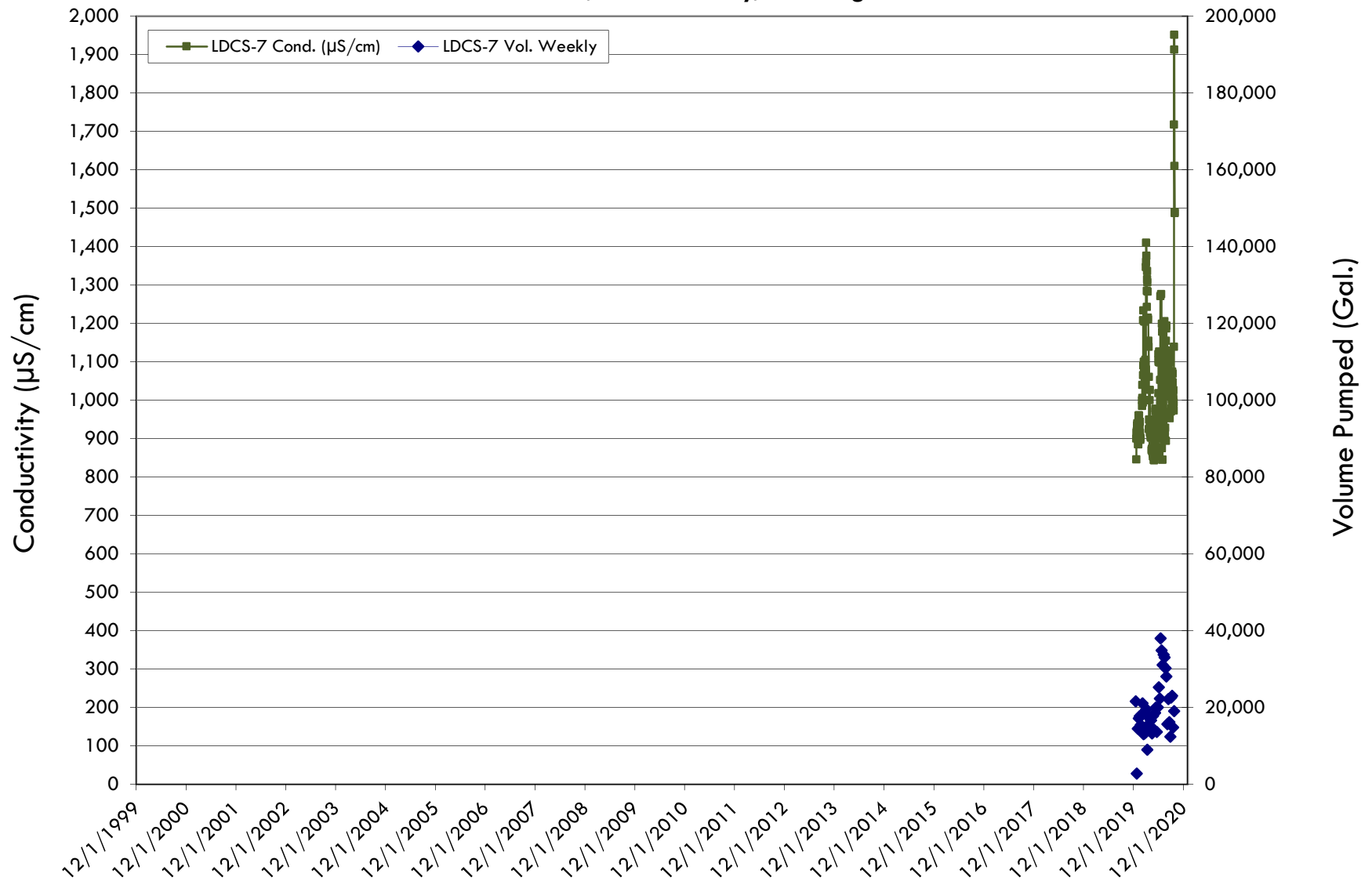
LDCS-5
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



LDCS-6
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



LDCS-7
Daily Conductivity vs Weekly Volume Pumped
Third Quarter 2020
LRI Landfill, Pierce County, Washington



