

Second Quarter 2023 Monitoring Report

LRI Landfill

Graham, Washington

Pierce County Recycling, Composting
& Disposal, LLC dba LRI
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SCS ENGINEERS

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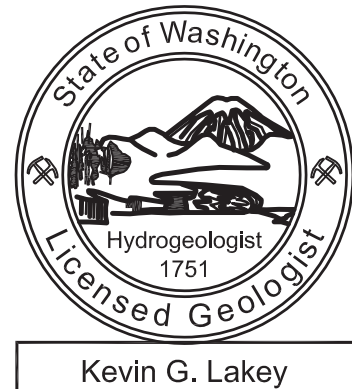
This document is the Second Quarter 2023 Monitoring Report for the LRI Landfill located in Graham, Washington. Activities this quarter included monitoring the volume and specific conductance of water pumped from the leak detection/collection system, quarterly groundwater monitoring, monthly landfill gas monitoring, and weekly surface water monitoring. This document was prepared by Jovany Estrada and Kevin Lakey of SCS Engineers and submitted to Mr. Keith Johnston of the Tacoma-Pierce County Health Department (TPCHD).



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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

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GROUNDWATER MONITORING

Second quarter 2023 groundwater samples were collected on June 7 and 8, 2023. Nine monitoring wells (MW-1A, MW-2A, MW-3, MW-4, MW-5A, MW-6, MW-7, MW-9, and MW-10) and eleven leak detection collection locations (LDCS-1, LDCS-2A, LDCS-2B, LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, LDCS-6, LDCS-7, LDCS-8, and LDCS-9A) were sampled this quarter. In addition, a leachate sample was collected from Cell 9. Water level elevations were measured on June 7 and 8, 2023. Field quality control samples consisted of one field blank and one duplicate sample collected at MW-7. Sampling procedures followed the LRI Landfill Groundwater Monitoring Plan (GWMP), dated March 10, 2014.

Groundwater samples were collected 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 Eurofins Scientific of Denver, Colorado for the parameters listed in Appendix I and II of WAC 173-351-990. Groundwater sampling locations are shown in Figure 1.

A groundwater surface elevation map for the second quarter monitoring event is included as Figure 1. 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), leachate, and quality control samples are summarized on the following tables presented 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) 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, total organic carbon (TOC)
- Plot 2 — alkalinity, sulfate, total dissolved solids (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 second quarter unless otherwise noted. 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 second 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	**	**	**	0.0100	0.0061	0.0071	0.0055
Iron, Dissolved	0.30	*	0.65	*	*	*	*	*
Manganese, Dissolved	0.05	0.09	0.29	0.37	0.12	0.19	0.28	0.28
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 results summarized 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.

Low-level detections of ammonia (ranging between 0.10 and 0.24 mg/L) were reported at downgradient wells MW-3, MW-4, MW-5A, and MW-6, and MW-7. The 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. During the second quarter, the cation-anion balance evaluation exceeded the appropriate threshold for

monitoring wells MW-2A, MW-6, MW-7, and background monitoring well MW-10. All other monitoring well cation-anion balance evaluations were below the appropriate threshold.

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 this quarter.

LEAK DETECTION/COLLECTION SYSTEM (LDCS) MONITORING

A leak detection/collection system (LDCS) is present directly beneath the composite liner of each landfill cell to provide for early leak detection and to collect leachate in the event a leachate leak develops in the composite liner or leachate force main. The system consists of a high permeability gravel blanket that is underlain and overlain by geosynthetic fabrics. The system also dewateres groundwater that is present within the glacial till. Leachate leaks are indicated by the presence acetone and 2-butanone (primary leachate indicator parameters) and increases in concentrations of ammonia and chloride (secondary leachate indicator parameters), as well as increases in specific conductance (conductivity), total dissolved solids, alkalinity, sodium, potassium, and total organic carbon.

LDCS Maintenance. No significant maintenance activities occurred this quarter.

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 data from the LDCS sumps trended within typical historical ranges during the second quarter of 2023.

LDCS Quarterly Monitoring. Samples were collected using disposable bailers at LDCS-1, LDCS-2A, and LDCS-2B, and with dedicated QED Sleeper Pumps at LDCS-3A, LDCS-4A, LDCS-4B, LDCS-5, LDCS-6, and LDCS-7. The sample from LDCS-8 was collected as a grab sample from the dewatering pump discharge spigot and the two samples from LDCS-9A were collected from the temporary HDPE sump using a peristaltic pump.

LDCS-1 water quality results included a low-level detection of acetone at 31 µg/L. Primary leachate indicator parameter 2-butanone, was not detected and concentrations of secondary leachate indicator parameters, ammonia (0.21 mg/L) and chloride (5.2 mg/l), remained low. Therefore, the acetone detection does not appear to be the result of leachate.

LDCS-2A water quality results included a low-level detection of 1,4-dichlorobenzene at 0.69 µg/L. Primary leachate indicator parameters acetone and 2-butanone were not detected and concentrations of secondary leachate indicator parameters, ammonia (1.1 mg/L) and chloride, (11 mg/L) remained low. Therefore, the 1-4, dichlorobenzene detection does not appear to be the result of leachate.

LDCS-4A and LDCS-4B water quality results display generally increasing trends in chloride (see the time trend plots in Attachment G). However, the remaining leachate indicator parameters remained low or non-detect, therefore, the water quality trends noted above do not appear to be the result of leachate.

LDCS-7 water quality results included a detection of benzene at 5.4 ug/L. Primary leachate indicator parameters, acetone and 2-butanone, were not detected and secondary leachate indicator parameters, ammonia (0.1 mg/L) and chloride (6.1 mg/L), remained low. Therefore, the benzene detection does not appear to be the result of leachate.

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

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. During the second quarter of 2023, construction and industrial stormwater treatment with Chitosan Sand Enhanced Filtration (CESF) was utilized each month.

Discharge Monitoring Reports (DMR's) were submitted to Ecology on a monthly (Construction Permit) and quarterly (Industrial Permit) basis. Copies of the second quarter 2023 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. 2023 Leachate Volume Data

Month	Leachate Trucked Offsite for Proper Disposal (gallons)	Monthly Rainfall (inches)
January	2,919,816	2.51
February	2,422,279	2.36
March	3,021,650	2.28
April	2,928,551	5.04
May	3,047,657	0.62
June	2,625,858	1.18
Totals	16,965,811	13.99
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 probes was conducted on April 27, May 24, and June 21 using a Landtec GEM2000 portable gas monitor. Monitoring results for the first six months of 2023 performance probes installed within the perimeter berm adjacent to the landfill are included in Exhibit 3.

Exhibit 3. 2023 Landfill Gas Probe Monitoring Summary (Percent Methane) Performance Probes

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 25	0.0	5.9	0.0	0.0	0.0	0.0	15.5	0.0	12.7	0.0	0.0	2.3	0.0
February 16	0.0	0.8	0.0	0.0	0.0	0.0	8.7	0.0	12.0	0.0	0.0	0.0	0.0
March 23	0.0	0.0	0.0	0.0	0.0	13.4	16.4	0.0	15.2	0.1	0.0	0.0	0.0
April 27	17.0	0.8	0.0	0.0	0.0	13.4	0.8	0.0	14.5	0.0	0.0	0.0	0.0
May 24	0.0	0.2	0.0	0.0	0.0	6.8	15.4	0.0	17.0	0.0	0.0	0.0	0.0
June 21	14.7	0.0	0.0	0.0	0.0	15.3	0.0	0.0	19.9	0.0	0.0	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**.

Monitoring results for five probes that were installed in September 2022 in native soils closer to the property boundary of the facility are included in Exhibit 4. Methane measurements were less than the lower explosive limit (LEL) of five percent by volume at each of these probes.

Exhibit 4. 2023 Landfill Gas Probe Monitoring Summary (Percent Methane)
Native Soils Probes

Monitoring Date	GP-17	GP-18	GP-19	GP-20	GP-21
January 25	0.0	0.0	0.0	0.0	0.0
February 16	0.0	0.0	0.0	0.0	0.0
March 23	0.0	0.0	0.0	0.0	0.0
April 27	0.0	0.0	0.0	0.0	0.0
May 24	0.0	0.0	0.0	0.0	0.0
June 21	0.0	0.0	0.0	0.0	0.0

Notes: All values are reported as percent methane by volume.

Indoor air was tested for the presence of methane on May 31, 2023. The office, maintenance building and scale house were tested with a portable flame ionization detector (MicroFID). No significant levels of methane were recorded.

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

LANDFILL GAS EXTRACTION WELL CONSTRUCTION

Eight new interim landfill gas extraction wells were installed at the landfill during the second quarter of 2023. A copy of the well installation report is included in Attachment J.

GROUNDWATER MONITORING WELL CONSTRUCTION AND MAINTENANCE

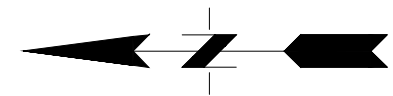
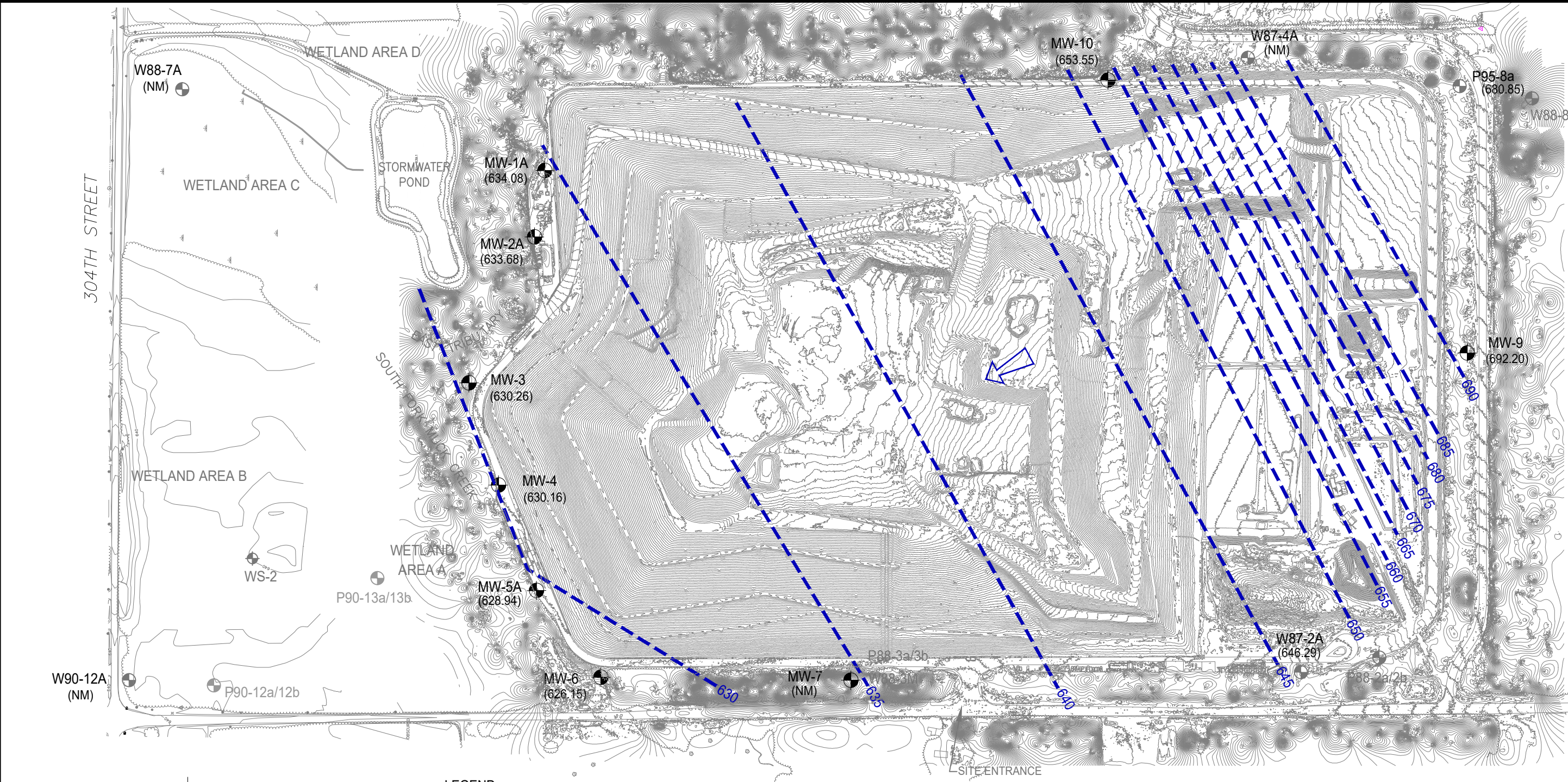
No well construction or significant well maintenance activities were performed this quarter.



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
- (646.29) GROUNDWATER ELEVATION (IN FEET ABOVE MSL)
- INFERRED GROUNDWATER FLOW DIRECTION
- (NM) NOT MEASURED



SCALE (ft)

Attachment B

Groundwater Data Summary Tables

**Table 1. Groundwater Level Elevations
June 7 and 8, 2023
LRI Landfill, Pierce County, Washington**

Location	Well Casing Elevation (ft)	Depth to Water (ft)	Water Level Elevation (ft, NGVD29)
Wells			
W87-2A	664.01	17.72	646.29
W88-3M	656.48	NM*	--
W87-4A	693.29	NM*	--
W88-7A	632.51	NM*	--
W88-8A	721.05	NM*	--
W90-12A	640.84	NM*	--
MW-1A	652.57	18.49	634.08
MW-2A	651.93	18.25	633.68
MW-3	637.41	7.15	630.26
MW-4	652.37	22.21	630.16
MW-5A	655.55	26.61	628.94
MW-6	635.71	9.56	626.15
MW-7	656.03	NM*	--
MW-9	701.77	9.57	692.20
MW-10	678.37	24.82	653.55
Piezometers			
P13-14A	665.96	NM*	--
P88-2A	663.96	NM*	--
P88-2B	663.48	NM*	--
P88-3A	656.20	NM*	--
P88-3B	655.98	NM*	--
P95-8A	722.07	41.22	680.85
P90-12A	640.84	NM*	--
P90-12B	640.73	NM*	--
P90-13A	645.19	NM*	--
P90-13B	643.63	NM*	--
GP-1P	652.00	NM*	--
GP-2P	658.61	15.90	642.71
GP-3P	658.51	9.90	648.61
GP-4P	662.01	9.80	652.21
GP-9P	674.03	12.00	662.70
GP-14P			
GP-15P			
GP-16P	689.51		
GP-17P			
P21-2			
P22-1		28.57	
P22-2		4.27	
P22-3			
South Creek			
SWSC-1	632.68	3.35	629.33
SWSC-2	629.98	3.20	626.78
Leak Detection System			
LDCS-1	657.26	28.47	628.79
LDCS-2A	659.24	30.10	629.14
LDCS-2B	661.70	27.65	634.05

Notes:

NM = not measured

-- = not applicable

All measurements taken on June 7 and 8, 2023

Table 2. Field Parameters
Second Quarter 2023
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	304-060723-02	6/7/2023	DP	6.69	112	15.3
MW-2A	304-060723-04	6/7/2023	DP	6.92	260	14.2
MW-3	304-060723-06	6/7/2023	DP	6.92	383	11.3
MW-4	304-060823-21	6/8/2023	SP	6.92	341	13.9
MW-5A	304-060723-08	6/7/2023	DP	7.27	376	13.3
MW-6	304-060823-12	6/8/2023	DP	7.40	344	11.0
MW-7	304-060723-14	6/7/2023	DP	7.26	388	11.3
MW-9	304-060823-18	6/8/2023	DP	6.68	136	10.5
MW-10	304-060723-16	6/7/2023	DP	6.20	284	13.4
Leak Detection System						
LDCS-1	304-060723-09	6/7/2023	DB	6.00	459	26.4
LDCS-2A	304-060723-07	6/7/2023	DB	6.44	875	23.6
LDCS-2B	304-060723-05	6/7/2023	DB	6.45	891	21.5
LDCS-3A	304-060823-03	6/8/2023	DP	6.22	849	22.0
LDCS-4A	304-060723-11	6/7/2023	DP	6.13	852	23.6
LDCS-4B	304-060723-19	6/7/2023	DP	6.38	975	26.4
LDCS-5	304-060823-17	6/8/2023	DP	6.35	862	24.5
LDCS-6	304-060823-13	6/8/2023	DP	6.57	1,006	27.2
LDCS-7	304-060723-01	6/7/2023	DP	5.94	803	26.7
LDCS-8	304-060823-20	6/8/2023	GB	6.31	989	25.2
LDCS-9	304-060823-24	6/8/2023	GB	6.27	672	15.8

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

SP = submersible pump

SU = standard units

μS/cm = microsiemens per centimeter

Table 3. Inorganic Parameters
Second Quarter 2023
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	0.20	0.50	0.20	10	1.0	4.0
WAC 173-200 Criteria	—	—	250	10	250	500	—	—
Prediction Limit	—	—	—	6.4	—	—	—	—
Monitoring Wells								
MW-1A	47	*	1.3	*	9.1	74	*	*
MW-2A	120	*	3.2	*	7.7	170	*	*
MW-3	160	0.13	4.1	*	32	220	1.0	*
MW-4	160	0.1	4.0	*	15	210	1.1	*
MW-5A	180	0.16	3.4	*	14	210	1.0	*
MW-6	160	0.14	5.6	*	6.4	210	1.1	*
MW-7	200	0.24	3.6	*	2.0	220	1.1	*
(BG) MW-9	67	*	1.7	*	1.0	130	*	*
(BG) MW-10	120	*	7.2	2.6	5.7	190	*	*
Leak Detection System								
LDCS-1	210	0.21	5.2	*	6.9	280	31	—
LDCS-2A	450	1.1	11	*	45	520	6.1	—
LDCS-2B	400	0.55	41	*	55	530	9.7	—
LDCS-3A	420	0.26	4.8	*	61	520	2.1	—
LDCS-4A	370	0.26	30	*	60	500	6.7	—
LDCS-4B	420	0.26	35	*	70	570	6.9	—
LDCS-5	370	0.46	29	*	79	550	10	—
LDCS-6	450	*	20	*	110	640	4.3	—
LDCS-7	420	0.1	6.1	*	14	490	4.7	—
LDCS-8	530	*	20	*	53	650	6.7	—
LDCS-9	300	*	7.3	1.2	54	420	2.9	—

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 Eurofins TestAmerica of Denver, Colorado

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

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

— = Not applicable or not performed

BG = Background

B = compound was detected in the method blank and the sample

Table 4. WAC 173-351 Appendix I Metals
Second Quarter 2023
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	—	—	—	—	—	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	—	*	—	*	—	0.0087	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
MW-2A	—	*	—	*	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
MW-3	—	*	—	*	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
MW-4	—	*	—	0.0100	—	0.015	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	0.027
MW-5A	—	*	—	0.0061	—	0.013	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
MW-6	—	*	—	0.0071	—	0.012	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
MW-7	—	*	—	0.0055	—	0.014	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
(BG) MW-9	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	*
(BG) MW-10	—	*	—	*	—	0.013	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.0073	*	—	0.011
Leak Detection System																															
LDSCS-1	*	—	0.032	—	0.021	—	0.021	—	—	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-2A	*	—	0.037	—	0.110	—	0.11	—	—	—	*	—	0.0022	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-2B	*	—	0.150	—	0.140	—	0.14	—	—	—	*	—	0.004	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	0.024
LDSCS-3A	*	—	0.017	—	0.025	—	0.025	—	—	—	*	—	0.0022	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-4A	*	—	0.015	—	0.033	—	0.033	—	—	—	*	—	0.003	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-4B	*	—	0.016	—	0.033	—	0.033	—	—	—	*	—	0.0013	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-5	*	—	*	—	0.049	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-6	*	—	*	—	0.047	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-7	*	—	0.022	—	0.041	—	*	—	*	—	*	—	0.003	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-8	*	—	0.011	—	0.046	—	*	—	*	—	*	—	0.0021	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*
LDSCS-9	*	—	*	—	0.017	—	*	—	*	—	*	—	0.0011	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*	—	*

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 LDSCS sumps are dissolved (D) metals

Parameter concentrations for leachate samples are total (T) metals

Analyses performed by Eurofins TestAmerica of Denver, Colorado

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

* = 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)
Second Quarter 2023
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	13	0.15	4.2	0.09	2.7	7.9
MW-2A	24	0.65	12	0.29	3.4	16
MW-3	43	*	17	0.37	4.4	15
MW-4	34	*	18	0.12	5.4	13
MW-5A	32	*	12	0.19	4.7	37
MW-6	37	*	17	0.28	5.1	11
MW-7	36	0.27	24	0.28	6.7	18
(BG) MW-9	11	0.13	7.2	*	2.2	7.6
(BG) MW-10	31	*	12	*	2.5	14
Leak Detection System						
LDCS-1	40	52	17	1.2	5.3	18
LDCS-2A	110	7.9	42	5.1	10.0	32
LDCS-2B	120	68	44	2.4	7.2	21
LDCS-3A	110	3.0	48	3.8	6.9	27
LDCS-4A	88	4.1	47	1.5	6.4	28
LDCS-4B	99	1.3	52	1.8	7.3	31
LDCS-5	87	0.18	53	1.3	8.6	39
LDCS-6	93	0.29	82	*	7.2	26
LDCS-7	97	3.9	38	3.7	4.8	29
LDCS-8	110	2.1	76	2.1	5.7	33
LDCS-9	84	*	23	0.72	2.4	28

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 Eurofins TestAmerica of Denver, Colorado