Attachment I

Surface Water Monitoring Data



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: South Creek

Monitoring Period: 07/01/2020 - 07/31/2020

Outfall: UNK - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C7-1	C7-1
Minimum			BM: >= 6.5 (RO)
Maximum		BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

No construction stormwater discharges occurred during the month of July

Outfall: UNK - South Creek

Monitoring Point	Parameter	Sample Date/ Statistical Base	Value	Notes/Comment
C7-1	All Parameters		C	

BMPs

Monitoring Point	Week	BMP
C7-1		Check Dams
C7-1		Sediment Trap
C7-1		Silt Fence

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

George Duvendack

Signature

8/11/2020 10:36:50 AM

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: South Creek

Monitoring Period: 08/01/2020 - 08/31/2020

Outfall: UNK - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C7-1	C7-1

Minimum		
		BM: >= 6.5 (RO)
Maximum		
	BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

No construction stormwater discharges occurred during the month of August.

BMPs

Monitoring Point	Week	BMP
C7-1		Check Dams
C7-1		Sediment Trap
C7-1		Silt Fence

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

George Duvendack

Signature

9/8/2020 5:18:20 PM

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: South Creek

Monitoring Period: 09/01/2020 - 09/30/2020

Outfall: UNK - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C7-1	C7-1
1-T	9/1/20	C	C
2-Su	9/6/20	C	C
3-Su	9/13/20	C	C
4-W	9/23/20	6.3	M
4-Th	9/24/20	4.6	M
4-F	9/25/20	3.2	M
4-Sa	9/26/20	6.9	M
5-Su	9/27/20	12.2	M
5-M	9/28/20	20.7	M
Minimum			M
			BM: >= 6.5 (RO)
Maximum		20.7	M
		BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge, M - Monitoring Is Conditional/Not Req This MP

Overall DMR Notes/Comment

Construction stormwater treatment using Chitosan Enhanced Sand Filtration (CESF) occurred for 6 days between September 23 and September 28. The averaged turbidity value is reported for each day that a discharge occurred. Turbidity results on September 27 and 28 were affected by automated backwash cycles. The system operator will make system modifications to preemptively close automated discharge valves prior to backwash cycles.

BMPs

Monitoring Point	Week	BMP
C7-1		Check Dams
C7-1		Construction Stormwater Chemical Treatment
C7-1		Sediment Trap
C7-1		Silt Fence

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

George Duvendack

10/15/2020 5:28:10 PM

Signature

Date



Permit Number: WAR002557

Permittee: Pierce County Recycling - 304th Street L

Facility County: Pierce

Receiving Waterbody:

Monitoring Period: 07/01/2020 - 09/30/2020

Outfall: SWPO - Discharge from SW pond

Version: 1

	Monitoring Point	Turbidity (NTU) Measured NTU Quarterly Grab	pH Standard Units Quarterly Grab	Oil & Grease Yes/No Quarterly Visual Observation	Copper Total Micrograms/L (ug/L) Quarterly Grab	Zinc Total Micrograms/L (ug/L) Quarterly Grab	Total BOD5 Total Milligrams/L (mg/L) Quarterly Grab	Solids (Residue) Total suspended (TSS) Milligrams/L (mg/L) Quarterly Grab	Ammonia Total Milligrams/L (mg/L) Quarterly Grab	Alpha-terpineol (3-Cyclohexene-1-methanol,,alpha,,alpha,,trimethyl-) Micrograms/L (ug/L) Quarterly Grab	Benzoic Acid Micrograms/L (ug/L) Quarterly Grab	p-Cresol (4-methylphenol) Micrograms/L (ug/L) Quarterly Grab
Week		SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO	SWPO
Limit Set		ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Western WA - 2020 Permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit	ISGP Non-Haz Waste Landfill (40CFR part 445 subpart B)- 2020 permit
14-M	9/28/20	23	6.9	No	12	32	5.2	36	B 0.5	B 7.2	B 500	B 1.8
Minimum			6.9									
			BM: >= 5.0 (RO)									
Average		23			12	32						
		BM: <= 25			BM: <= 14	BM: <= 117						
Maximum			6.9									
			BM: <= 9.0 (RO)									
Month 1 Average							C	C	C	C	C	C
							<= 37	<= 27	<= 4.9	<= 16	<= 71	<= 14
Month 2 Average							C	C	C	C	C	C
							<= 37	<= 27	<= 4.9	<= 16	<= 71	<= 14
Month 3 Average							5.2	36	B 0.5	B 7.2	B 500	B 1.8
							<= 37	<= 27	<= 4.9	<= 16	<= 71	<= 14