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

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

** = Reported concentrations for leachate are total metals

— = not applicable or not performed

BG = Background

Table 6. Volatile Organic Compounds (µg/L)
Second Quarter 2023
LRI Landfill, Pierce County, Washington

Parameter	1,4-Dichlorobenzene	2-Butanone (MEK)	4-Methyl-2-pentanone (MIBK)	Acetone	Benzene	Carbon disulfide	Ethylbenzene	m-Xylene & p-Xylene	o-Xylene	Toluene
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
MRL	0.50	6.0	5.0	10.0	0.50	0.63	1.0	0.50	0.50	0.50
WAC 173-200 Criteria	4.0	—	—	—	1.0	—	—	—	—	—
Monitoring Wells										
MW-1	*	*	*	*	*	*	*	*	*	*
MW-2	*	*	*	*	*	*	*	*	*	*
MW-3	*	*	*	*	*	*	*	*	*	*
MW-4	*	*	*	*	*	*	*	*	*	*
MW-5	*	*	*	*	*	*	*	*	*	*
MW-6	*	*	*	*	*	*	*	*	*	*
MW-7	*	*	*	*	*	*	*	*	*	*
(BG) MW-9	*	*	*	*	*	*	*	*	*	*
(BG) MW-10	*	*	*	*	*	*	*	*	*	*
Leak Detection System										
LDCS-1	0.76	*	*	31	*	*	*	*	*	*
LDCS-2A	0.69	*	*	*	*	*	*	*	*	*
LDCS-2B	*	*	*	*	*	*	*	*	*	*
LDCS-3A	*	*	*	*	*	*	*	*	*	*
LDCS-4A	*	*	*	*	*	*	*	*	*	*
LDCS-4B	*	*	*	*	*	*	*	*	*	*
LDCS-5	*	*	*	*	*	*	*	*	*	*
LDCS-6	*	*	*	*	*	*	*	*	*	*
LDCS-7	*	*	*	*	5.4	*	*	*	*	*
LDCS-8	*	*	*	*	*	*	*	*	*	*
LDCS-9	*	*	*	*	*	*	*	*	*	*
Leachate Collection System										
Leachate, Cell 9	*	*	74	*	4.2	6.2	8.4	31	17	87
Quality Control Samples										
Field Blank	*	*	*	*	*	*	*	*	*	*

Notes:

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

Analyses performed by Eurofins TestAmerica of Denver, Colorado

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

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

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

— = not applicable or not performed

BG = Background

Table 7. Cation-Anion Balance
Second Quarter 2023
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	13	4.2	2.7	7.9	27.8	0.65	0.35	0.06	0.34	1.40	28.9	46.4	24.7
MW-2A	24	12	3.4	16	55.4	1.20	0.99	0.08	0.70	2.96	26.1	40.5	33.4
MW-3	43	17	4.4	15	79.4	2.15	1.40	0.10	0.65	4.30	17.5	49.9	32.6
MW-4	34	18	5.4	13	70.4	1.70	1.48	0.12	0.57	3.87	17.8	43.9	38.3
MW-5A	32	12	4.7	37	85.7	1.60	0.99	0.11	1.61	4.30	39.9	37.1	23.0
MW-6	37	17	5.1	11.0	70.1	1.85	1.40	0.12	0.48	3.84	15.5	48.1	36.4
MW-7	36	24	6.7	18	84.7	1.80	1.98	0.15	0.78	4.71	19.9	38.2	42.0
MW-9	11	7.2	2.2	7.6	28	0.55	0.59	0.05	0.33	1.52	25.0	36.1	38.9
MW-10	31	12	2.5	14	59.5	1.55	0.99	0.06	0.61	3.20	20.8	48.3	30.9
LDCS-1	40	17	5.3	18	80.3	2.00	1.40	0.12	0.78	4.30	21.0	46.4	32.6
LDCS-2A	110	42	10.0	32	194.0	5.49	3.46	0.23	1.39	10.56	15.3	52.0	32.7
LDCS-2B	120	44	7.2	21	192.2	5.99	3.62	0.16	0.91	10.69	10.1	56.0	33.9
LDCS-3A	110	48	6.9	27	191.9	5.49	3.95	0.16	1.17	10.77	12.4	51.0	36.7
LDCS-4A	88	47	6.4	28	169.4	4.39	3.87	0.14	1.22	9.62	14.2	45.6	40.2
LDCS-4B	99	52	7.3	31	189.3	4.94	4.28	0.16	1.35	10.73	14.1	46.0	39.9
LDCS-5	87	53	8.6	39	187.6	4.34	4.36	0.19	1.70	10.59	17.8	41.0	41.2
LDCS-6	93	82	7.2	26	208.2	4.64	6.75	0.16	1.13	12.68	10.2	36.6	53.2
LDCS-7	97	38	4.8	29	168.8	4.84	3.13	0.11	1.26	9.34	14.7	51.8	33.5
LDCS-8	110	76	5.7	33	224.7	5.49	6.25	0.13	1.44	13.31	11.8	41.2	47.0
LDCS-9	84	23	2.4	28	137.4	4.19	1.89	0.05	1.22	7.36	17.3	57.0	25.7

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	56.4	1.3	0.0	9.1	66.8	0.92	0.04	0.000	0.19	1.15	3.2	80.4	16.4	2.55	9.7	10	O
MW-2A	144	3.2	0.0	7.7	154.9	2.36	0.09	0.000	0.16	2.61	3.5	90.4	6.1	5.57	6.2	5	Exceeds
MW-3	192	4.1	0.0	32	228.1	3.15	0.12	0.000	0.67	3.93	2.9	80.1	16.9	8.23	4.5	5	O
MW-4	192	4.0	0.0	15	211.0	3.15	0.11	0.000	0.31	3.57	3.2	88.1	8.7	7.44	3.9	5	O
MW-5A	216	3.4	0.0	14	233.4	3.54	0.10	0.000	0.29	3.93	2.4	90.1	7.4	8.23	4.5	5	O
MW-6	192	5.6	0.0	6.4	204	3.15	0.16	0.000	0.13	3.44	4.6	91.5	3.9	7.28	5.5	5	Exceeds
MW-7	240	3.6	0.0	2.0	245.6	3.94	0.10	0.000	0.04	4.08	2.5	96.5	1.0	8.79	7.1	5	Exceeds
MW-9	80.4	1.7	0.0	1.0	83.1	1.32	0.05	0.000	0.02	1.39	3.5	95.0	1.5	2.91	4.6	10	O
MW-10	144	7.2	2.6	5.7	159.5	2.36	0.20	0.042	0.12	2.73	7.5	86.7	4.4	5.93	8.0	5	Exceeds
LDCS-1	252	5.2	0.0	6.9	264.1	4.13	0.15	0.000	0.14	4.42	3.3	93.4	3.2	8.72	1.4	5	O
LDCS-2A	540	11.0	0.0	45	596	8.86	0.31	0.000	0.94	10.10	3.1	87.7	9.3	20.67	2.2	5	O
LDCS-2B	480	41	0.0	55	576	7.87	1.16	0.000	1.14	10.17	11.4	77.4	11.2	20.86	2.5	5	O
LDCS-3A	504	4.8	0.0	61	569.8	8.27	0.14	0.000	1.27	9.67	1.4	85.5	13.1	20.44	5.4	5	Exceeds
LDCS-4A	444	30	0.0	60	534	7.28	0.85	0.000	1.25	9.38	9.0	77.7	13.3	19.00	1.3	5	O
LDCS-4B	504	35	0.0	70	609	8.27	0.99	0.000	1.46	10.71	9.2	77.2	13.6	21.44	0.1	5	O
LDCS-5	444	29	0.0	79	552	7.28	0.82	0.000	1.64	9.74	8.4	74.7	16.9	20.34	4.2	5	O
LDCS-6	540	20	0.0	110	670	8.86	0.56	0.000	2.29	11.71	4.8	75.6	19.5	24.39	4.0	5	O
LDCS-7	504	6.1	0.0	14	524	8.27	0.17	0.000	0.29	8.73	2.0	94.7	3.3	18.07	3.4	5	O
LDCS-8	636	20	0.0	53	709	10.43	0.56	0.000	1.10	12.10	4.7	86.2	9.1	25.40	4.8	5	O
LDCS-9	360	7.3	1.2	54	423	5.90	0.21	0.019	1.12	7.25	2.8	81.4	15.5	14.61	0.7	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].

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
Second Quarter 2023 Monitoring Report
LRI Landfill, Pierce County, Washington

Parameter	MRL	MW-7	MW-7 (Duplicate)	RPD (%)
Volatile Organic Compounds (µg/L)				
4-bromofluorobenzene	2	49	47	4.17
Dibromofluoromethane	2	49	51	4.0
Inorganic Parameters (mg/L)				
Alkalinity, Total	10	200	200	0.0
Ammonia	0.1	0.24	0.23	4.3
Chloride	0.2	3.6	3.5	2.8
Sulfate	0.2	2.0	2.1	4.9
Total Dissolved Solids	10	220	230	4.4
Total Organic Carbon	1.0	1.1	0	200
Dissolved Metals (mg/L)				
Calcium	0.2	36	37	2.7
Iron	0.1	0.27	0.25	7.7
Magnesium	0.1	24	23	4.3
Manganese	0.005	0.28	0.26	7.4
Potassium	2.0	6.7	6.5	3.0
Sodium	1.0	18	16	11.8
Total Metals (mg/L)				
Arsenic	0.005	0.0055	0.0054	1.8
Barium	0.005	0.014	0.015	6.9

Notes:

Analyses performed by Eurofins 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

U= parameter was not detected in sample

* = 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

June 12, 2023
File No. 04223001.02

Subject: **Second Quarter 2023 Groundwater Monitoring Event**
LRI Landfill, Pierce County, Washington

NOTES/SAMPLE DECODING:

Event Dates: June 7 & 8, 2023

Field Staff: Jovany Estrada and Alex Deszo

- This event served as a quarterly monitoring event.
- 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-5, LDCS-6, and LDCS-7.
- Disposable bailers were used to sample leak detection/collection system points LDCS-1, LDCS-2A, LDCS-2B.
- The sample from LDCS-8 was collected from the channel discharge spigot.
- A leachate sample was collected from Cell 9A sump using a disposable bailer.
- A non-dedicated Sample Pro pump was used for purging and sampling well MW-4.
- A round of water level measurements was completed on June 7 & 8, 2023.
- 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
304-060723-01	LDCS-7
304-060723-02	MW-1A
304-060823-03	LDCS-3
304-060723-04	MW-2A
304-060723-05	LDCS-2B
304-060723-06	MW-3
304-060723-07	LDCS-2A
304-060723-08	MW-5A
304-060723-09	LDCS-1
304-060723-11	LDCS-4A
304-060823-12	MW-6
304-060823-13	LDCS-6
304-060723-14	MW-7
304-060823-15	QC, FB

304-060723-16	MW-10
304-060823-17	LDCS-5
304-060823-18	MW-9
304-060723-19	LDCS-4B
304-060823-20	LDCS-8
304-060823-21	MW-4
304-060723-23	MW-7 (Duplicate)
304-060823-24	LCDS-9
304-060823-25	Leachate Cell 9A

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

Groundwater Sampling Data Sheet

Project #:	4223001-02			Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	L21 304th			Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	L069-7			MP-20	Refill	11.5	One Well Volume	Other:		
Sample ID:	304060723-01			YSI	Discharge	35	(liters)	Flow		
Date:	6/7/23			BOS	Pressure	40	Total Volume Bailed	Setting:		
Weather:	Clear			Total Depth	Flow	2000 L/min	(liters)			
Filtered?	Y	N		Locked?	Y	N		Water in Protector?	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:

Lorainy Estrada
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #:	04223001.02		Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site	LRS 304 th		DTW	18.49	Meter:	CONTROL SETTINGS:	1 ft water = 0.62L	1L = 0.26 gallons	
Well ID:	MW - 2A		TOS	/	MP-20	Refill	9	One Well Volume	Other:
Sample ID:	304-060723-02		Intake	/	YSI	Discharge	6	(liters)	Flow
Date:	6/17/23		BOS	/		Pressure	24.40	Total Volume Bailed	Setting:
Weather:	Clear		Total Depth	/		Flow		(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					
	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):									
Needs new tubing for water									

TIME	DTW	Temp.	Sp.Cond.	DO	pH	Eh	Turbidity	Q / Vol.
1035		17.8	188.2	9.12	7.33	189.1	3.04	
1040		15.3	140.6	5.42	6.37	186.2	3.35	
1043		15.2	116.9	5.54	6.51	176.0	3.28	
1046		15.2	102.0	5.74	6.58	169.8	3.22	
1049		15.2	97.9	5.74	6.61	166.4	3.16	
1052		15.1	104.6	4.80	6.62	149.6	3.08	
1055		15.3	119.5	3.20	6.66	89.1	3.08	
1058		15.3	111.6	4.16	6.69	84.0	4.63	

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

Needs new tubing for water output, Current hose is kinked, restricting flow

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 #: 04223001.02

Site LR1 304+L

Well ID: LDOS-3

Sample ID: 304-060823-C3

Date: 6/8/23

Weather: Cloudy

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

[illegible]

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

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

SAMPLER:

Tovani Estrada

Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail		Peristaltic		Grab		Other	
Site: LRT 304th		18.25 DTW		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons					
Well ID: MW-2A		TOS		MP-20		Refill 9		One Well Volume		Other:			
Sample ID: 304-060723-04		Intake		YSI		Discharge 6		(liters)		Flow			
Date: 8/7/23		BOS		Pressure 30		Total Volume Bailed		(liters)		Setting:			
Weather: Clear, Sunny		Total Depth		Flow 400 mL/min									
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

(425) 746-4600

Project #: 04223001.02		Sampling Method: Dedicated		1.75" QED SamplePro		Bail		Peristaltic		Grab		Other	
Site: LRI 304th		27.65 DTW		Meter: CONTROL SETTINGS:		1 ft water = 0.62L		1L = 0.26 gallons					
Well ID: LDCS-2B		TOS		MP-20		Refill		One Well Volume		Other:			
Sample ID: 304-060723-05		Intake		YSI		Discharge		(liters)		Flow			
Date: 6/7/23		BOS				Pressure		Total Volume Bailed		Setting:			
Weather: Clear		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:

Jovany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04223061.02			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			DTW	7.15	Refill	9	One Well Volume	Other:	
Sample ID:	304-060723-06			TOS	/	MP-20	6	(liters)	Flow	
Date:	6/17/23			Intake	/	YSL	35	Total Volume Bailed	Setting:	
Weather:	Clear, Sunny			BOS	/	Pressure	400ml/min	(liters)		
				Total Depth		Flow				
Filtered?	Y	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

(425) 746-4600

Project #: 04223001-02

Site LR1 304th

Well ID: LDCS-2A

Sample ID: 304-060723-07

Date: 6/7/23

Weather: Clear

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

[illegible]

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

leachate 8.82

213052

Concl 932.4

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

SAMPLER:

Jovany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #:	04223 001.02			Sampling Method:	Dedicated		1.75" QED SamplePro	Bail	Peristaltic	Grab	Other	
Site	LE 304th			Meter:	CONTROL SETTINGS:		1 ft water = 0.62L	1L = 0.26 gallons				
Well ID:	MW-5A			MP-20	Refill	9	One Well Volume	Other:				
Sample ID:	304-060723-08			YSI	Discharge	6	(liters)	Flow				
Date:	6/17/23			BOS	Pressure	40	Total Volume Bailed	Setting:				
Weather:	Clear Sunny			Total Depth	Flow	400 ml/min	(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):												

[illegible]

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

SAMPLER:

Alex Desro
Printed Name

Signature

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

Groundwater Sampling Data Sheet

Project #:	C-223001.02			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:	WCS-1A			MP-20	Refill		One Well Volume (liters)	Other:		
Sample ID:	304-060723-09			YSI	Discharge			Flow Setting:		
Date:	6/7/23				Pressure		Total Volume Bailed (liters)			
Weather:	Clear				Flow					
Filtered?	Y	N		Locked?	Y	N		Water in Protector?	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:

Tovand Estrada
Printed Name

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001 02

Site CR 304th

Well ID: LDCS-4A

Sample ID: 304-060723-11

Date: 6/7/23

Weather: Clear

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

1000 ml Amber

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:

Jovany Estrada
Printed Name


Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02

Site LEI 304th

Well ID: MW-6

Sample ID: 304-060823-12

Date: 6/8/23

Weather: Cloudy

Filtered? ☒ Y ☐ N

Locked? Y (N)

Water in Protector? ☒ Y ☐ N

Damage? Y N

Sample Containers:

1000 ml Poly

500 mi Poly

250 ml Poly

125 ml Poly

500 ml HNO3 x2

500 ml H₂SO₄ x2

40 ml VOA

1000 ml Amber

125 ml NaOH

[illegible]

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

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

SAMPLER:

Printed Name Alex DeLeo

Signature

Bellevue, WA 98005

(425) 746-4600

Project #: 04223001.02

Site LPI 304th

Well ID: LDCS-6

Sample ID: 304-060523-~~22~~ | 3

Date: 6/5/23

Weather: Cloudy

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):

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 #: 04223001.02

Site CRI 304th

Well ID: MW-7

Sample ID: 304-060723-14

Date: 6/7/23

Weather: Clear Sunny

Filtered? ☒ Y ☐ N

Locked? ☒ Y ☐ N

Water in Protector? YN

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

1000 ml Amber

125 ml NaOH

[illegible]

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

Drop taken @ 14:41

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 #: 04223001.02

Site LIZI 304th

Well ID: Field Blank

Sample ID: 304-060823-15

Date: 6/8/23

Weather: Sunny

Filtered? ☒ Y ☐ N

Locked? Y ☒ N

Water in Protector? Y N

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

[illegible]

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

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 #: 04223001.02

Site 625 304th

Well ID: MW-10

Sample ID: 304-060723--16

Date: 6/7/23

Weather: Sunny

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

1000 ml Amber

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:

Alex Deszo
Printed Name

Signature _____

Bellevue, WA 98005

Groundwater Sampling Data Sheet

Signature _____

Bellevue, WA 98005

(425) 746-4600

Project #:	09223001.02			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-9			MP-20	Refill	9	One Well Volume	Other:			
Sample ID:	304-02823-18			YSI	Discharge	6	(liters)	Flow			
Date:	6/18/23			BOS	Pressure	45	Total Volume Bailed	Setting:			
Weather:	Cloudy			Total Depth	Flow	300 ml/min	(liters)				
Filtered?	Y	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

(425) 746-4600

Project #: 04223001 07		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: LDCS-4B		TOS		MP-20		Refill 12		One Well Volume		Other:			
Sample ID: 304-060723-19		Intake		YSI		Discharge 3		(liters)		Flow			
Date: 6/7/23		BOS				Pressure 60		Total Volume Bailed		Setting:			
Weather: Clear		Total Depth				Flow 1200/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):													

[illegible]

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

SAMPLER:

Jovany Estrada
Printed Name


Signature

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

(425) 746-4600

Project #:	04223001.02			Sampling Method:	Dedicated	1.75" QED SamplePro	Bail	Peristaltic	Grab	Other
Site:	LPI 304th			Meter:	CONTROL SETTINGS:			1 ft water = 0.62L 1L = 0.26 gallons		
Well ID:	LDCS-8			DTW		Refill		One Well Volume	Other:	
Sample ID:	304-060823-20			TOS		Discharge		(liters)	Flow	
Date:	6/8/23			Intake	YSI	Pressure		Total Volume Bailed	Setting:	
Weather:	Cloudy			BOS		Flow		(liters)		
Filtered?	Y	N		Total Depth						
Sample Containers:	Locked?	Y	N	Water in Protector?	Y	N	Damage?	Y	N	
	1000 ml Poly			500 ml Poly			125 ml Poly			
	500 ml HNO3	x2		500 ml H2SO4	x2		40 ml VOA	x3	x6	
	125 ml NaOH						1000 ml Amber			
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:

Jovany Estrada
Printed Name


Signature

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

Groundwater Sampling Data Sheet

Project #:	04223001.02			Sampling Method:	Dedicated		1.75" QED SamplePro		Bail	Peristaltic	Grab	Other
Site:	URF 304 th			Meter:	CONTROL SETTINGS:				1 ft water = 0.62L	1L = 0.26 gallons		
Well ID:	NW-4			MP-20	Refill		9		One Well Volume	Other:		
Sample ID:	304-060823-21			YSI	Discharge		6		(liters)	Flow		
Date:	6/18/23				Pressure		50		Total Volume Bailed	Setting:		
Weather:	Cloudy				Flow				(liters)			
Filtered?	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:

Alex Deszo
Printed Name

Signature

AD

Bellevue, WA 98005

(425) 746-4600

Project #: 0427300 | .02

Site LPI 30442

Well ID: LDCS-9

Sample ID: 304-060823-24

Date: 6/8/23

Weather: Cloudy

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

[illegible]

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

Not filtered on site

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 #:	04223001.02			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:	Cell 9 Leachate			MP-20	Refill	One Well Volume			Other:	
Sample ID:	304-060823-25			YSI	Discharge	(liters)			Flow	
Date:	6/8/23			BOS	Pressure	Total Volume Bailed			Setting:	
Weather:	Cloudy			Total Depth	Flow	(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):										

[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 _____

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	6/7/2023					
Time	8:35					
Weather (sky or precip, temp)	clear					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 100, 20, <0.1	800,
Pre-Cal Reading	1403	4.25	7.20	8.84		
Post Cal Reading	1413	4.00	7.00	8.60		
Discrepancy	No					
Calib. Successful?	yes					
Calibration by	Jovany Estrada					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental				YSI Pro DDS / HACH2000	
Calibration Location	LPI office					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	6/7/2023					
Time	8:32					
Weather (sky or precip, temp)	Clear, Sunny, 60°					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 100, 20, <0.1	800,
Pre-Cal Reading	1395	3.92	6.98	7.50		
Post Cal Reading	1413	4.00	7.00	8.50		
Discrepancy	NO					
Calib. Successful?	Yes					
Calibration by	AMD					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental			YSI Pro DDS / HACH2000		
Calibration Location	CRI Parking Lot					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	6/8/2023					
Time	9:00					
Weather (sky or precip, temp)	cloudy					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 100, 20, <0.1	800,
Pre-Cal Reading	1450	4.04	7.88	8.67		
Post Cal Reading	1413	4.00	7.00	8.50		
Discrepancy	No					
Calib. Successful?	yes					
Calibration by	Jovany Estrada					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental				YSI Pro DDS / HACH2000	
Calibration Location	LPI office					

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

GROUNDWATER SAMPLING INSTRUMENT CALIBRATION DOCUMENTATION FORM

Date	6/8/23					
Time	8:52					
Weather (sky or precip, temp)	Cloudy 63°					
Parameter	Conductivity	pH 4	pH 7	D.O.	Turbidity	Comments/Exceptions
Type of Calibration	Standard	Standard	Standard	Standard	Standard	
Standard Value	1413	4.00	7.00	100% or ~8.5	1000, 10, 0.2 800, 100, 20, <0.1	
Pre-Cal Reading	1418	4.02	6.99	8.76		
Post Cal Reading	1413	4.00	7.00	8.5		
Discrepancy	NO					
Calib. Successful?	Yes					
Calibration by	AMS					
Instrument Type, ID	YSI Pro DDS / YSI 556 / Rental			YSI Pro DDS / HACH2000		
Calibration Location	L2E 304th office lot					

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



Attachment D

Statistical Calculations

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2023
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.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	Conc.	Result	Conc.	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	0.5	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	0.005	L	0.0025	0.01	L	0.005	0.001	L	0.0005	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	0.02	L	0.01	0.005	L	0.0025	0.01	L	0.005	0.005	L	0.0025	0.01	L	0.005	0.02	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	0.032	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	0.01	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	0.01	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	0.01	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	0.01	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			2			0			0			
Minimum Concentration		0.001		0.0025		0.02		0.0005		0.0025		0.0005		0.0025		0.001		0.0005		0.0005		0.001		0.0005		0.001		0.0025		0.0005		0.0025		0.0005		0.0025		0.005		0.032		0.005		0.25				
Maximum Concentration		0.025		0.0025		0.03		0.0025		0.03		0.0025		0.0025		0.0025		0.005		0.005		0.005		0.001		0.005		0.0025		0.005		0.0025		0.005		0.005		0.032		0.005		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			
Coefficient 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	0.5	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	0.002	L	0.001	0.002	L	0.01	0.005	L	0.0025	0.01	L	0.005	0.005	L	0.0025	0.01	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		0.0025		0.0005		0.0025		0.001		0.0005		0.0005		0.001		0.0005		0.001		0.0025		0.0005		0.0025		0.0005		0.0025		0.005		0.005		0.005		0.25				
Maximum Concentration		0.025		0.0025		0.018		0.0025		0.018		0.0025		0.0025		0.0025		0.005		0.005		0.005		0.001		0.005		0.0025		0.005		0.0025		0.005		0.005		0.005		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			
Coefficient of Variation (%)	NC			NC			12.798		NC			NC			NC			NC			NC			NC			NC			NC			NC			NC			NC			NC			NC</			

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2023
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.		
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		0.0005		0.0025		0.0005		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		NC	0.0089		0.02275	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Variance	NC		NC	1.6E-06		0.00076	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Standard Deviation	NC		NC	0.00125		0.02763	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Coefficient of Variation (%)	NC		NC	14.0465		121.469	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Standard Error	NC		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
	9/18/2014	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	L 0.005	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	0.009	0.009	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		0.0005		0.0025		0.0005		0.005		0.25
Maximum Concentration		0.025		0.008		0.036		0.0025		0.0025		0.0051		0.005		0.0061		0.001		0.001		0.0025		0.0005		0.0025		0.005		0.01		0.25	
Average Concentration	NC		NC	0.00631		0.026	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Variance	NC		NC	3E-06		6E-05	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Standard Deviation	NC		NC	0.00175		0.00776	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Coefficient of Variation (%)	NC		NC	27.6653		29.863	NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		
Standard Error	NC		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
	9/19/2014	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										

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2023
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.																				
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	0.01	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.001	L	0.0005	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.01	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.01	L	0.005	0.5	L	0.25			
	9/18/2015	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.01	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.028	0.028	0.5	L	0.25				
	6/8/2016	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.023	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	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	0.0005	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.01	L	0.005	0.5	L	0.25									
	12/11/2019	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.016	0.016	0.01	L	0.005	0.5	L	0.25									
	3/17/2020	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.015	0.015	0.01	L	0.005	0.5	L	0.25									
	6/8/2020	0.05	L	0.025	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.005	L	0.0025	0.005	L	0.0025	0.001	L	0.0005	0.002	L	0.001	0.002	L	0.001	0.005	L	0.0025	0.005	L	0.0025	0.014	0.014	0.01	L	0.005	0.5	L	0.25									
	9/22/2020	0.05	L																																																

Statistical Summary of Total Metals and Nitrate Groundwater Data
Appendix I Parameters, Second Quarter 2023
LRI Landfill, Pierce County, Washington

Location ID Monitoring Date	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)	
	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.
9/14/2022	0.05	L 0.025	0.005	L 0.0025	0.016	0.016	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	0.019	0.019	3.1	3.1
12/29/2022	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 0.01	3.0	3.0
3/14/2023	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 0.01	3.0	3.0
6/8/2023	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 0.01	2.6	2.6
Number Analyzed	38		38		38		38		38		38		38		38		38		38		38		38		38		38		38		38	
Number Detected	0		0		38		0		0		0		0		0		0		0		0		0		0		0		9		38	
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		2.5
Maximum Concentration		0.025		0.0025		0.016		0.0025		0.0025		0.0025		0.005		0.005		0.001		0.01		0.0025		0.005		0.0025		0.005		0.034		6.4
Average Concentration		NC		NC		0.01379		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		4.418421
Variance		NC		NC		1.1E-06		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		1.360462
Standard Deviation		NC		NC		0.00104		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		1.166389
Coefficient of Variation (%)		NC		NC		7.56988		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		26.39831
Standard Error		NC		NC		0.00017		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		NC		0.189213

Notes: Metals results are for total metals.
mg/L = milligrams per liter.
L = not reported at or above the MRL (Method Reporting Limit).
One-half the MRL value used for statistical calculations when concentrations not reported at or above the MRL.
NC = not calculated due to insufficient number of reported detections.

Groundwater Prediction Limits (mg/L)
Appendix I Parameters, Second Quarter 2023
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	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	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	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	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	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	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	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	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.

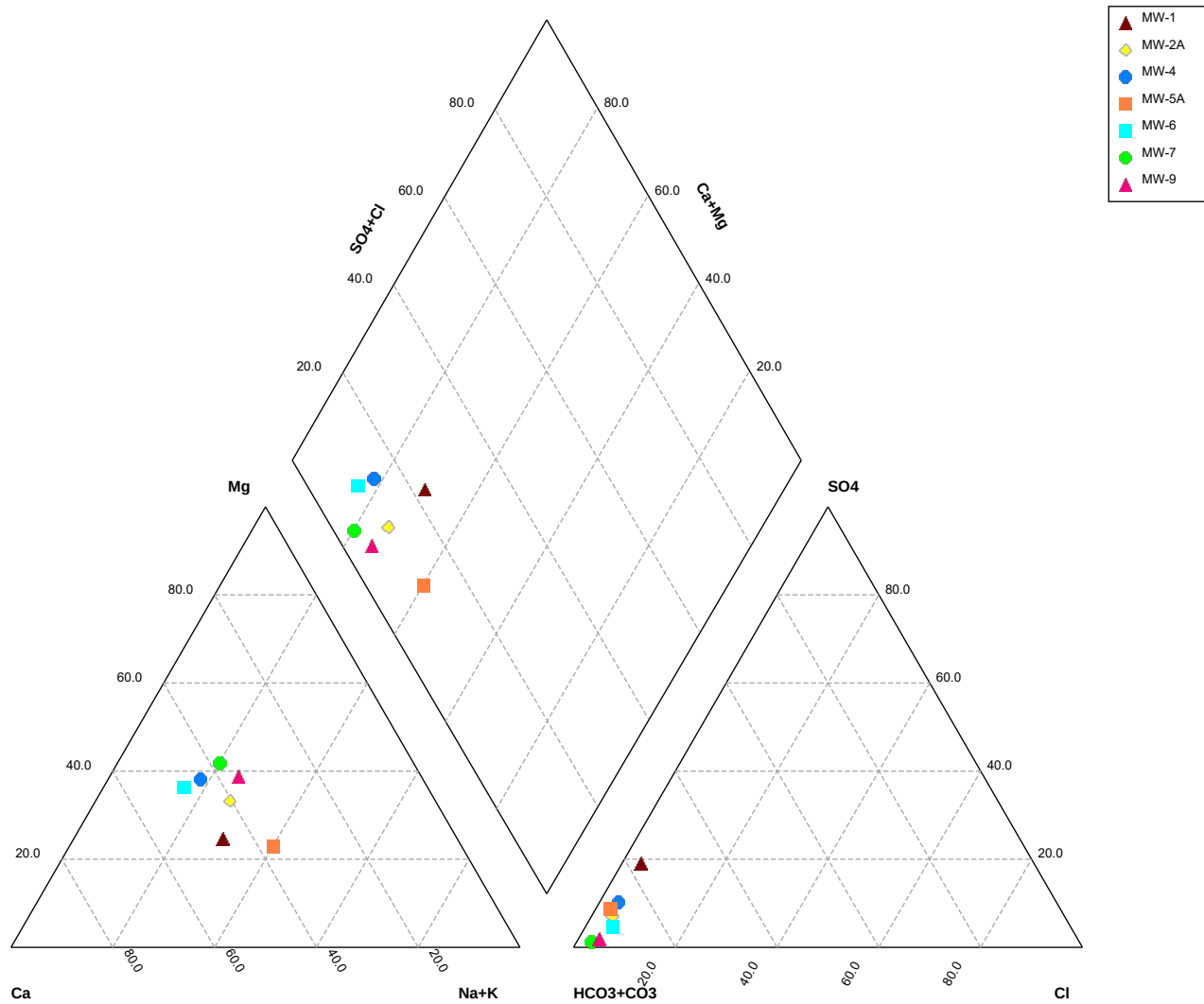
L = not reported at or above the MRL (Method Reporting Limit).

mg/L = milligrams per liter.

Attachment E

Trilinear Diagrams

Second Quarter 2023, Groundwater Monitoring Wells



LRI Landfill

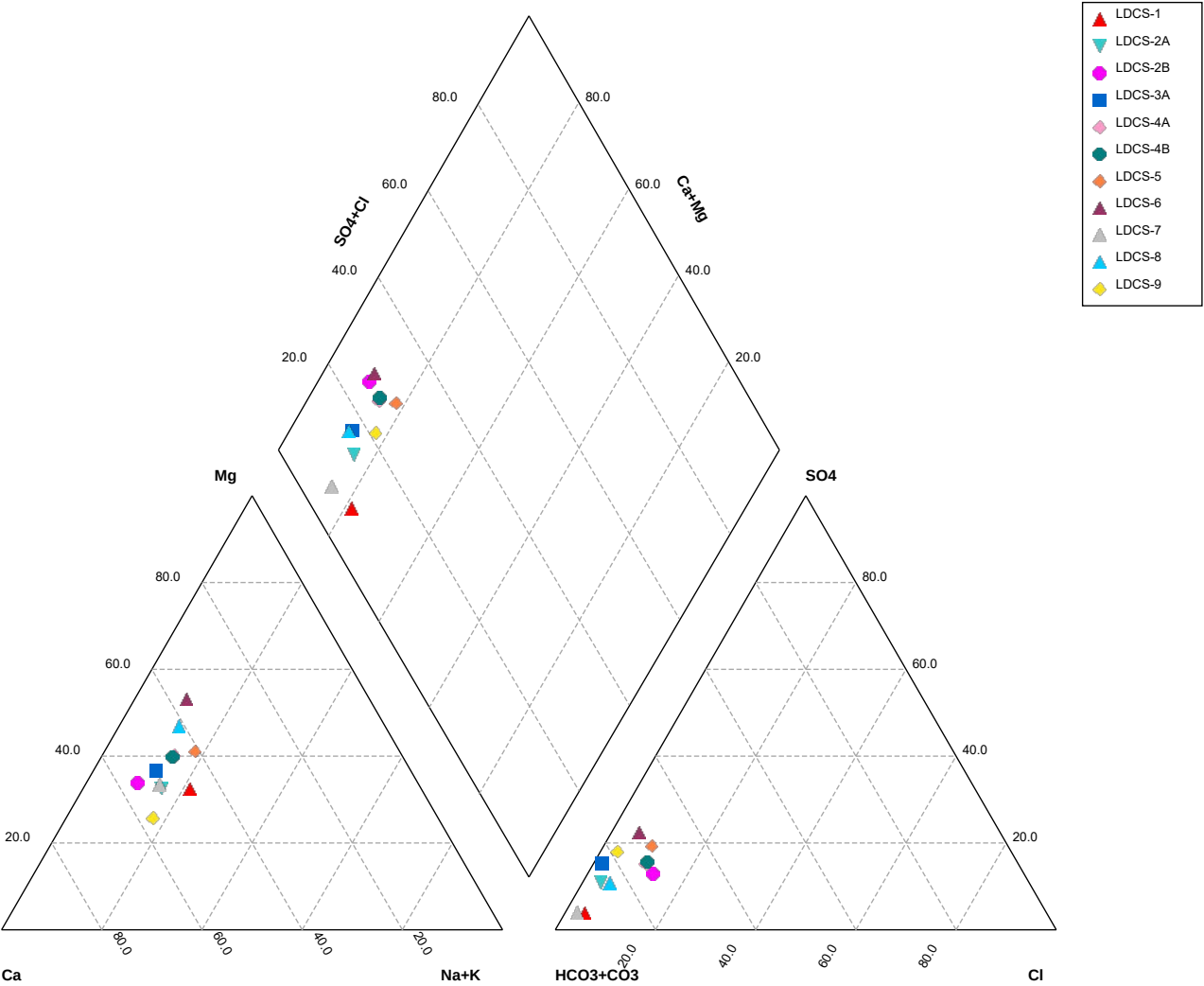
Piper Diagram – 2Q23

LRI, Inc.

04223001.02

July 11, 2023

Second Quarter 2023, Leak Detection Collection Recovery System



LRI Landfill

2Q23 – LCDRS

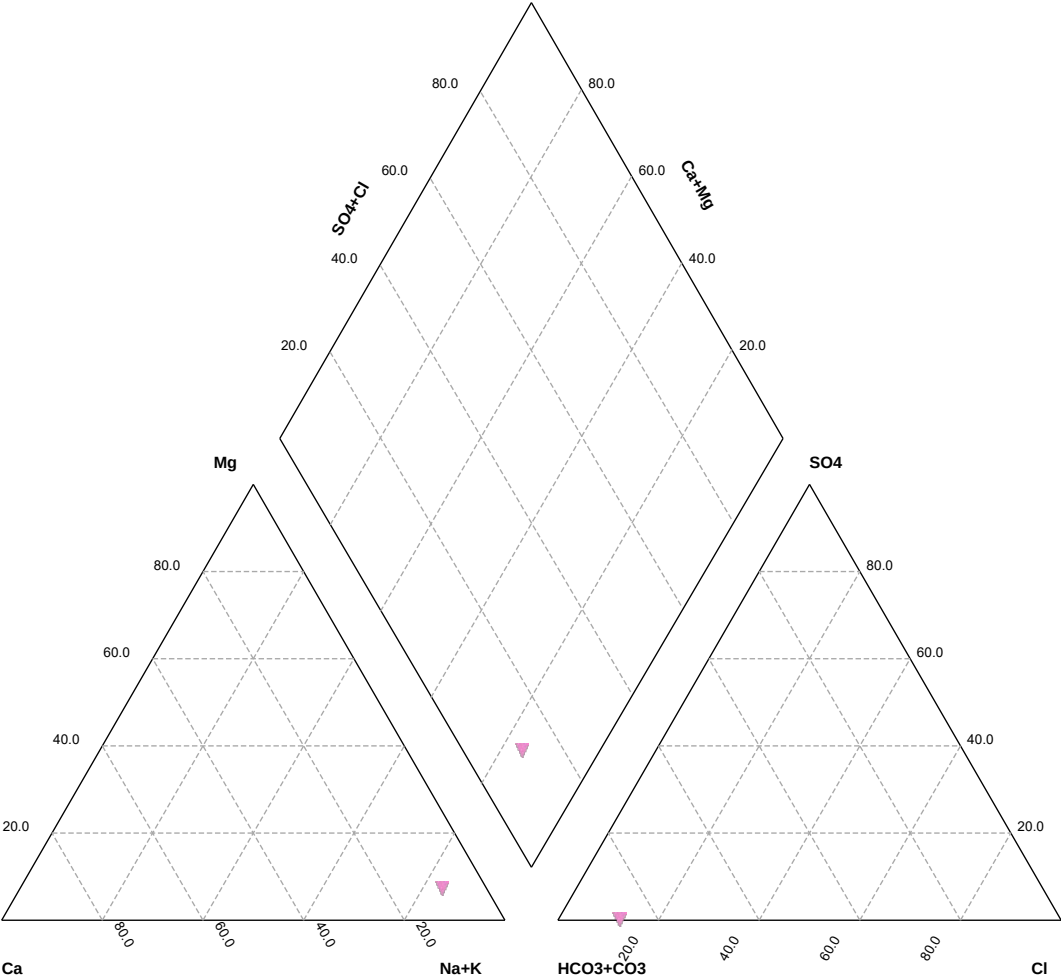
LRI, Inc.

04223001.02

July 11, 2023

Second Quarter 2023, Leachate

▼ Leachate, Cell 9



Attachment F

Analytical Data Validation Report

SECOND QTR. 2023 DATA VALIDATION REPORT – LRI LANDFILL**Project Details**

Project No.	04223001.02	Site Name	LRI 304 th Street LF
Data Validator	Alex Deszo	Data Level	Level 2
Date	06/29/2023	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)
280-177538-1	No Comment	TestAmerica, Denver, CO
280-177542-1	Due to a FedEx shipping delay, the following samples were received with insufficient time to perform the Nitrate analysis within holding time: 304-060723-02 (280-177542-1), 304-060723-04 (280-177542-2) and 304-060723-16 (280-177542-6). The analysis was cancelled and the samples were logged for Nitrate-Nitrite Method 353.2	TestAmerica, Denver, CO
280-177636-1	No Comment	TestAmerica, Denver, CO
280-177638-1	A trip blank was submitted for analysis with these samples; however, it was not listed on the Chain of Custody (COC)	TestAmerica, Denver, CO
280-177639-1	No Comment	TestAmerica, Denver CO

Analytical Summary

Sample Group	Analyses					
	TDS/Alk/NO3	Metals	NH3/TOC	VOCs	Anions	TSS
280-177538-1	X	X ₁	X	X	X	-
280-177542-1	X	X ₂	X	X	X	X
280-177636-1	X	X ₁	X	X	X	-
280-177638-1	X	X ₃	X	X	X	-
280-177639-1	X	X ₂	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 Chemistry	Acceptable.	See case narratives.
General Comments	Acceptable.	See case narratives.

Field Quality Assurance Samples

Field QA Samples	Sample Group	Analytes	Notes
QC-FB	280-177538-1	None.	
QC-FB	280-177638-1	None.	

Lab Quality Flags

Flag	Sample Groups	Comments
4	280-177538-1, 280-177542-1, 280-177638-1, 280-177636-1, 280-177639-1	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
^+	280-177542-1	Continuing Calibration Verification (CCV) is outside acceptance limits, high biased.
F1	280-177538-1, 280-177542-1, 280-177638-1, 280-177636-1, 280-177639-1	MS and/or MSD recovery exceeds control limits.
F2	280-177638-1, 280-177636-1, 280-177639-1	MS/MSD RPD exceeds control limits
F5	280-177638-1, 280-177636-1, 280-177639-1	Duplicate RPD exceeds limit, and one or both sample results are less than 5 times RL, and the absolute difference between results is < the upper reporting limits for both.
E	280-177542-1, 280-177638-1, 280-177636-1, 280-177339-1	Result exceeded calibration range.