Reporting Codes Used: B - Below Detection Limit/No Detection, C - No Discharge

Overall DMR Notes/Comment

Alpha terpineol, benzoic acid, and phenol were analyzed by Method 8270 due to a lower than normal volume of sample collected. The resulting method detection limit for benzoic acid was above the non-hazardous landfill effluent limit. The lab prepared the sample, including p-cresol, through Method 3510C 10 days after the sample was collected, which exceeded the recommended 7-day holding time. The delay arose because the lab shipped the sample from the initial laboratory to an affiliated laboratory for analysis.

I certify under penalty of law, that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

George Duvendack

Signature

11/13/2020 3:53:56 PM

Date



Attachment J

Landfill Gas Monitoring Data

Exhibit 3 - Results of Landfill Gas Probe Monitoring

Landfill Gas Control System

LRI Landfill

SCS Engineers

04220001.04

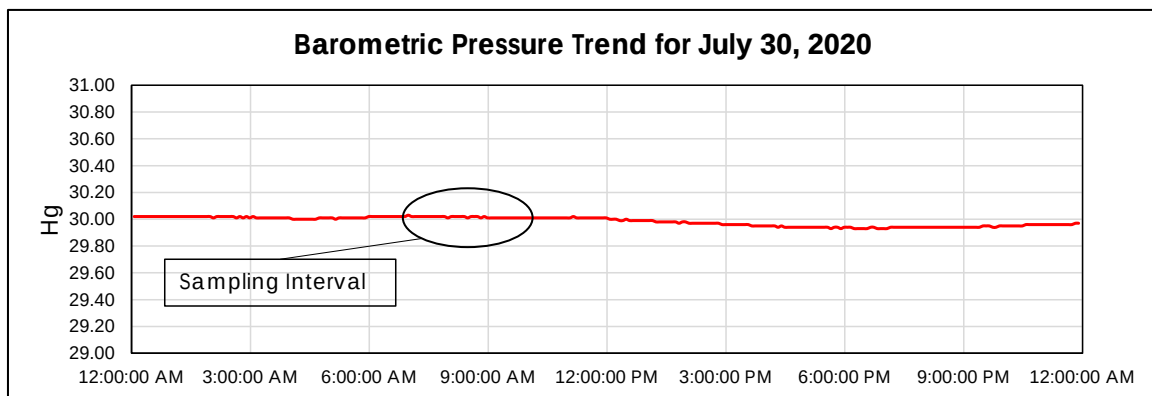
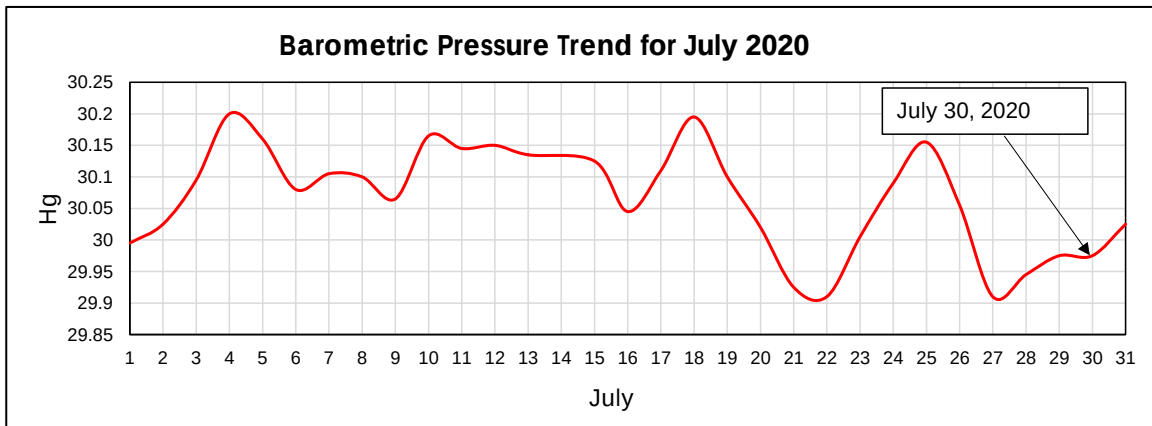
July-20