J	280-177538-1, 280-177542-1, 280-177638-1, 280-177636-1, 280-177639-1	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
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Duplicate Evaluation

Analyte	Units	MW-7 (304-060723-14)	MW-7 DUP (304-060723-23)	RPD (%)
Alkalinity, Total	mg/L	200	200	0.00
Ammonia	mg/L	0.24	0.23	4.26
Arsenic, Total	mg/L	0.0055	0.0054	1.83
Barium, Total	mg/L	0.014	0.015	6.90
Calcium, Dissolved	mg/L	36	37	2.74
Chloride	mg/L	3.6	3.5	2.82
Dibromofluoromethane	ug/L	49	51	4.00
Iron, Dissolved	mg/L	0.27	0.25	7.69
Magnesium, Dissolved	mg/L	24	23	4.26
Manganese, Dissolved	mg/L	0.28	0.26	7.41
Potassium, Dissolved	mg/L	6.7	6.5	3.03
Sodium, Dissolved	mg/L	18	16	11.76
Sulfate	mg/L	2	2.1	4.88
Toluene D8	ug/L	50	51	1.98
Total Dissolved Solids	mg/L	220	230	4.44
Total Organic Carbon	mg/L	1.1	1	9.52
4-bromofluorobenzene	ug/L	49	47	4.17

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

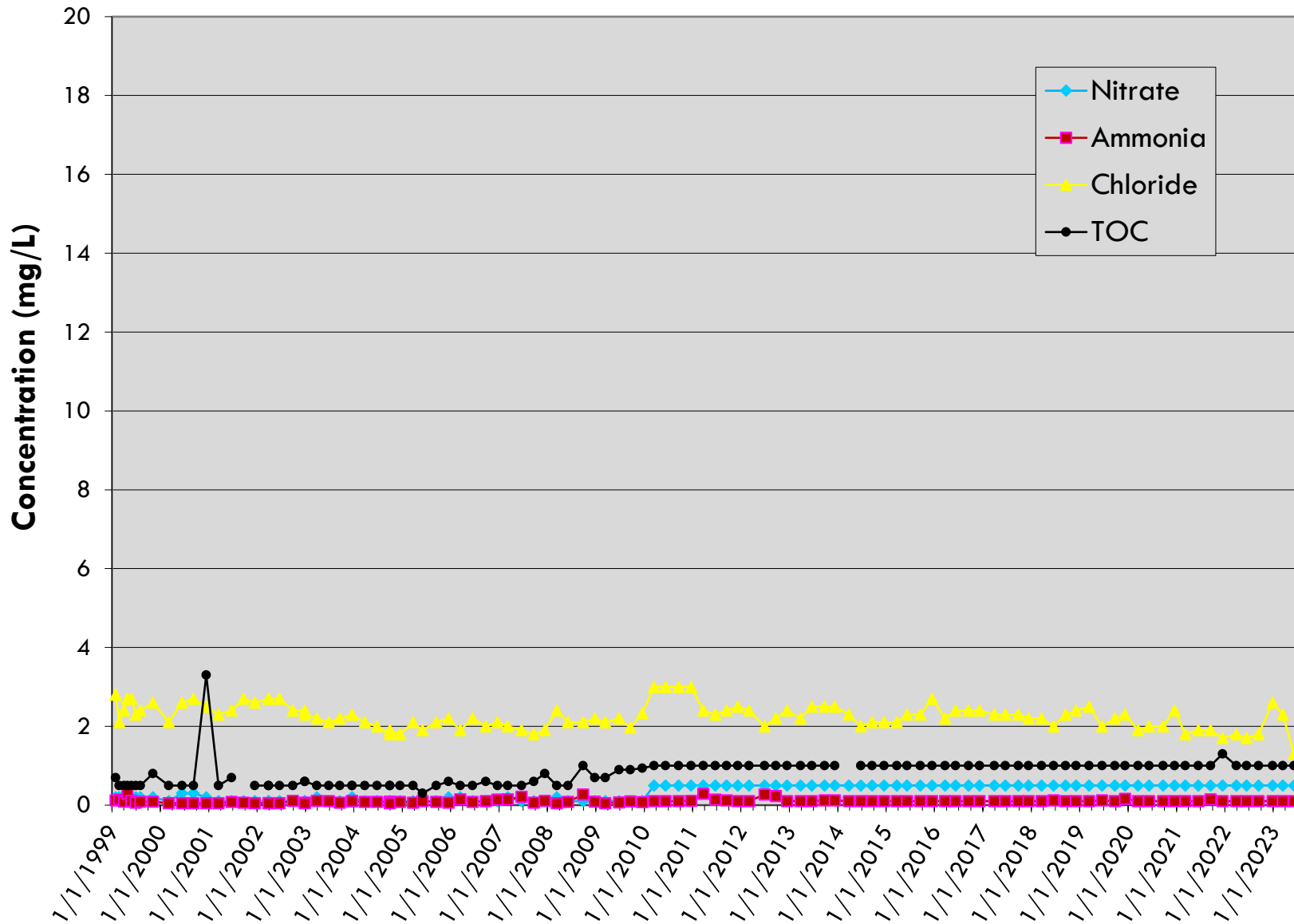
Lab qualifiers are noted. All data, as qualified, are acceptable for use.

Attachment G

Groundwater and LDCS Time Trend Plots

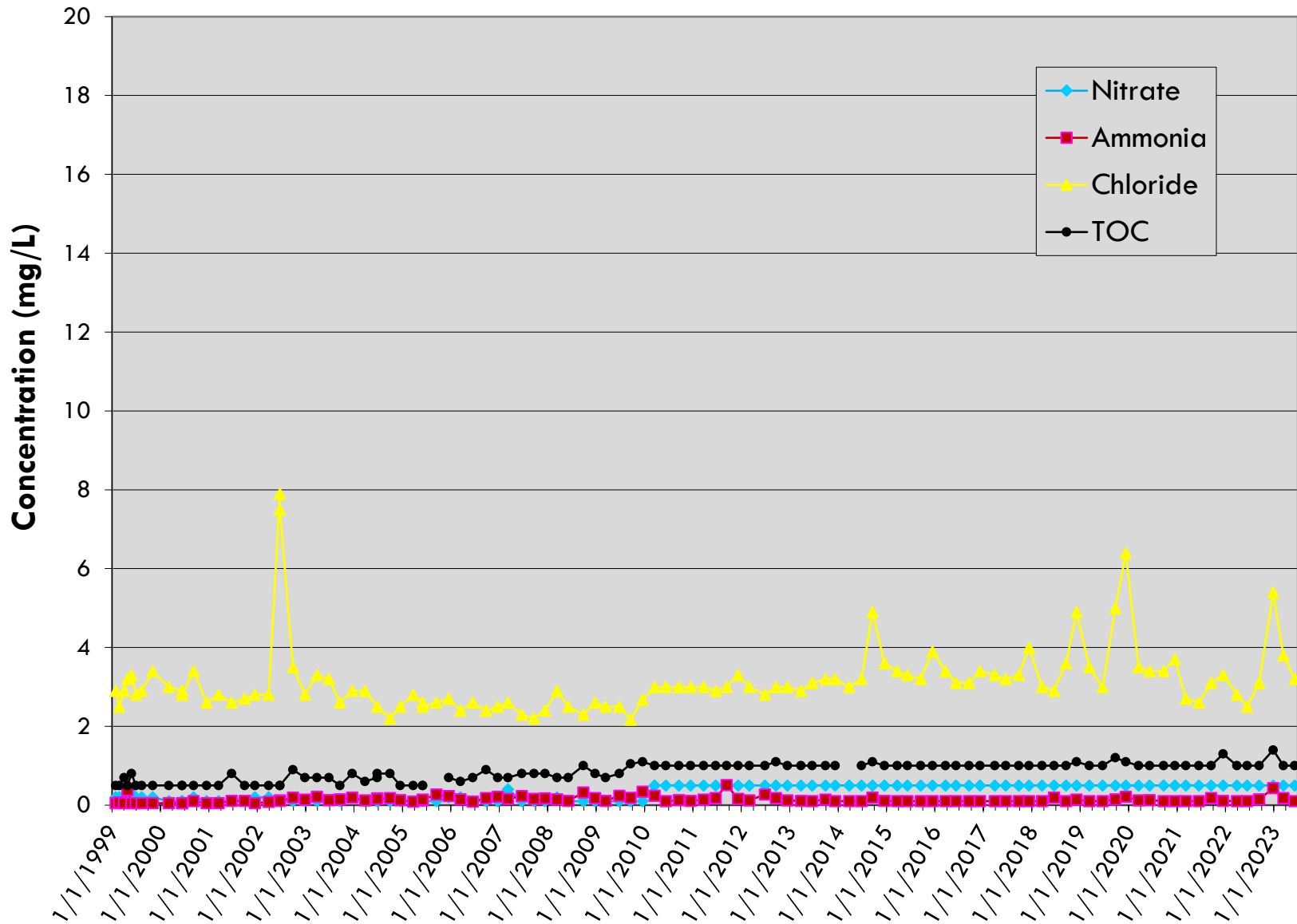
MW-1A

LRI Landfill, Pierce County, Washington



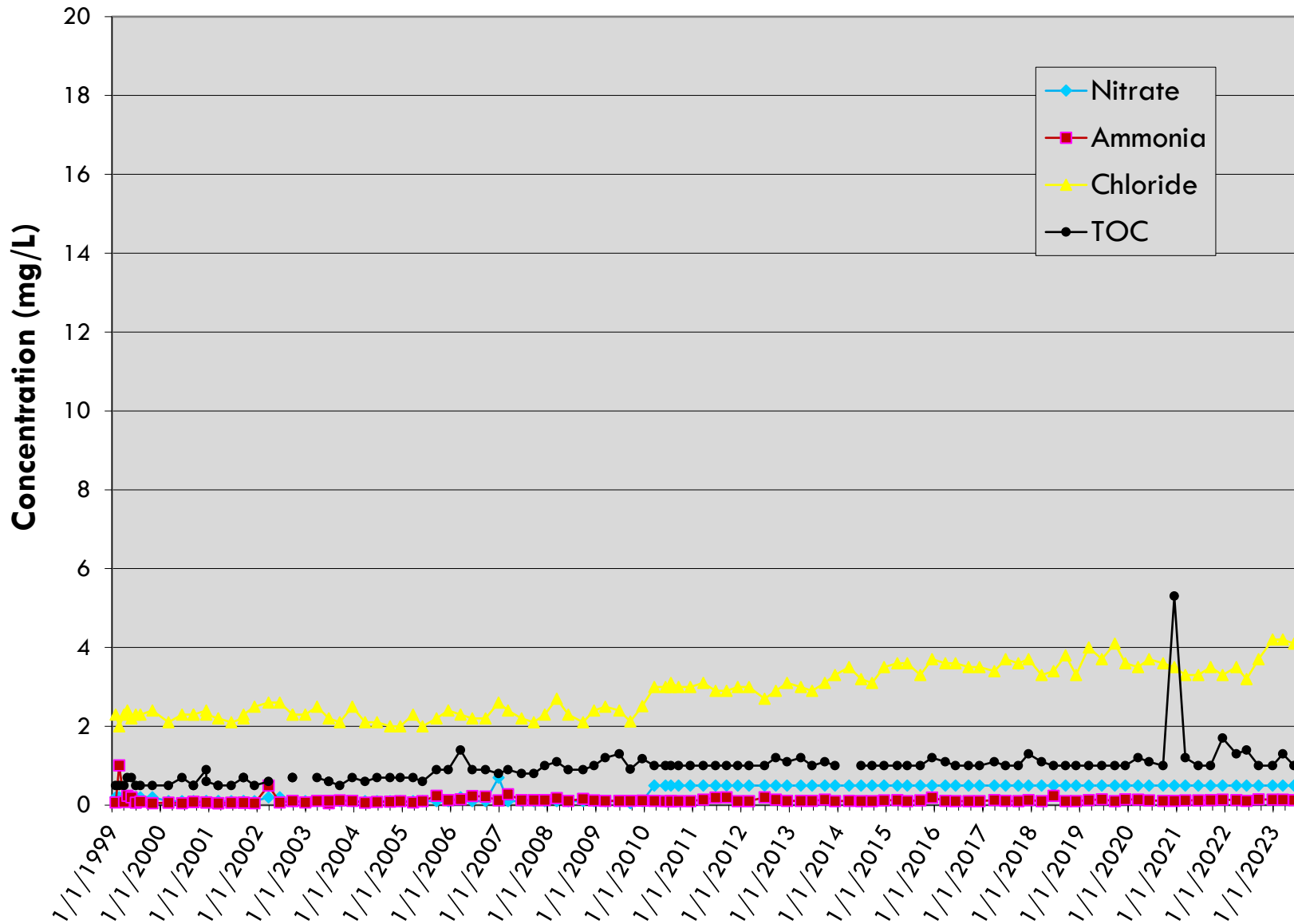
MW-2A

LRI Landfill, Pierce County, Washington



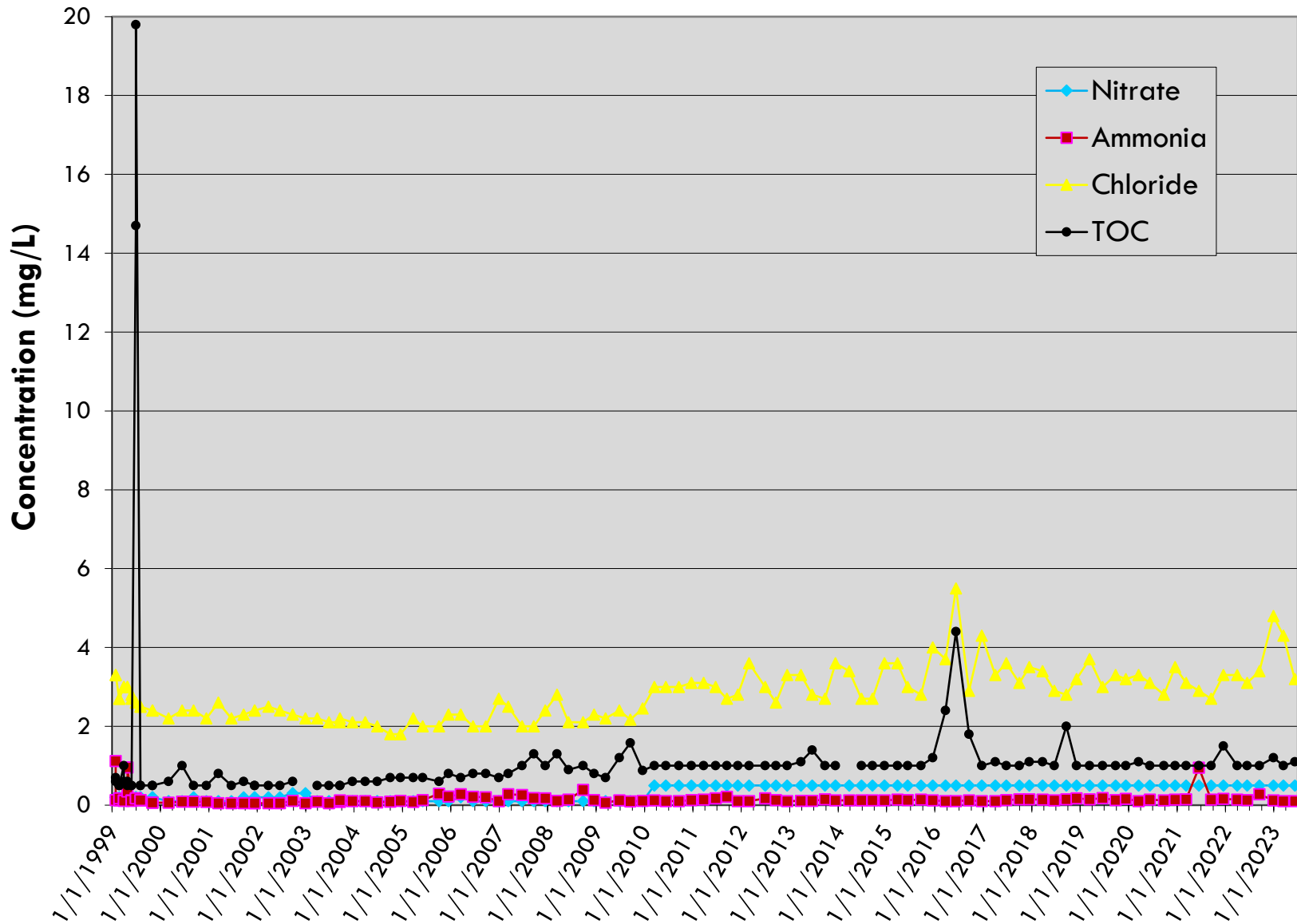
MW-3

LRI Landfill, Pierce County, Washington



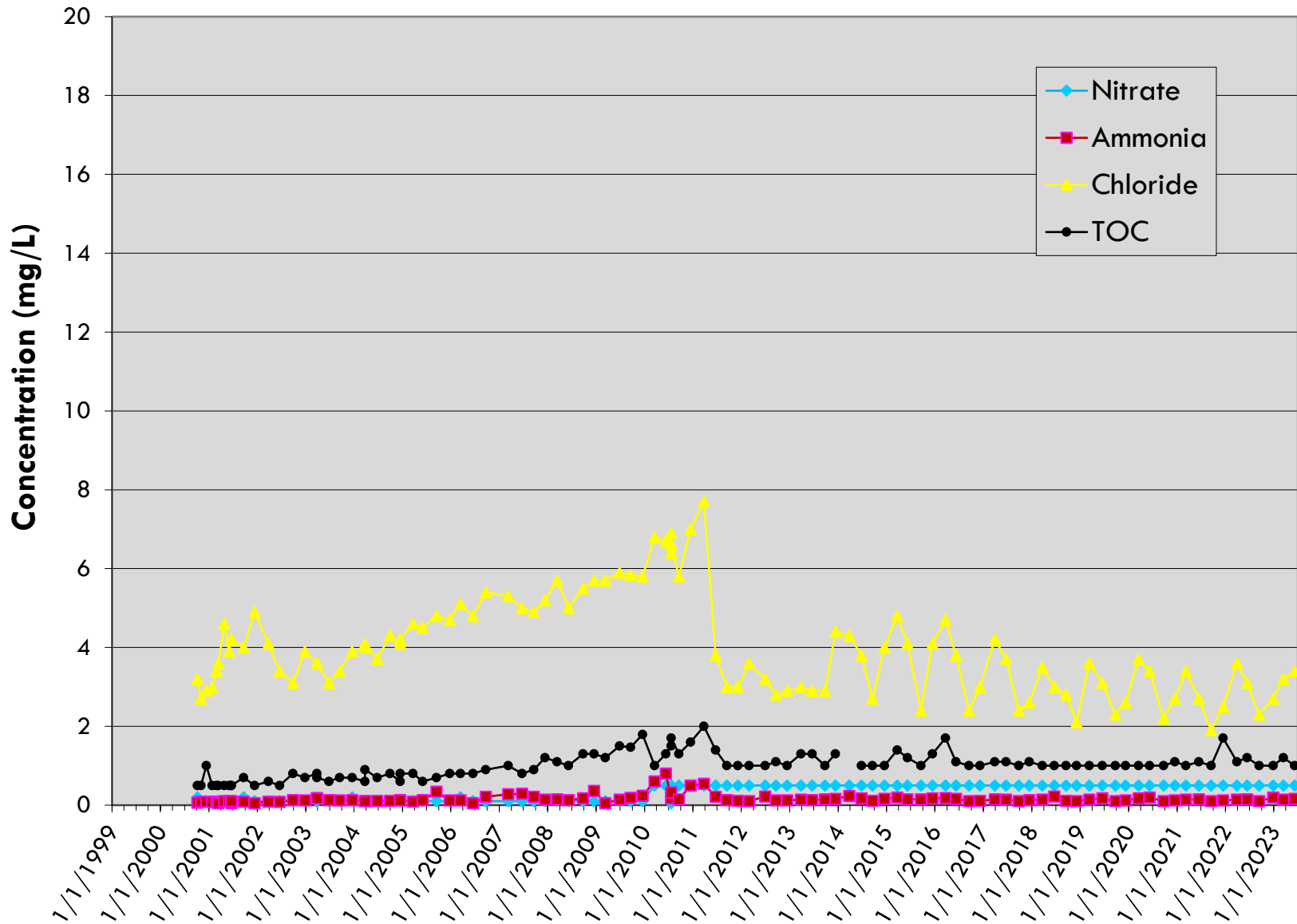
MW-4

LRI Landfill, Pierce County, Washington



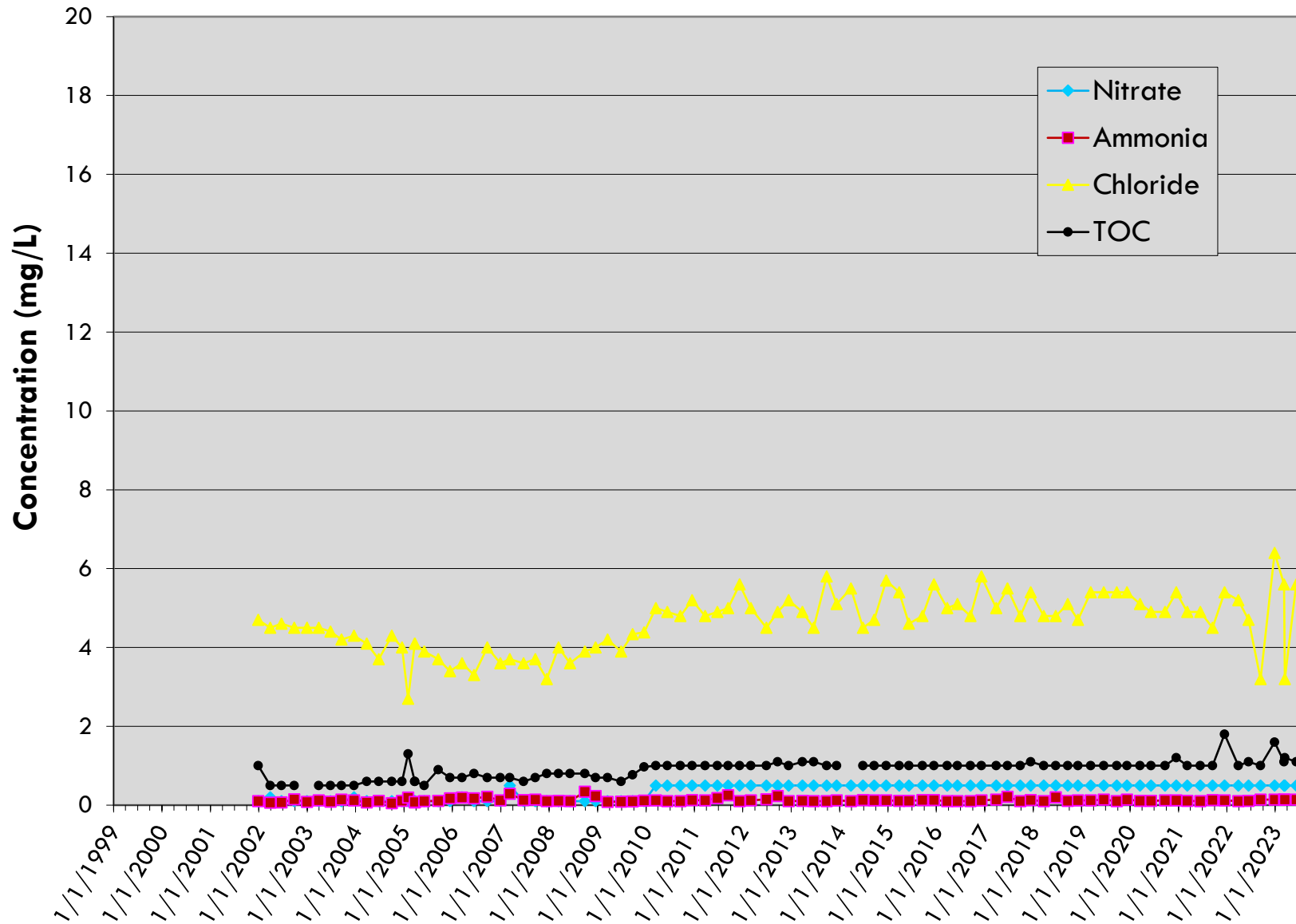
MW-5A

LRI Landfill, Pierce County, Washington



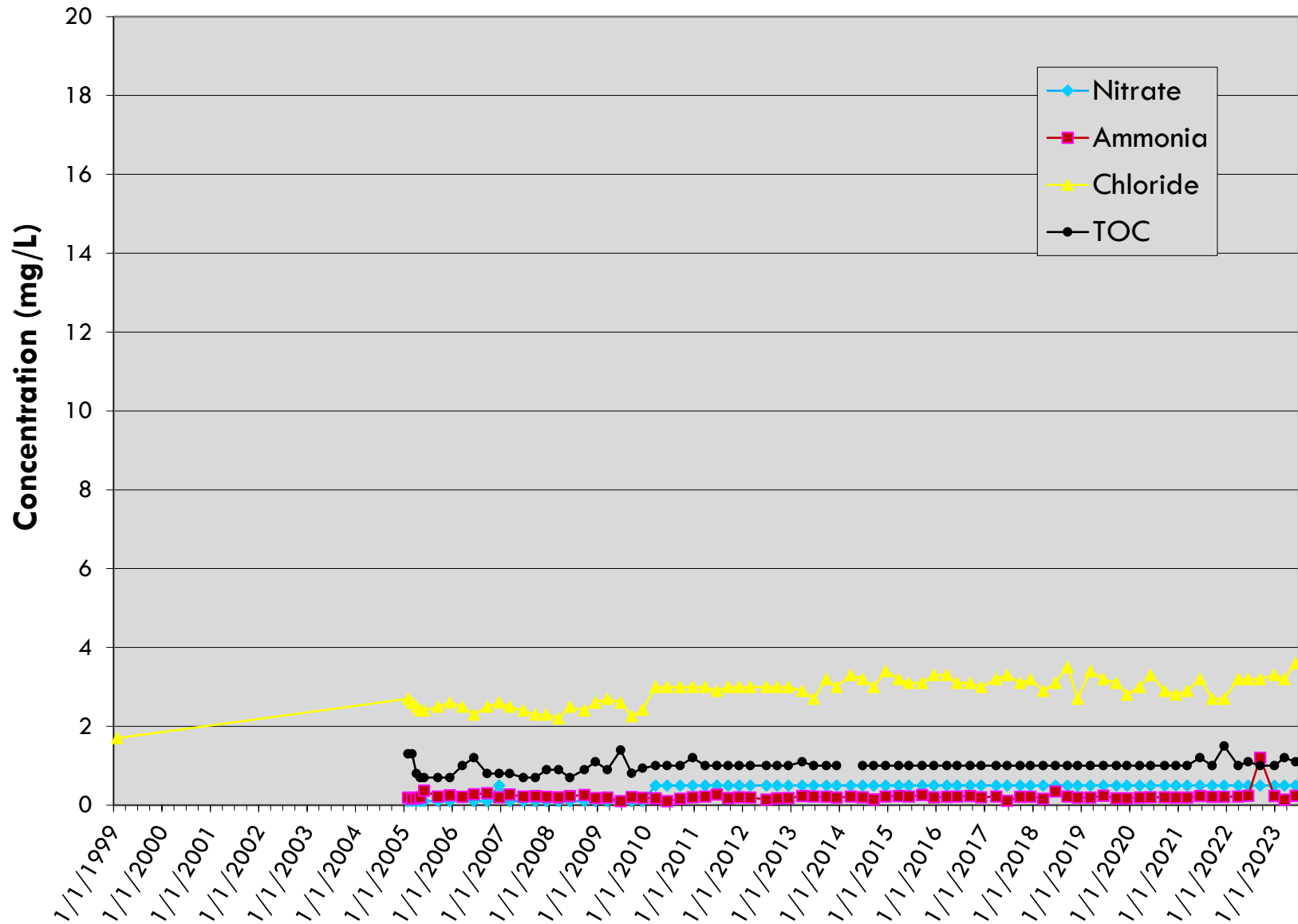
MW-6

LRI Landfill, Pierce County, Washington

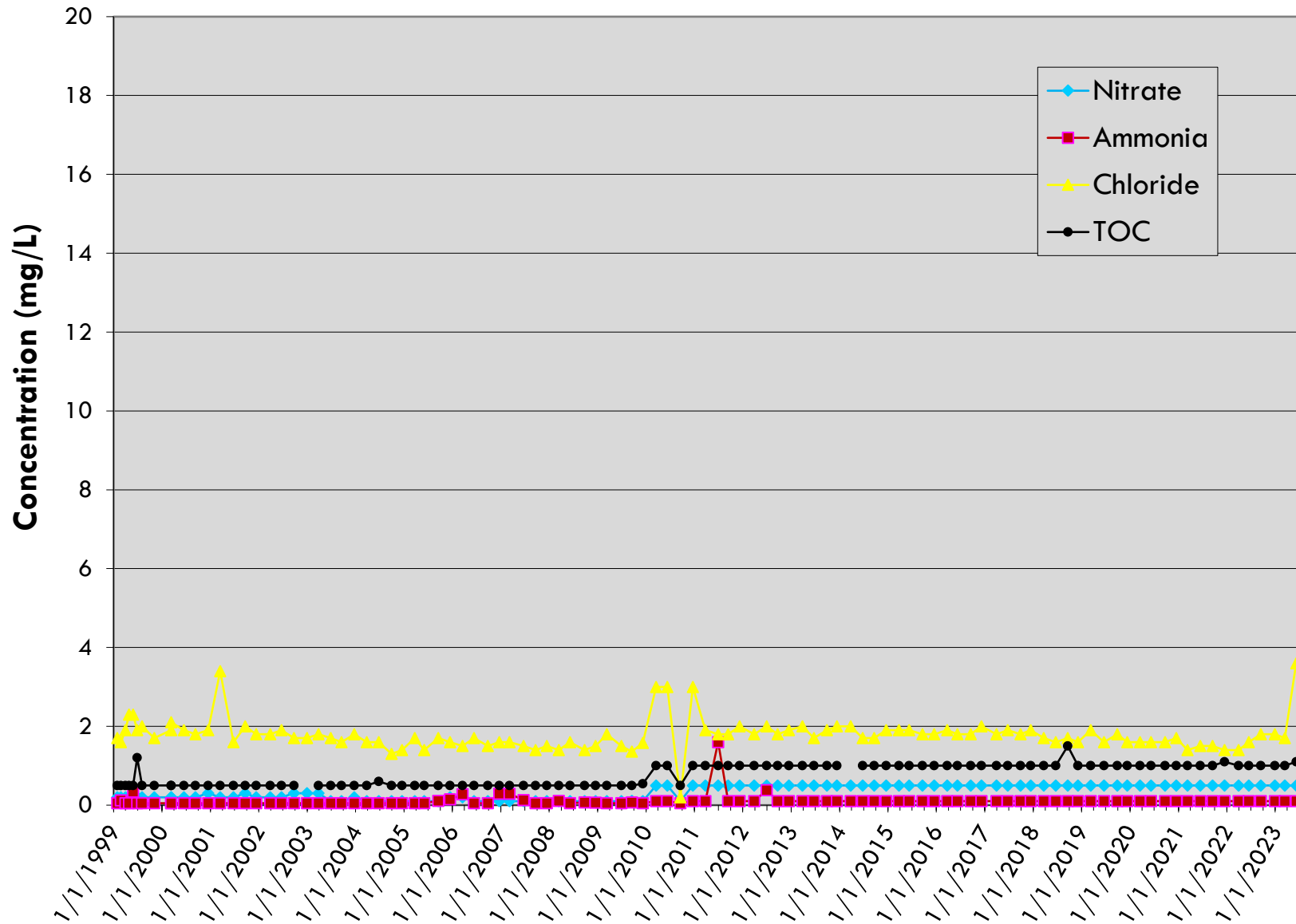


MW-7

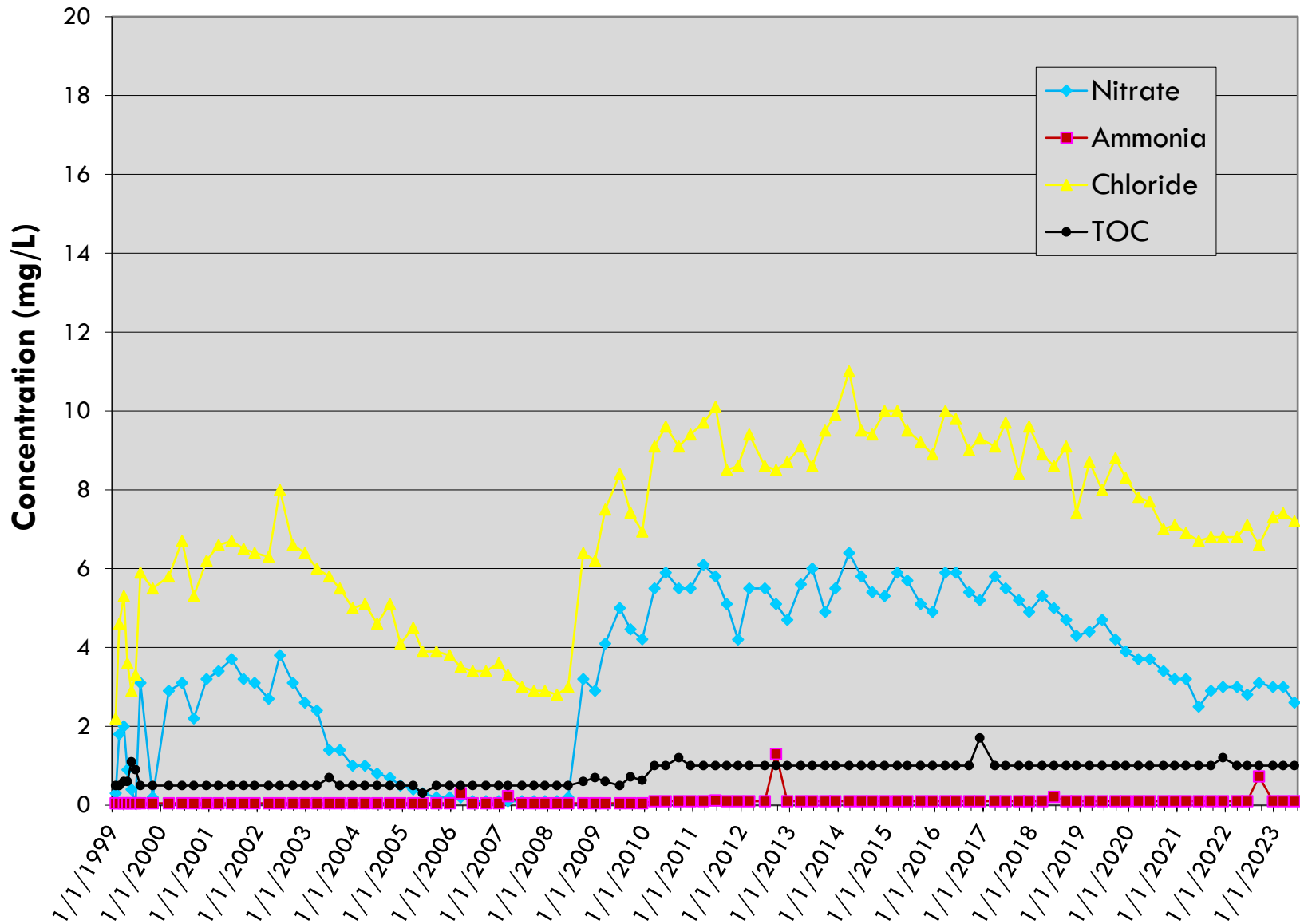
LRI Landfill, Pierce County, Washington