Location Refer Design.	Date	Time	P _(well) (in W.C.)	Gas Composition - <i>Note 1</i>					Depth to Water <i>Note 2</i> (ft-TOC)	Exposed Portion of Perforations - <i>Note 3</i>		Comments
				CH ₄ Spike (% by vol.)	CH ₄ (% by vol.)	CO ₂ (% by vol.)	O ₂ (% by vol.)	Balance (N ₂ & H ₂ O) (% by vol.)		(ft)	(%)	
Normal Operating Rage:												
(min)			-		0.3	0.3	-				20.0	
(max)			5.00		5.0	5.0	20.3				90.0	
Perimeter Gas Probes												
GP-1	7/30/2020	7:55	0.2	7.8	2.5	1.9	17.0	78.6	18.3	11.3	100.0	
GP-2	7/30/2020	8:05	0.1	6.3	6.0	18.4	0.4	75.2	16.6	9.6	100.0	
GP-3	7/30/2020	8:11	0.1	--	0.0	10.9	10.9	78.2	11.7	7.7	100.0	
GP-4	7/30/2020	11:53	0.0	--	0.0	7.3	7.9	84.8	9.0	5.0	100.0	
GP-9	7/30/2020	8:21	0.1	--	0.0	9.7	6.2	84.1	13.6	0.0	0.0	
GP-10	7/30/2020	7:46	0.1	--	0.1	20.4	3.0	76.5				
GP-10P												<i>Note 5</i>
GP-11	7/30/2020	7:34	0.1	--	0.0	16.1	7.6	76.3				<i>Note 6</i>
GP-12	7/30/2020	7:29	0.2	36.1	28.9	69.2	0.2	1.7				<i>Note 6</i>
GP-13	7/30/2020	7:23	0.1	--	0.0	25.9	1.4	72.7				
GP-14	7/30/2020	8:54	0.1	--	0.0	0.0	20.6	79.4	15.0	0.0	0.0	
GP-15	7/30/2020	9:02	0.1	--	0.0	0.0	20.4	79.6	21.0	5.0	100.0	
GP-16	7/30/2020	8:27	0.1	--	0.0	0.4	20.5	79.1	21.2	14.2	94.9	
Weather: Temperature, T (deg F): Wind Speed (mph): Wind Direction: Barometric Pressure, P (in Hg): 24hr Baro.Trend (rising / falling / steady / unsteady)						Beginning	Ending	Average	Starting Date:		7/30/2020	
						Clear	Clear	Clear	Starting Time:		7:23	
						65	82	73.5	Finishing Date:		7/30/2020	
						7	6	6.5	Finishing Time:		11:53	
						0	225	112.5	Monitored by:		T. Berndahl	
						29.52	29.51	29.52	Instruments:		GEM 2000	
						Steady			Calibration Date:		7/30/2020	

Headings:		Notes:	
P _(well)	Relative Pressure	1.	Measurement for spike concentrations of CH ₄ and CO ₂ are recorded as a comment if observed during sampling.
CH ₄	Methane	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
CO ₂	Carbon Dioxide	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
O ₂	Oxygen	4.	GP-10P added in January 2018. Monitoring performed at water level piezometer installed in the same boring as GP-10.
H ₂ O	Water Vapor	5.	Quick connect broken. Could not monitor.
N ₂	Nitrogen	6.	Missing Bolts for the flush mount.
TOC	Top of Casing		