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

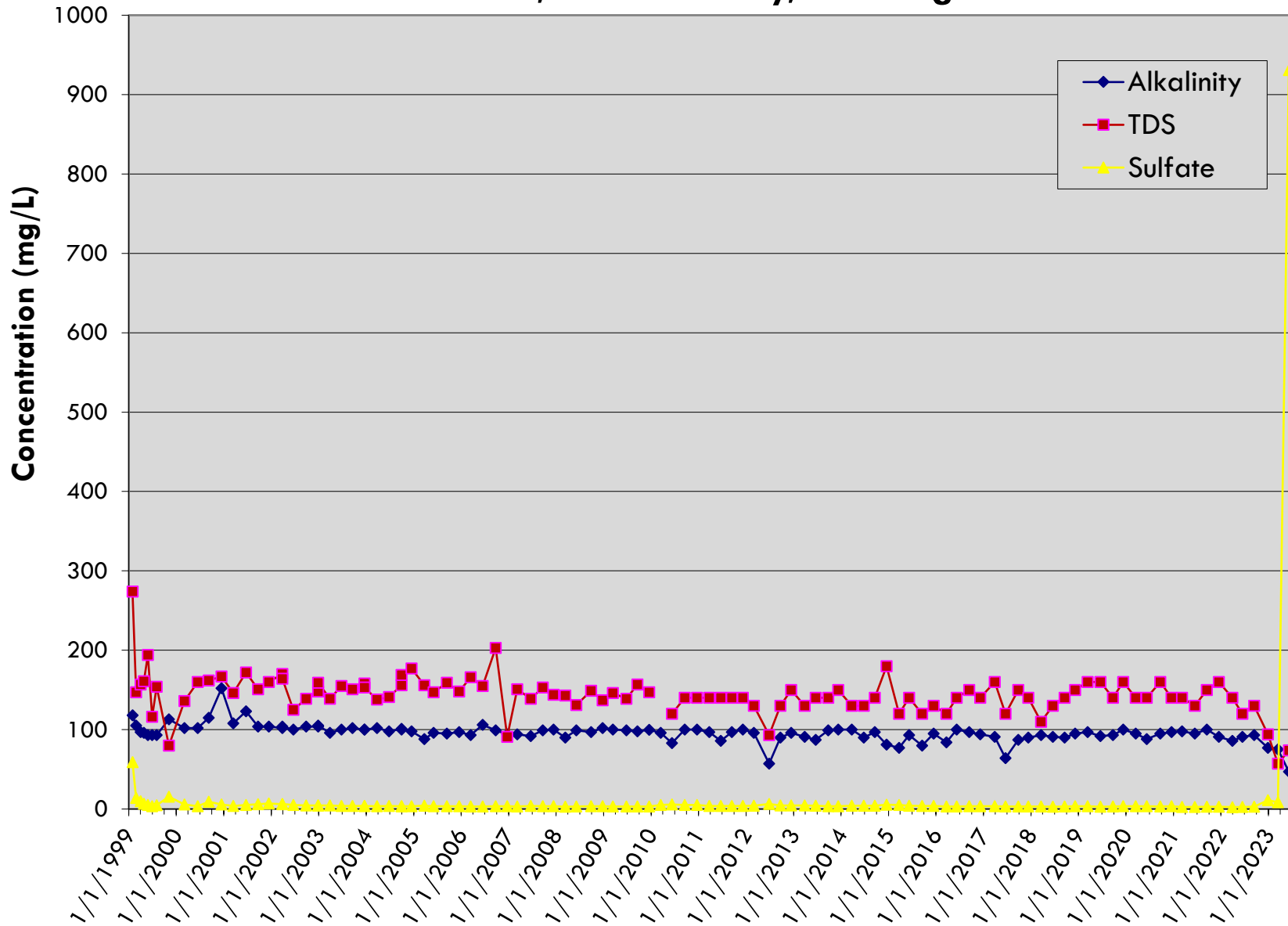


MW-10 (Background) LRI Landfill, Pierce County, Washington

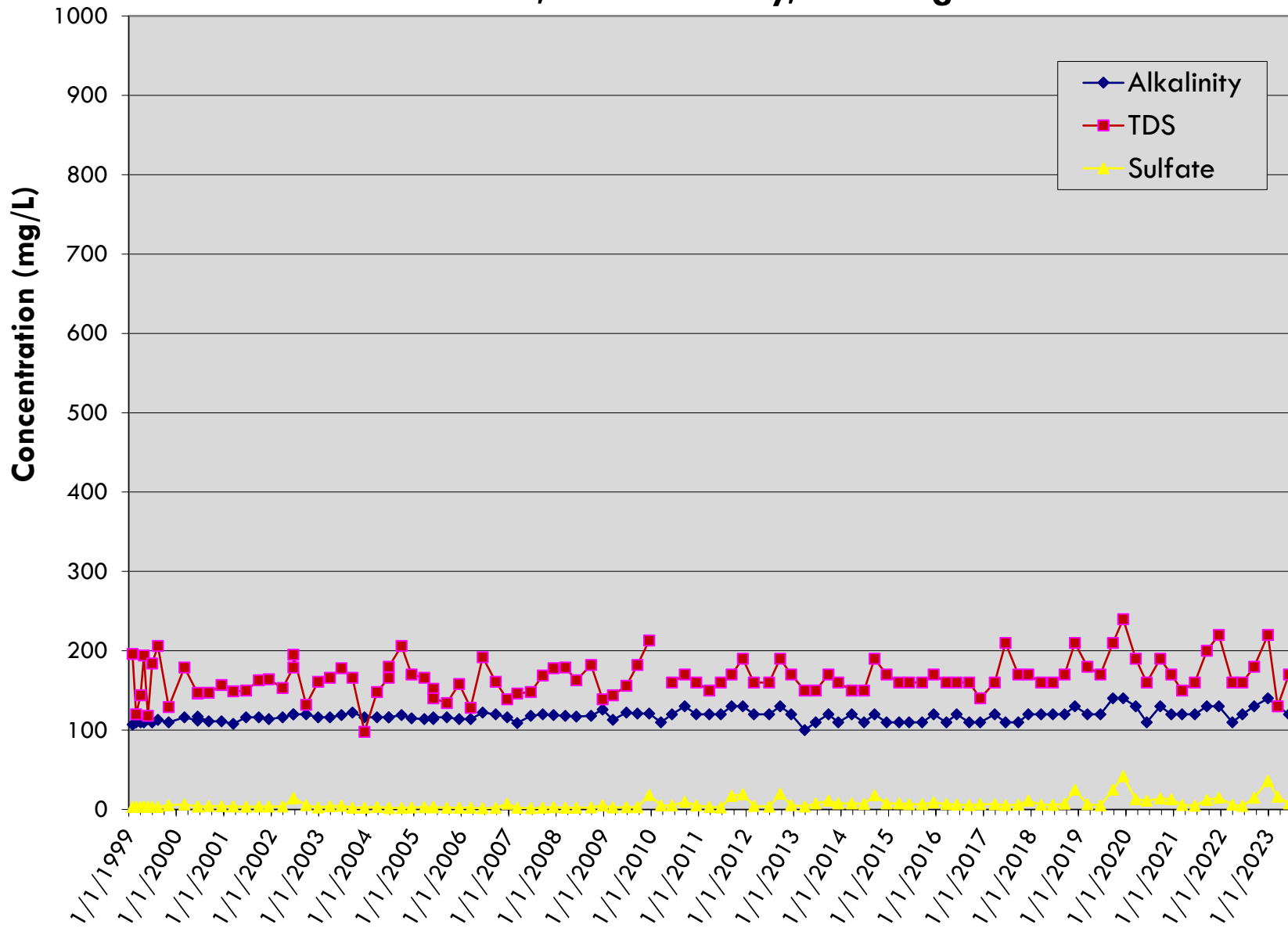


MW-1A

LRI Landfill, Pierce County, Washington

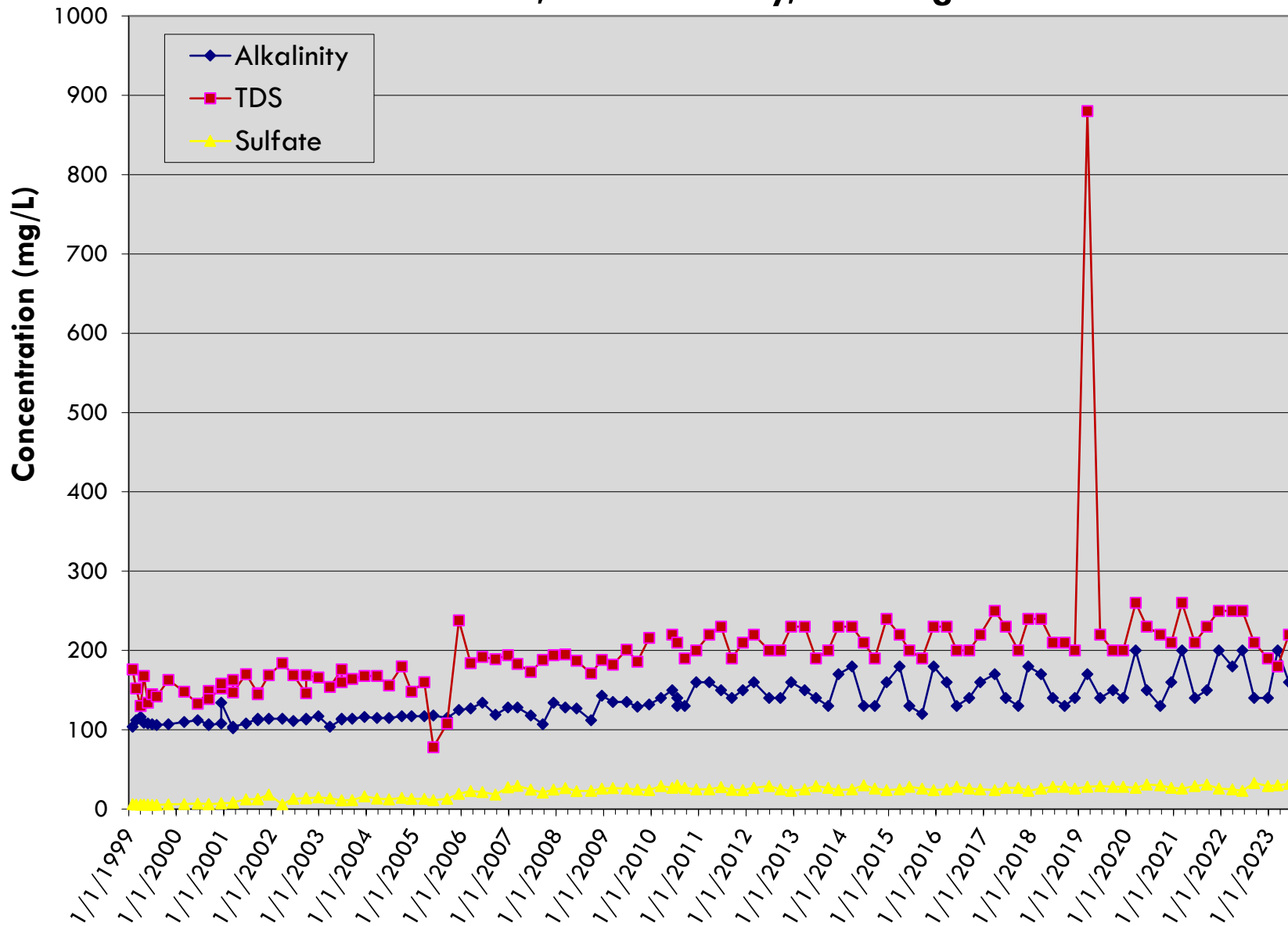


MW-2A
LRI Landfill, Pierce County, Washington

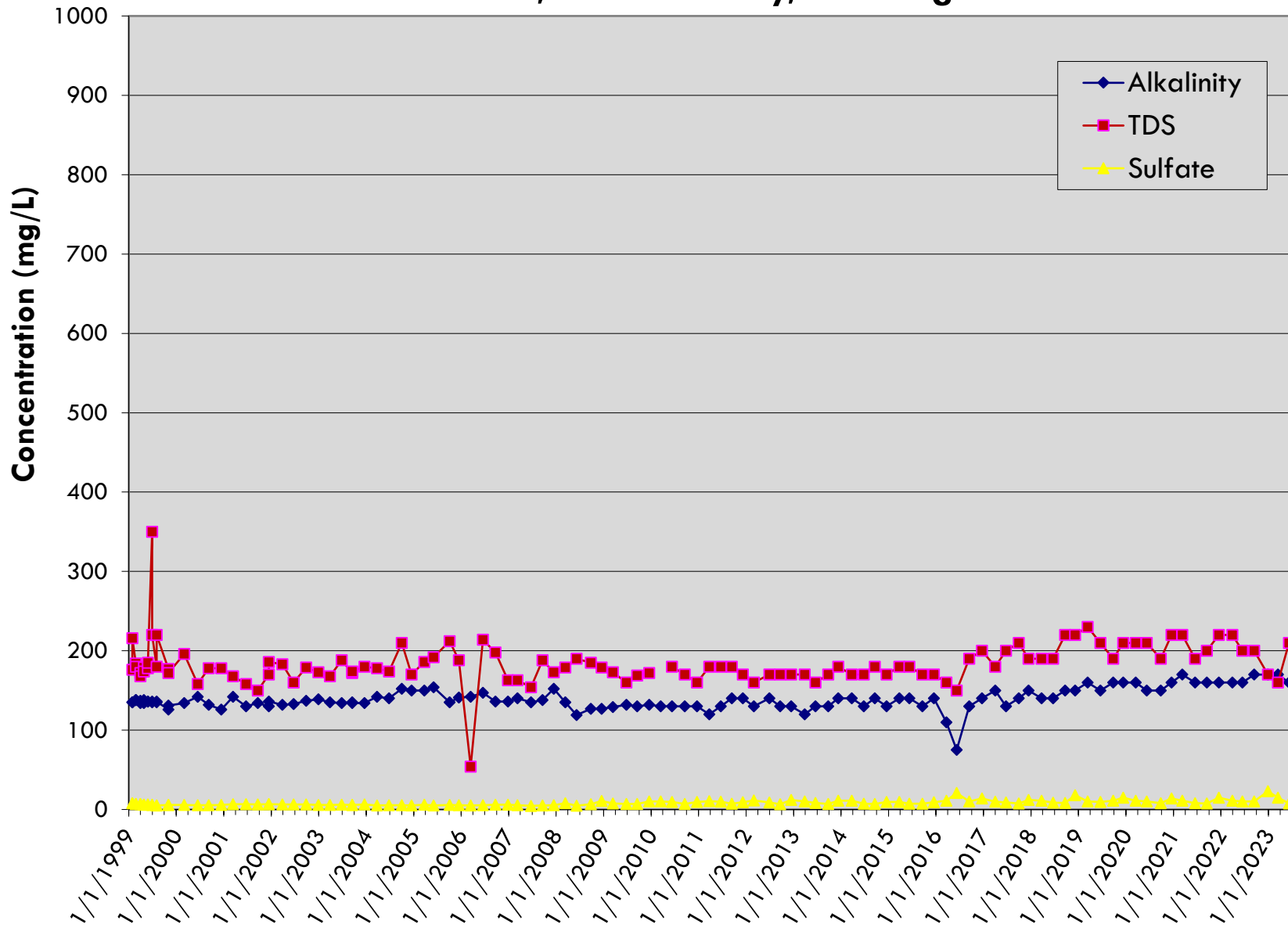


MW-3

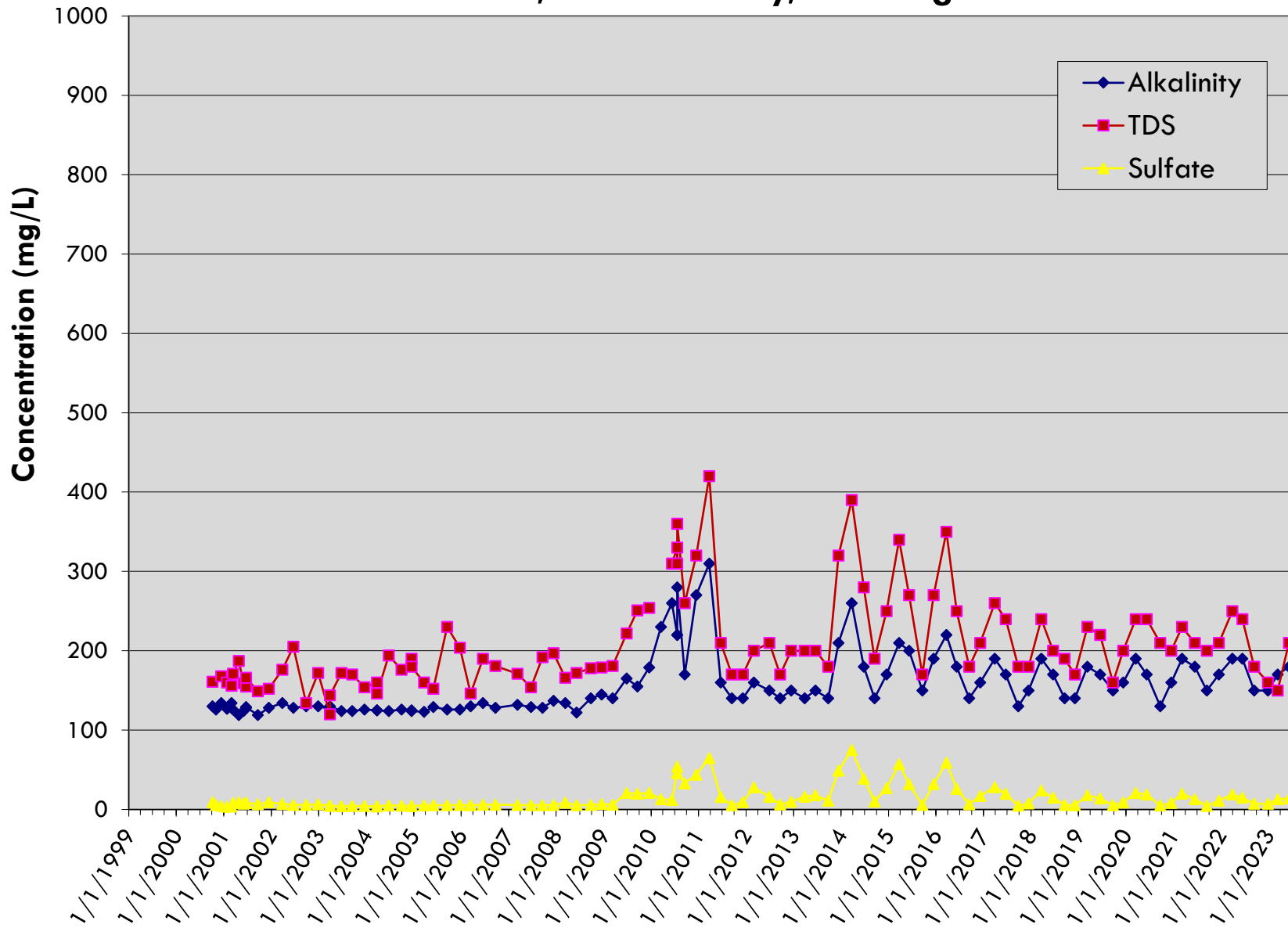
LRI Landfill, Pierce County, Washington



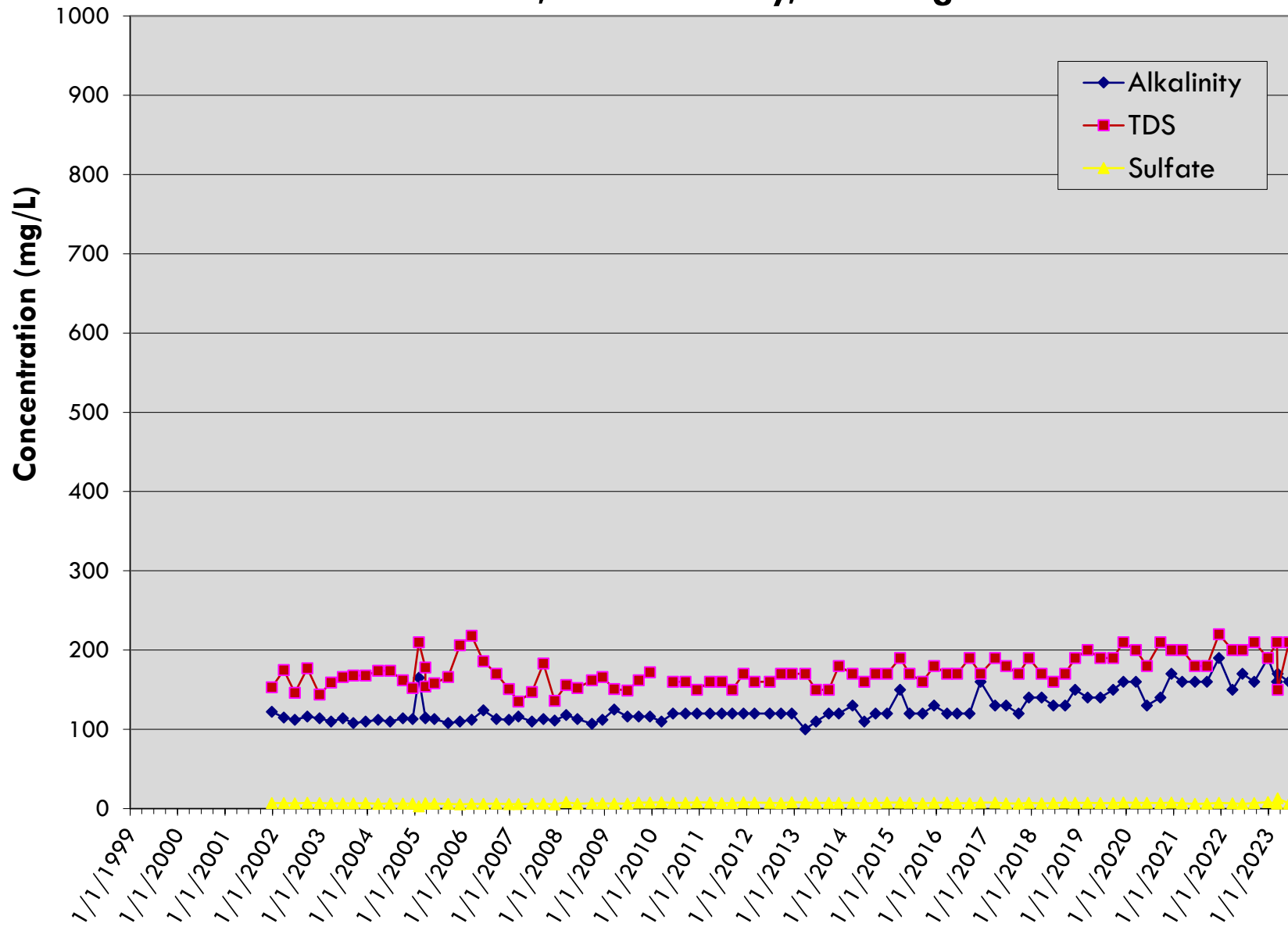
MW-4
LRI Landfill, Pierce County, Washington



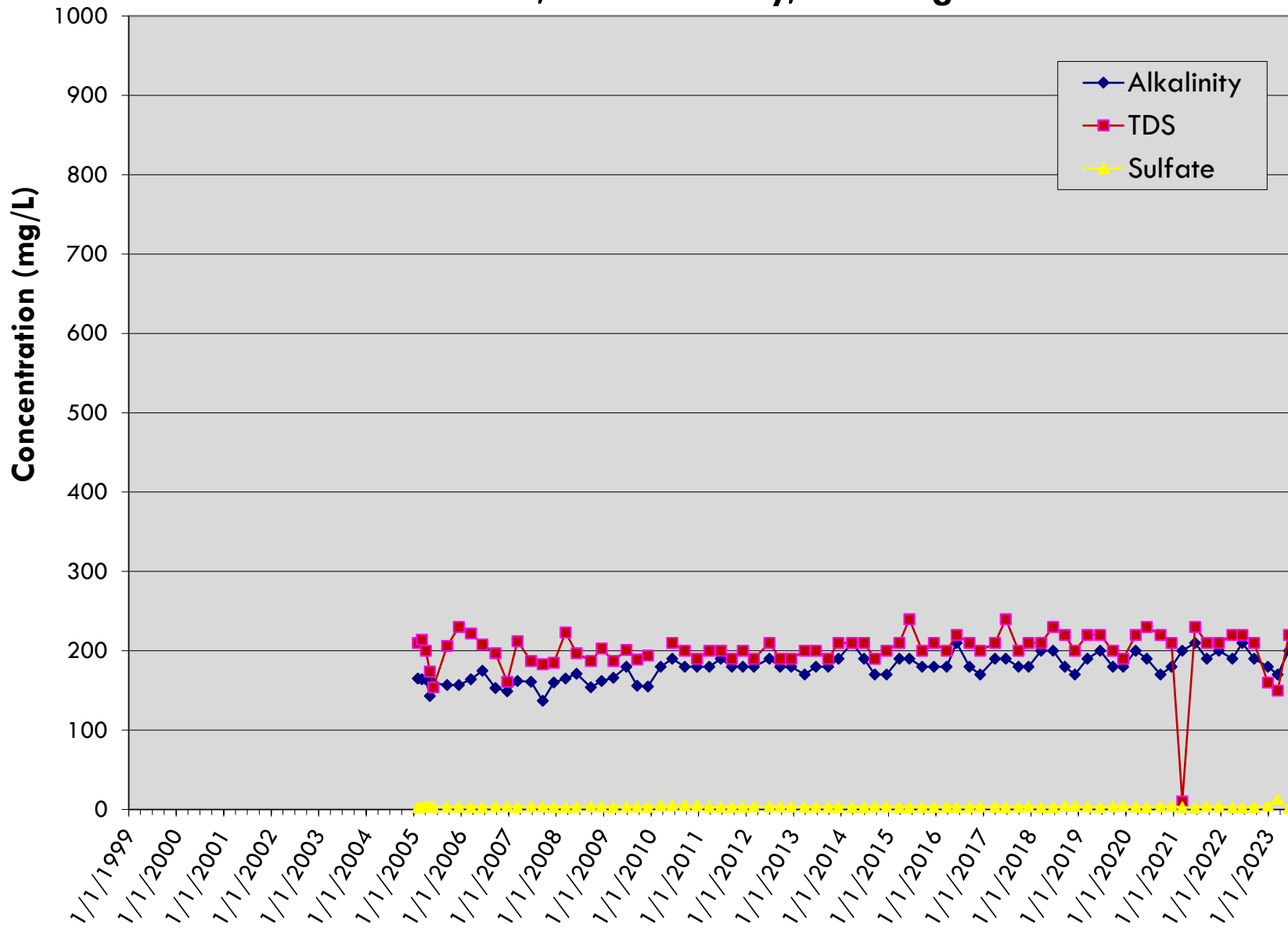
MW-5A
LRI Landfill, Pierce County, Washington



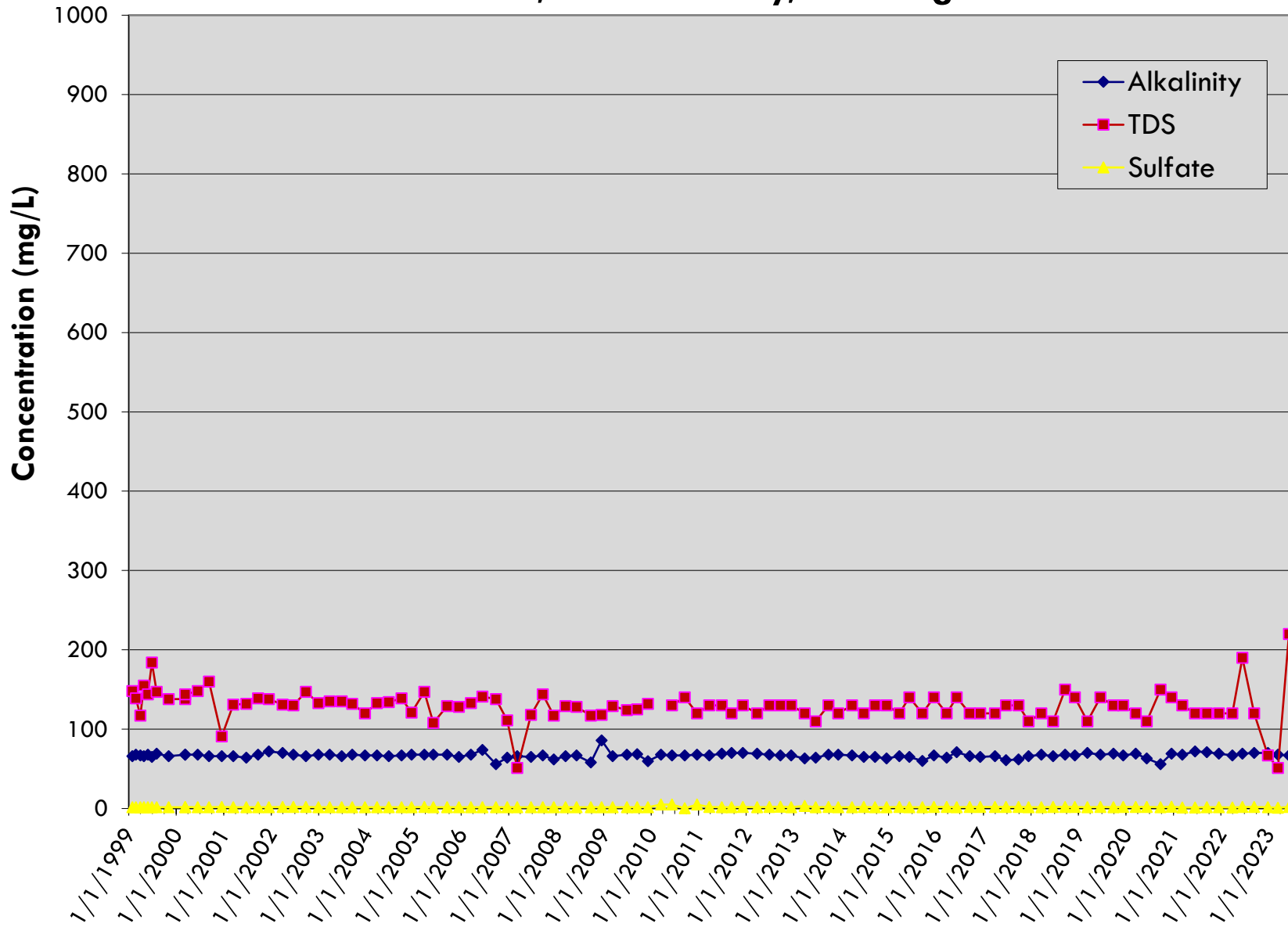
MW-6
LRI Landfill, Pierce County, Washington



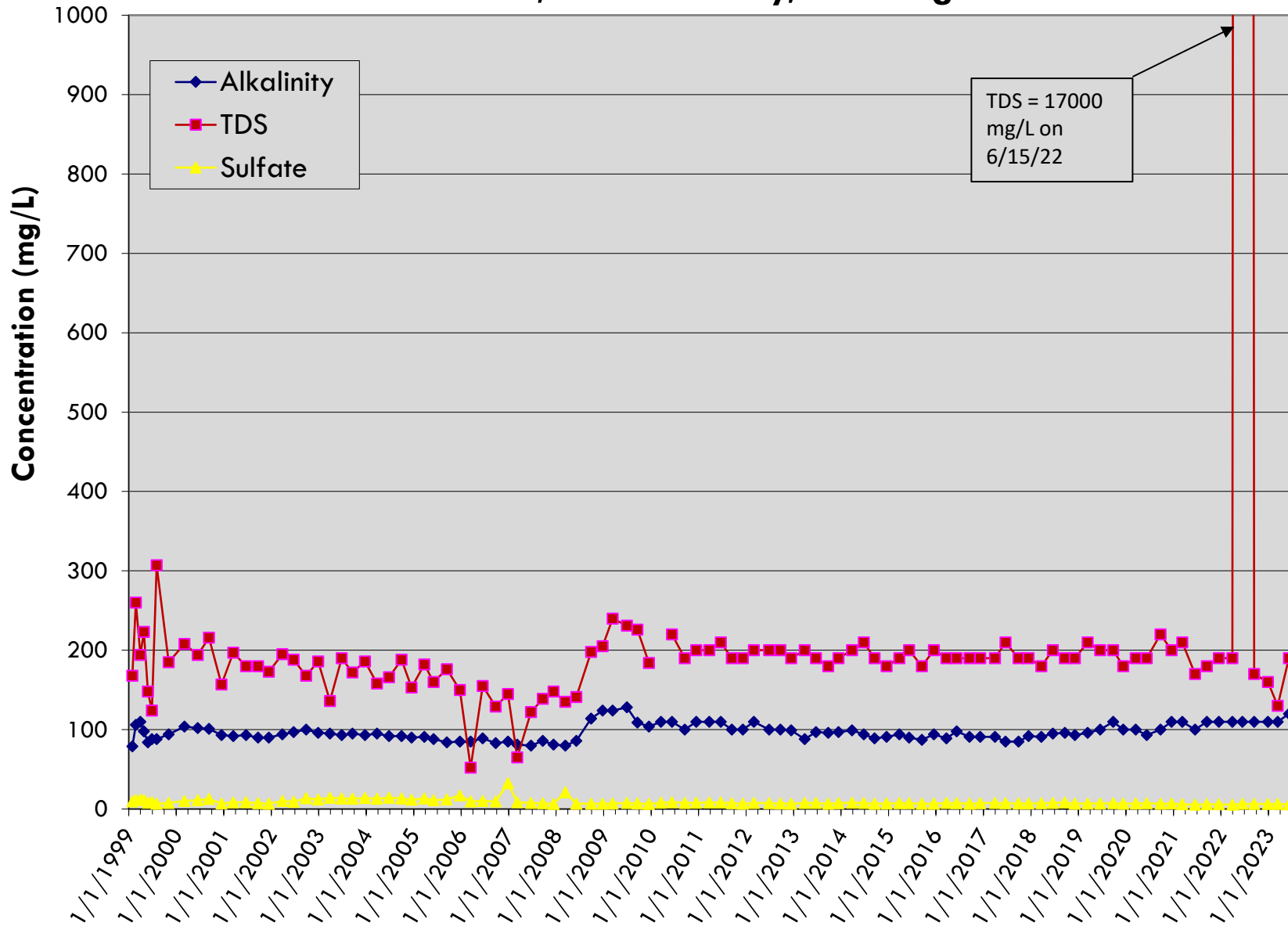
MW-7
LRI Landfill, Pierce County, Washington



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

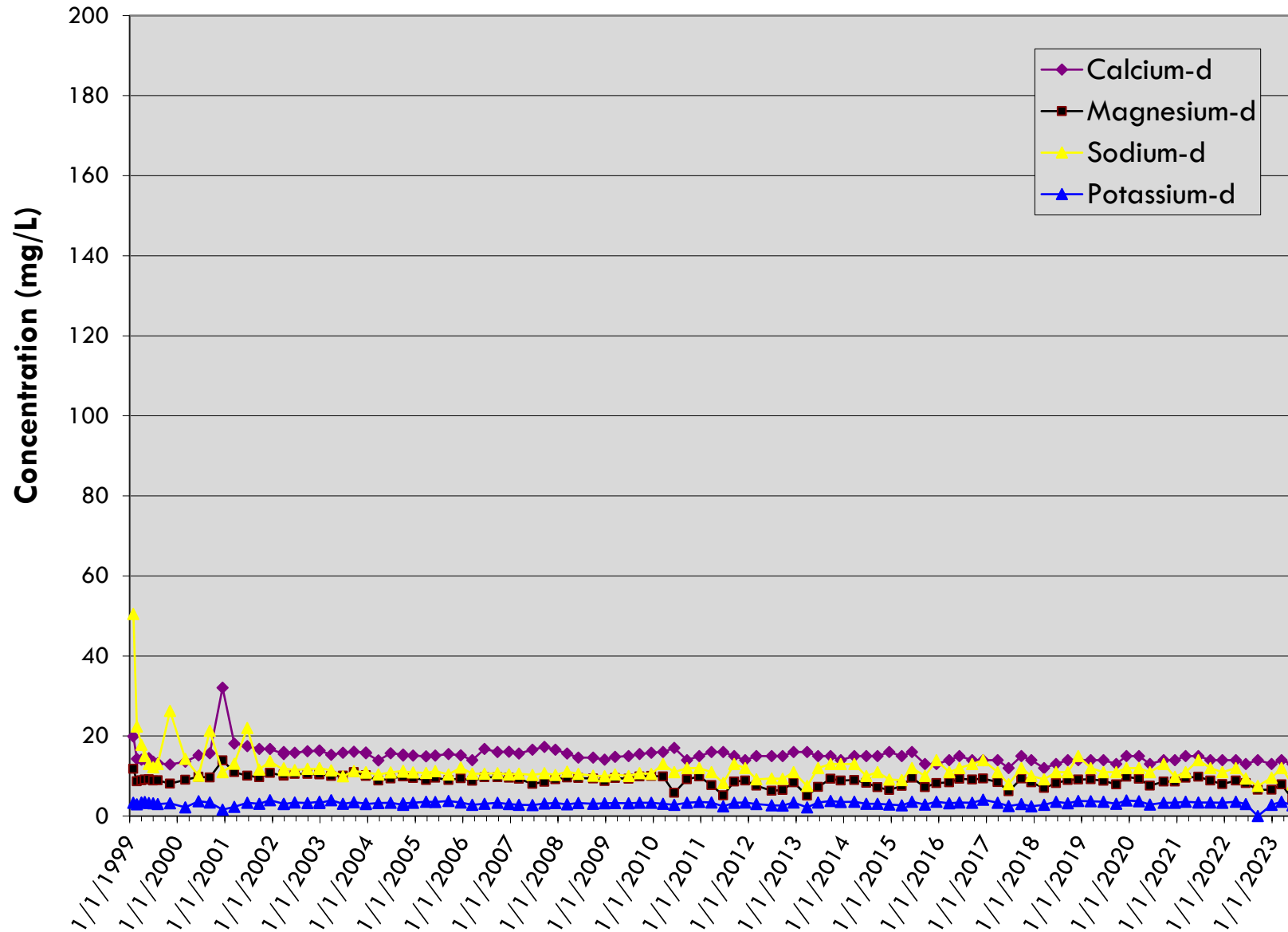


MW-10 (Background) LRI Landfill, Pierce County, Washington

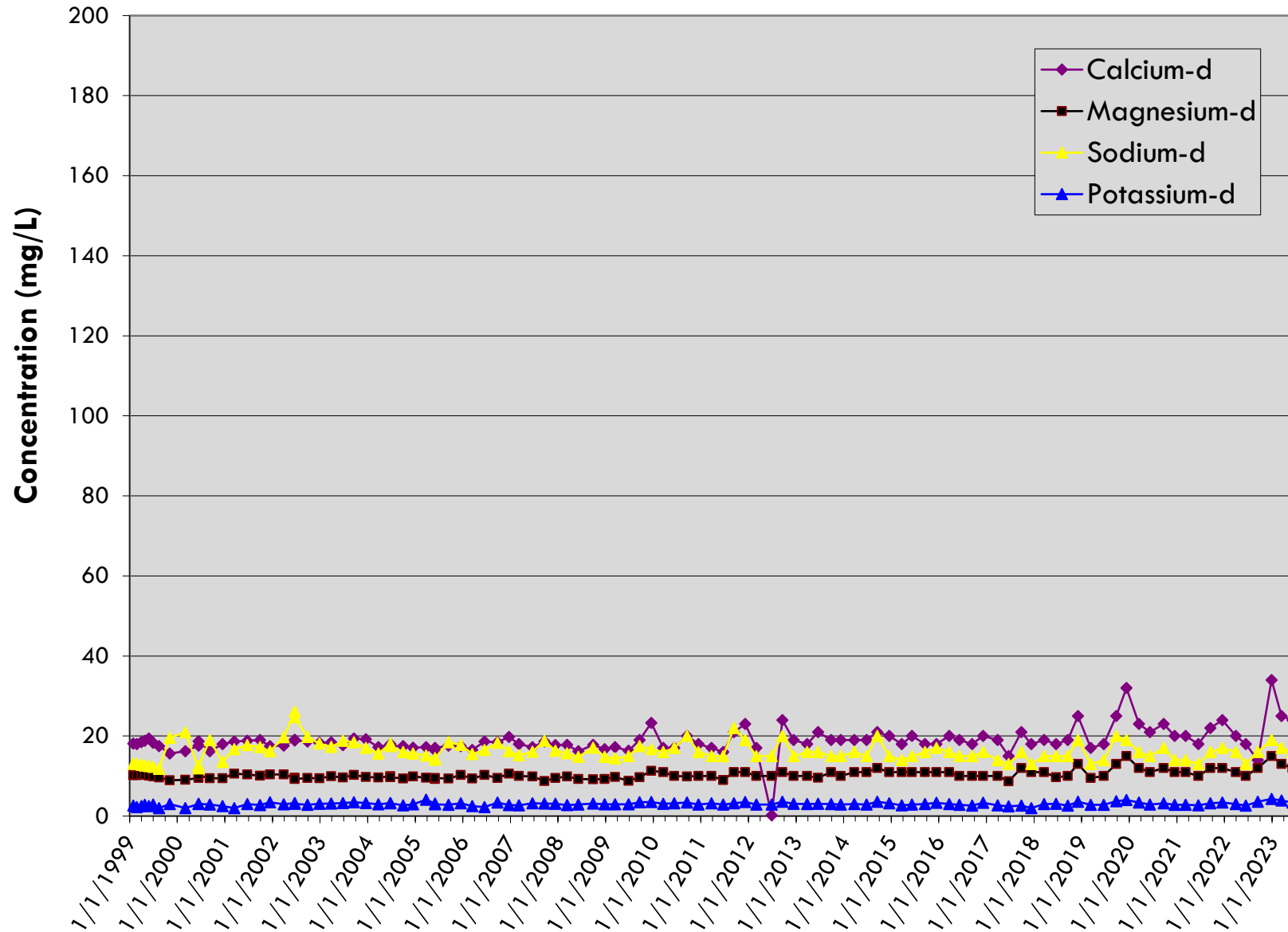


MW-1A

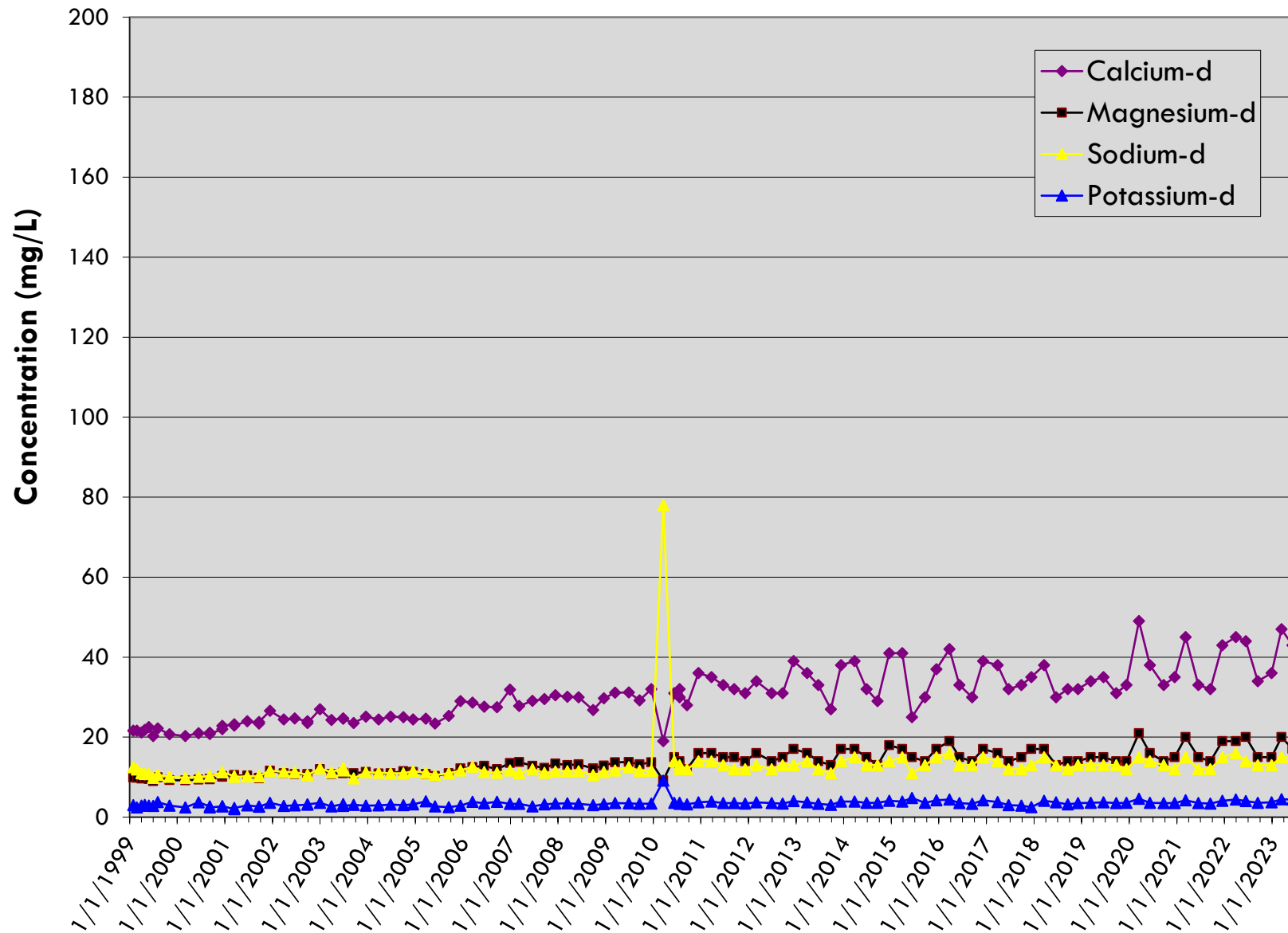
LRI Landfill, Pierce County, Washington



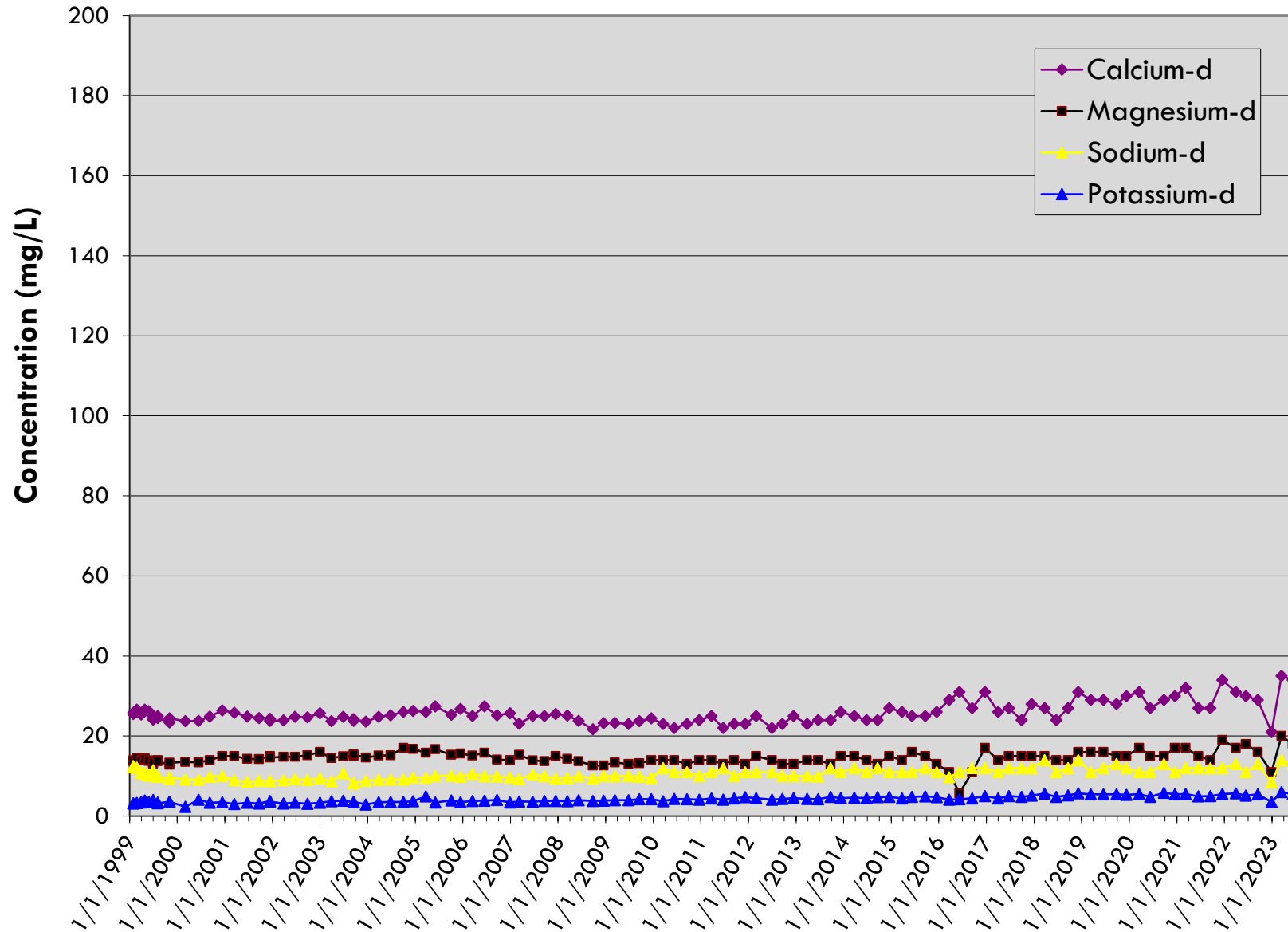
MW-2A
LRI Landfill, Pierce County, Washington