Barometric Pressure Trend - July 2020

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Puyallup)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-07-30/2020-07-30/monthly>

Daily Data Source: Wunderground.com (Puyallup)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-07-30/2020-07-30/daily>

Exhibit 3 - Results of Landfill Gas Probe Monitoring

Landfill Gas Control System

LRI Landfill

SCS Engineers

04220001.04

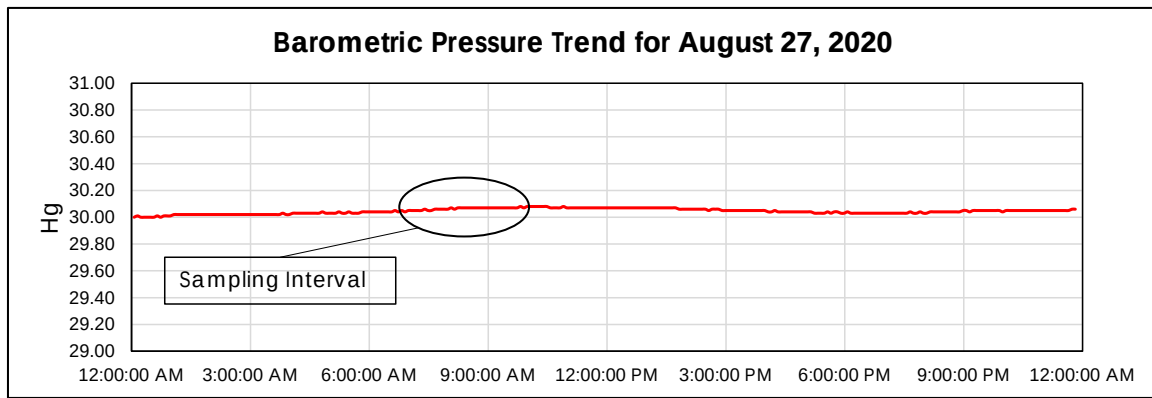
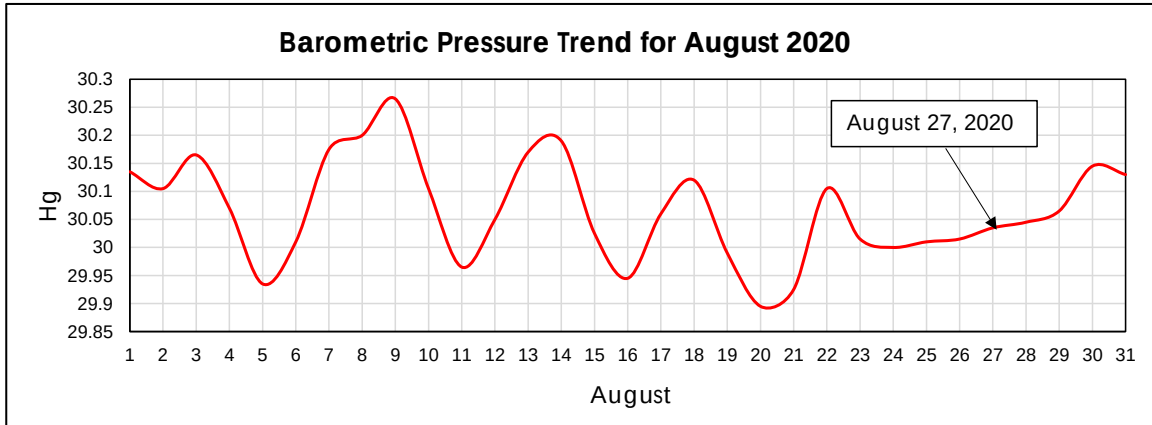
August-20

Location Refer Design.	Date	Time	P _(well) (in W.C.)	Gas Composition - <i>Note 1</i>					Depth to Water <i>Note 2</i> (ft-TOC)	Exposed Portion of Perforations - <i>Note 3</i>		Comments
				CH ₄ Spike (% by vol.)	CH ₄ (% by vol.)	CO ₂ (% by vol.)	O ₂ (% by vol.)	Balance (N ₂ & H ₂ O) (% by vol.)		(ft)	(%)	
Normal Operating Rage:												
(min)			-		0.3	0.3	-				20.0	
(max)			5.00		5.0	5.0	20.3				90.0	
Perimeter Gas Probes												
GP-1	8/27/2020	8:08	0.1	11.6	5.3	3.5	15.5	75.7	19.1	12.1	100.0	
GP-2	8/27/2020	12:46	0.1	--	0.1	18.7	0.2	81.0	17.1	10.1	100.0	
GP-3	8/27/2020	8:17	-0.4	--	0.0	10.6	11.7	77.7	10.1	6.1	100.0	
GP-4	8/27/2020	8:26	0.1	--	0.0	8.8	10.9	80.3	13.3	9.3	100.0	
GP-9	8/27/2020	8:32	0.1	--	0.0	10.0	8.4	81.6	14.0	0.0	0.0	
GP-10	8/27/2020	7:59	0.1	--	1.0	21.7	2.0	75.3				
GP-10P												<i>Note 5</i>
GP-11	8/27/2020	7:54	0.1	--	0.0	23.4	0.7	75.9				<i>Note 6</i>
GP-12	8/27/2020	7:49	0.1	30.5	25.3	62.8	2.6	9.3				<i>Note 6</i>
GP-13	8/27/2020	7:38	0.1	0.2	0.5	28.5	0.8	70.2				
GP-14	8/27/2020	8:58	0.2	--	0.0	6.3	11.7	82.0	16.6	0.6	11.0	
GP-15	8/27/2020	9:06	-0.4	--	0.0	0.1	20.6	79.3	12.2	0.0	0.0	
GP-16	8/27/2020	8:38	0.1	--	0.1	0.2	21.1	78.6	22.0	15.0	99.7	
						Beginning	Ending	Average	Starting Date:		8/27/2020	
Weather:						Clear	Clear	Clear	Starting Time:		7:38	
Temperature, T (deg F):						56	76	66	Finishing Date:		8/27/2020	
Wind Speed (mph):						0	8	4	Finishing Time:		12:46	
Wind Direction:						0	270	135	Monitored by:		T. Berndahl	
Barometric Pressure, P (in Hg):						29.54	29.58	29.56	Instruments:		GEM 2000	
24hr Baro.Trend (rising / falling / steady / unsteady)						Steady			Calibration Date:		8/27/2020	

Headings:		Notes:	
P _(well)	Relative Pressure	1.	Measurement for spike concentrations of CH ₄ and CO ₂ are recorded as a comment if observed during sampling.
CH ₄	Methane	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
CO ₂	Carbon Dioxide	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
O ₂	Oxygen	4.	GP-10P added in January 2018. Monitoring performed at water level piezometer installed in the same boring as GP-10.
H ₂ O	Water Vapor	5.	Quick connect broken. Could not monitor.
N ₂	Nitrogen	6.	Missing Bolts for the flush mount.
TOC	Top of Casing		

Barometric Pressure Trend - August 2020

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Puyallup)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-08-27/2020-08-27/daily>

Daily Data Source: Wunderground.com (Puyallup)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-08-30/2020-08-30/monthly>

SCS Engineers

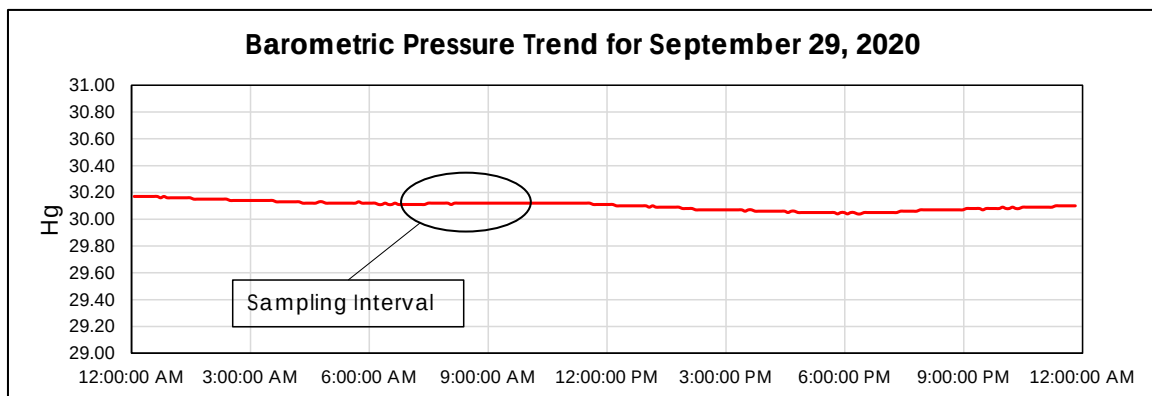
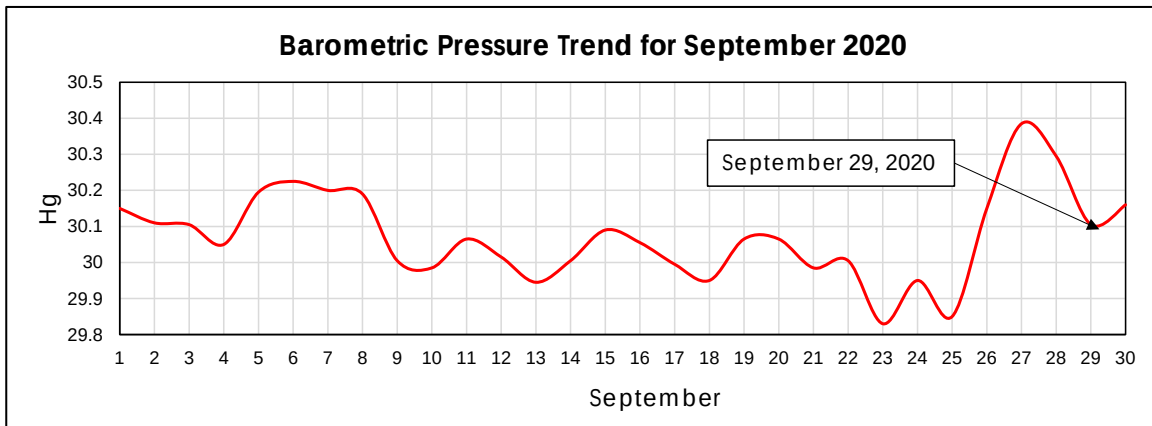
04220001.04

September-20

Headings:		Notes:	
P _(well)	Relative Pressure	1.	Measurement for spike concentrations of CH ₄ and CO ₂ are recorded as a comment if observed during sampling.
CH ₄	Methane	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
CO ₂	Carbon Dioxide		
O ₂	Oxygen	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
H ₂ O	Water Vapor	4.	GP-10P added in January 2018. Monitoring performed at water level piezometer installed in the same boring
N ₂	Nitrogen		as GP-10.
TOC	Top of Casing	5	Quick connect broken. Could not monitor.
		6	Missing Bolts for the flush mount.

Barometric Pressure Trend - September 2020

LRI 304th Landfill, Washington



Monthly Data Source: Wunderground.com (Puyallup)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-09-29/2020-09-29/monthly>

Daily Data Source: Wunderground.com (Puyallup)

Lat: 47.10 Long: 122.29 Elev: 535 ft-AMSL

Data Source: <https://www.wunderground.com/dashboard/pws/KWAPUYAL102/table/2020-09-29/2020-09-29/daily>

LRI 304th Street Landfill Landfill Gas Monitoring of On-site Buildings

Project Number: 04220001.04

Date: 9/29/20

Weather Conditions: Sunny

Instrument: MicroFlo

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**.

- ☒ Main Office - individual office spaces, storage areas and within open crawl-space area. 15.0 ppm conference room
- ☒ Repair Shop - survey atmosphere conditions throughout (lower height levels). 13.0 ppm eye wash
- ☒ Pay/Scale Booth - interior of building.
- ☒ Work Shop - interior of shed adjacent to stormwater ponds. 11.5 West side


Signature

Background

Upwind → 0.2 ppm

Downwind → 16.9 ppm