MW-3
LRI Landfill, Pierce County, Washington

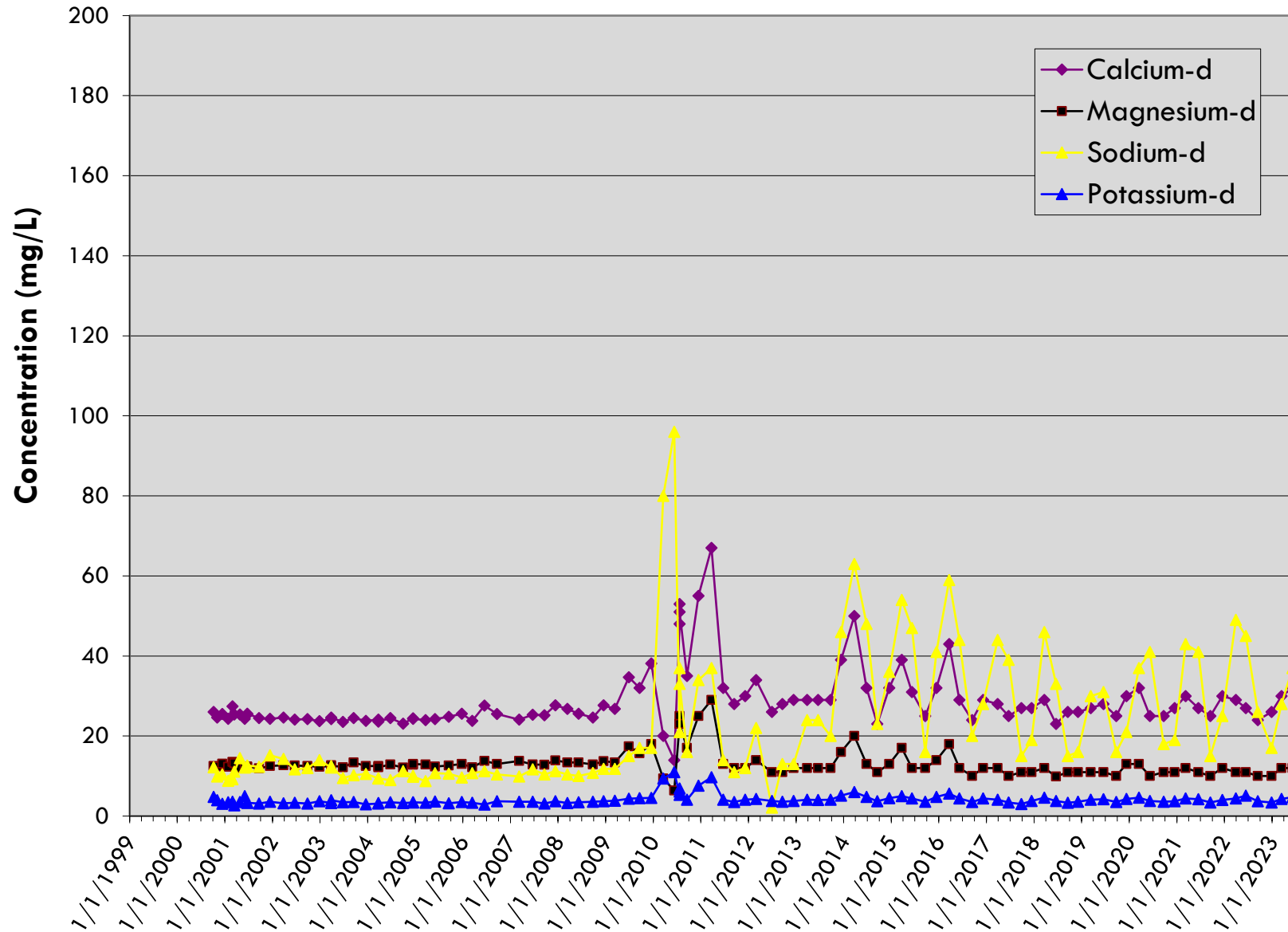


MW-4
LRI Landfill, Pierce County, Washington



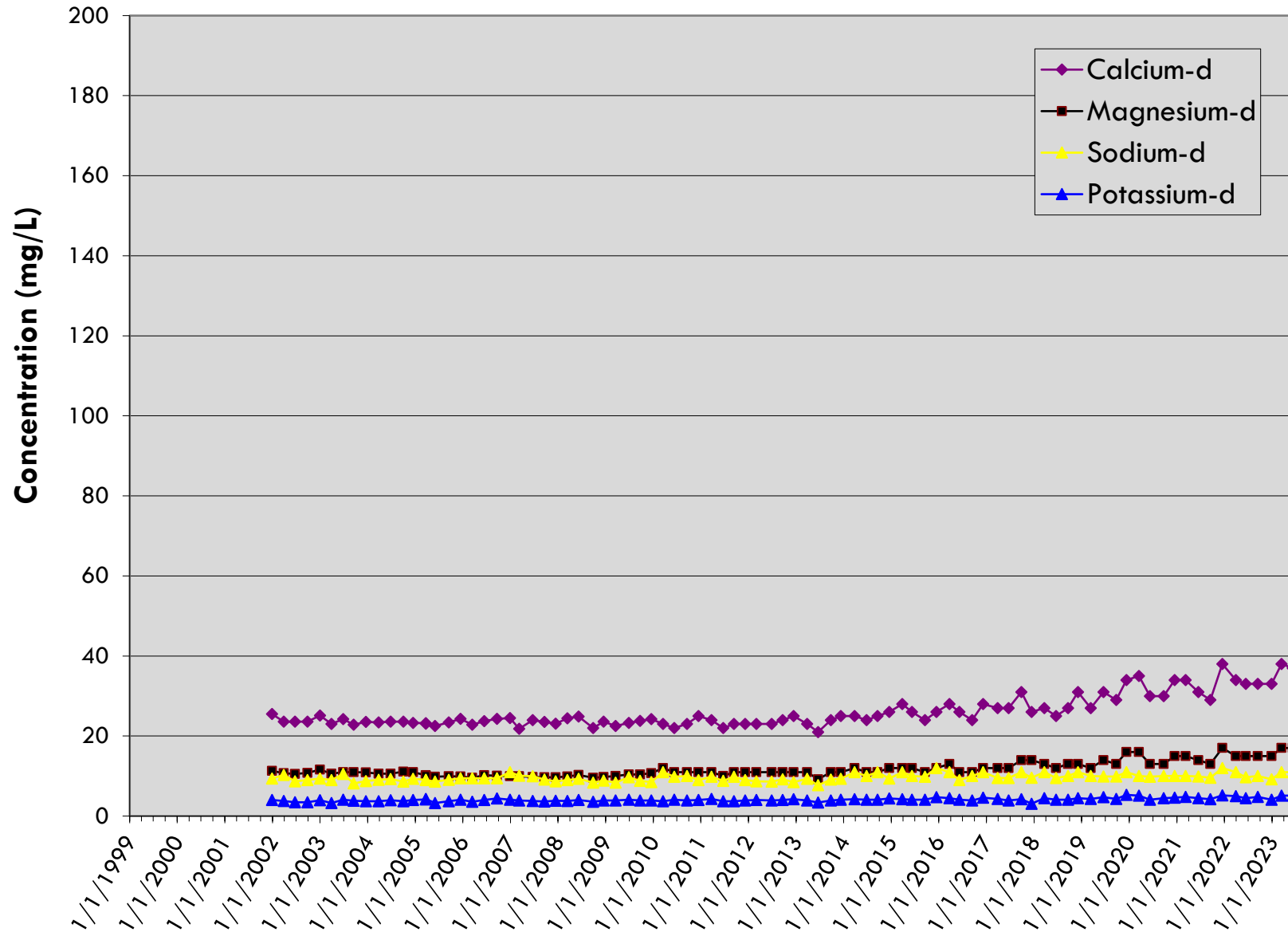
MW-5A

LRI Landfill, Pierce County, Washington

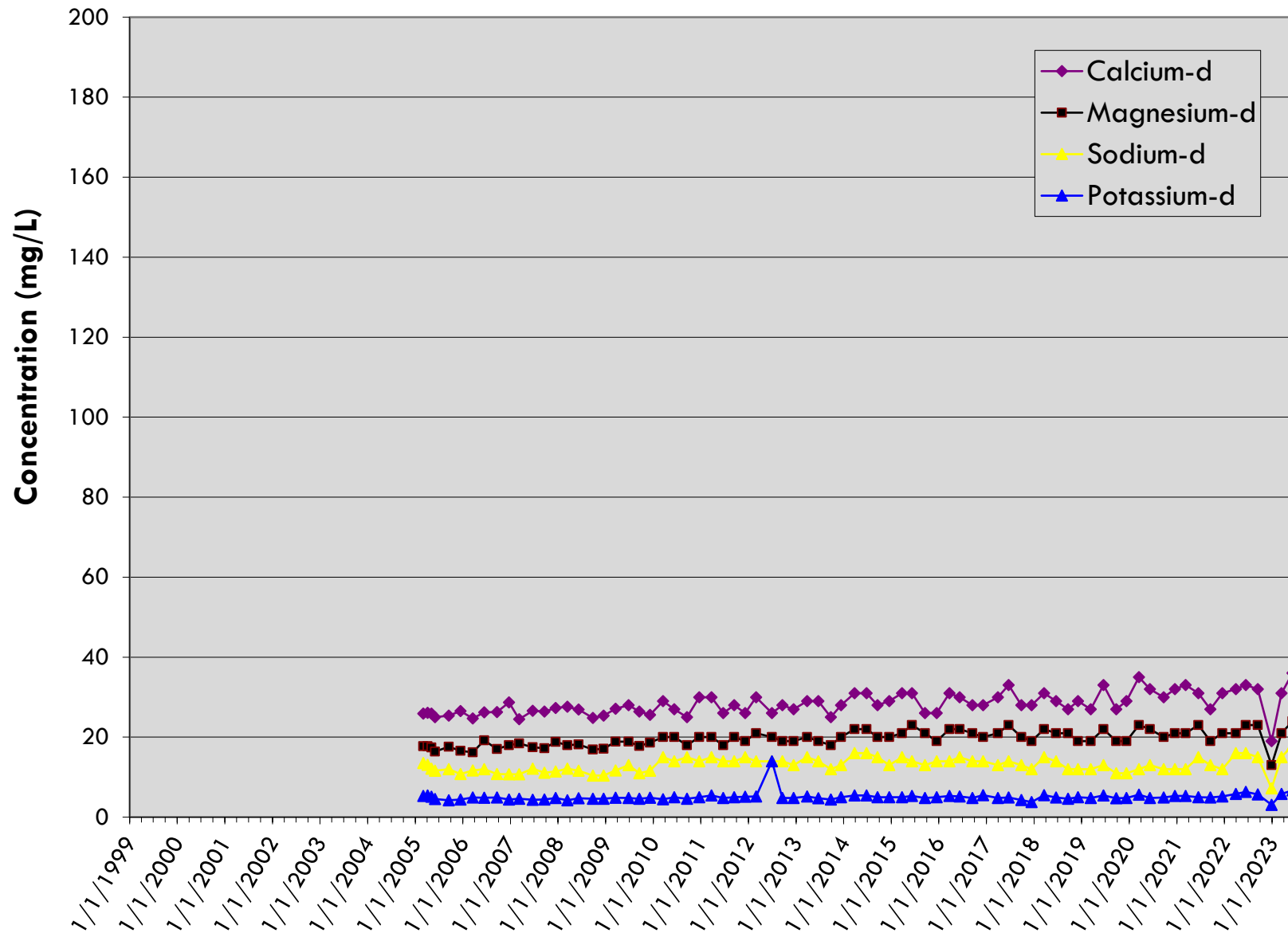


MW-6

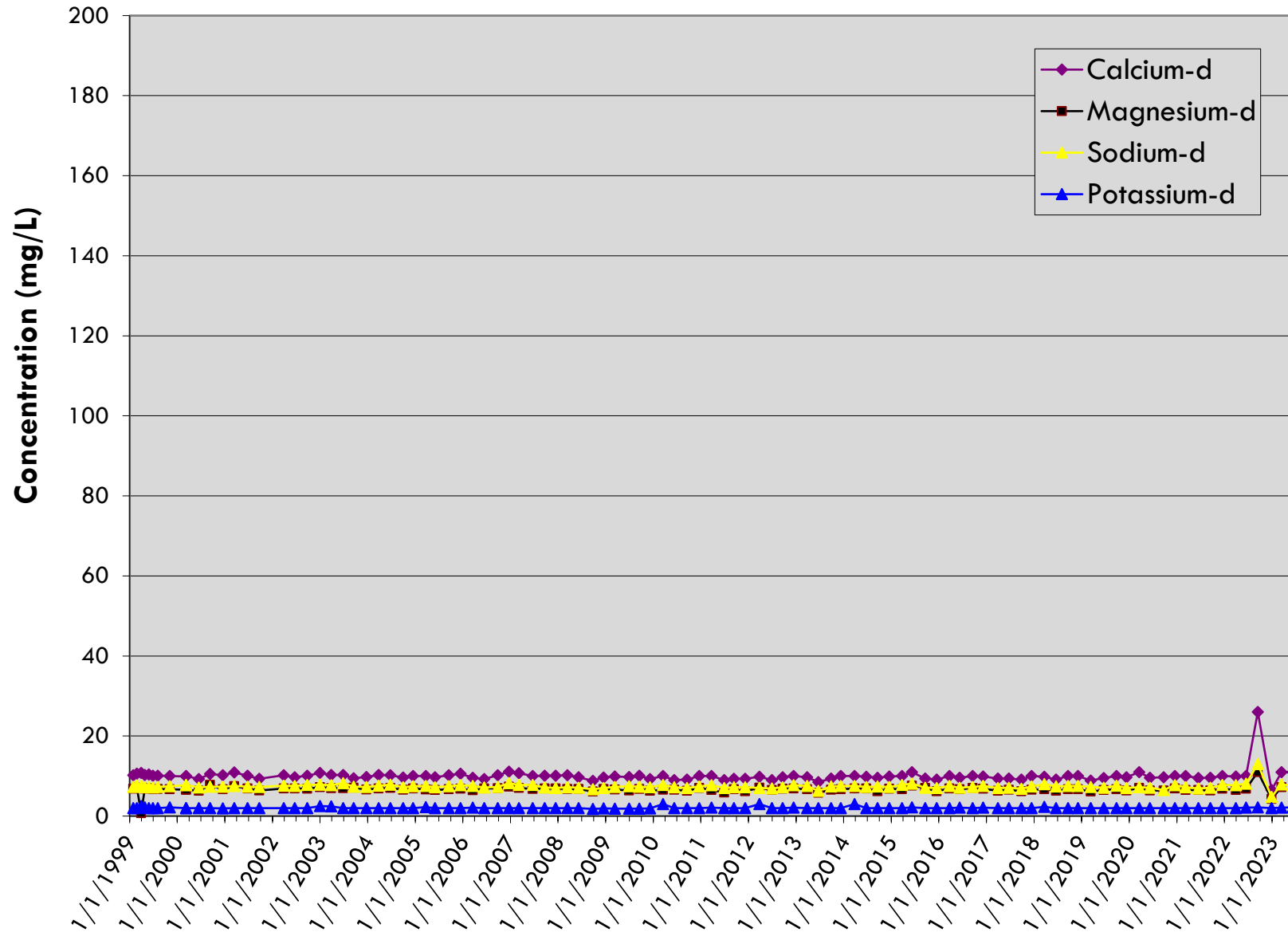
LRI Landfill, Pierce County, Washington



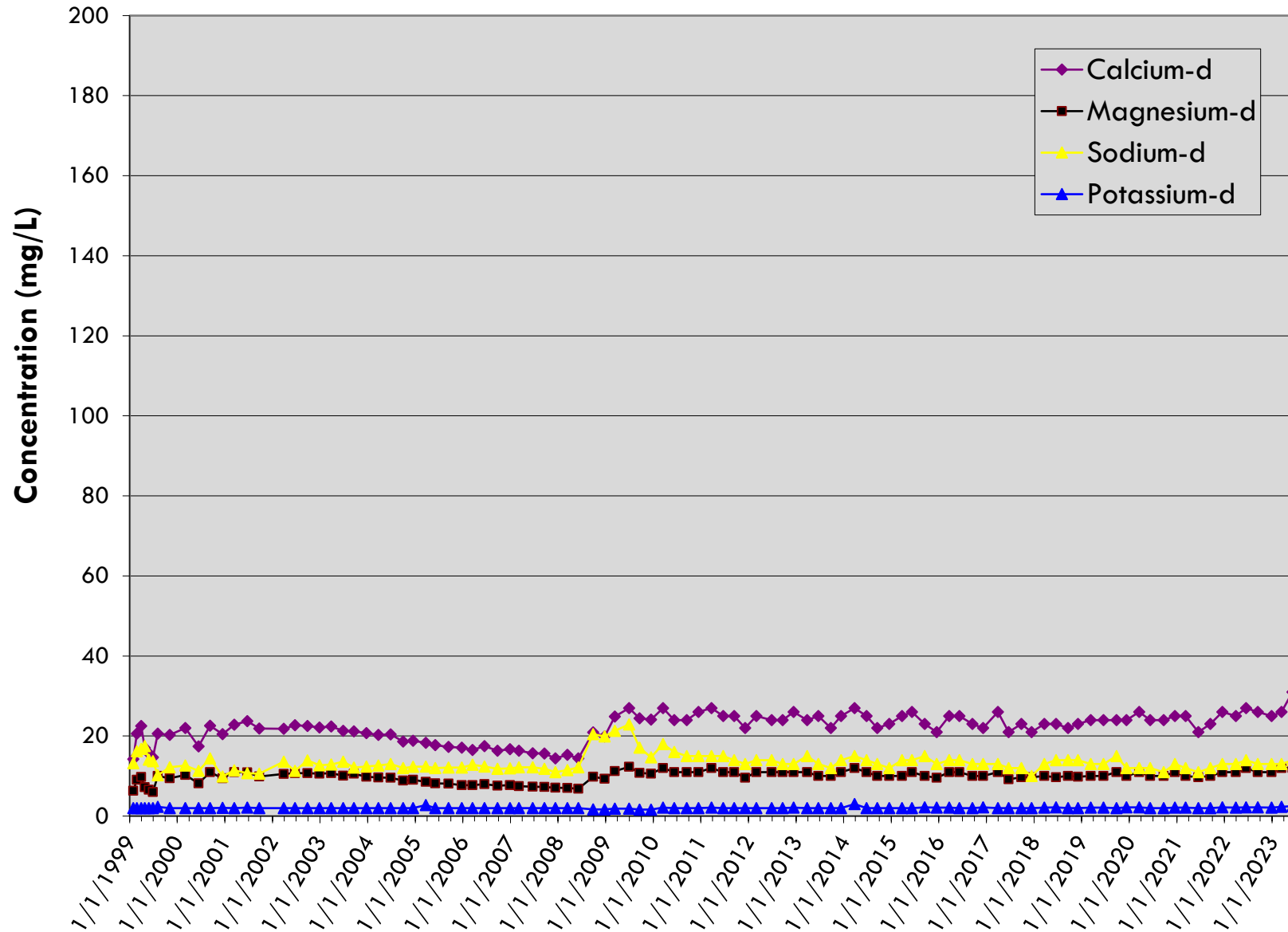
MW-7
LRI Landfill, Pierce County, Washington



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

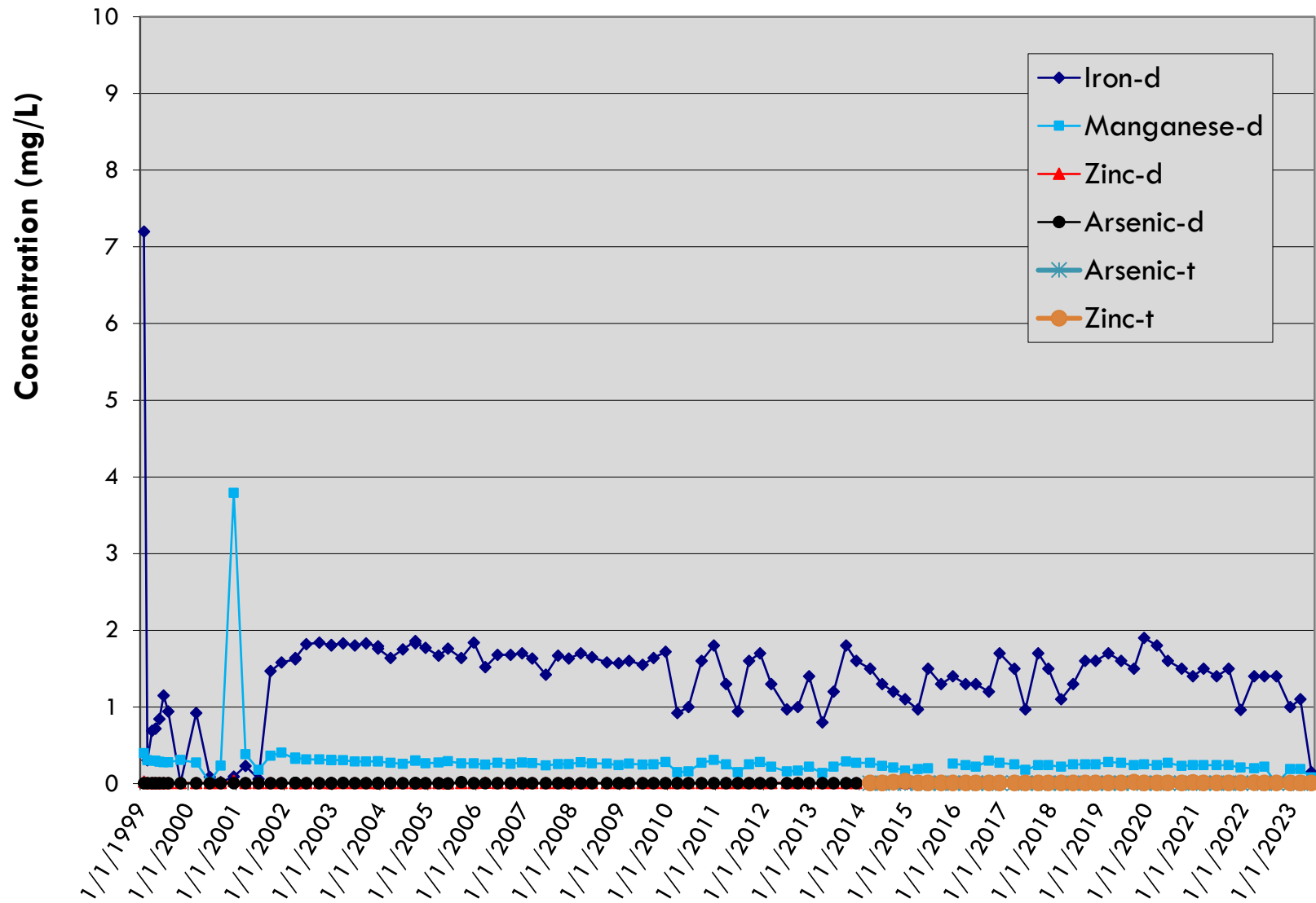


MW-10 (Background) LRI Landfill, Pierce County, Washington



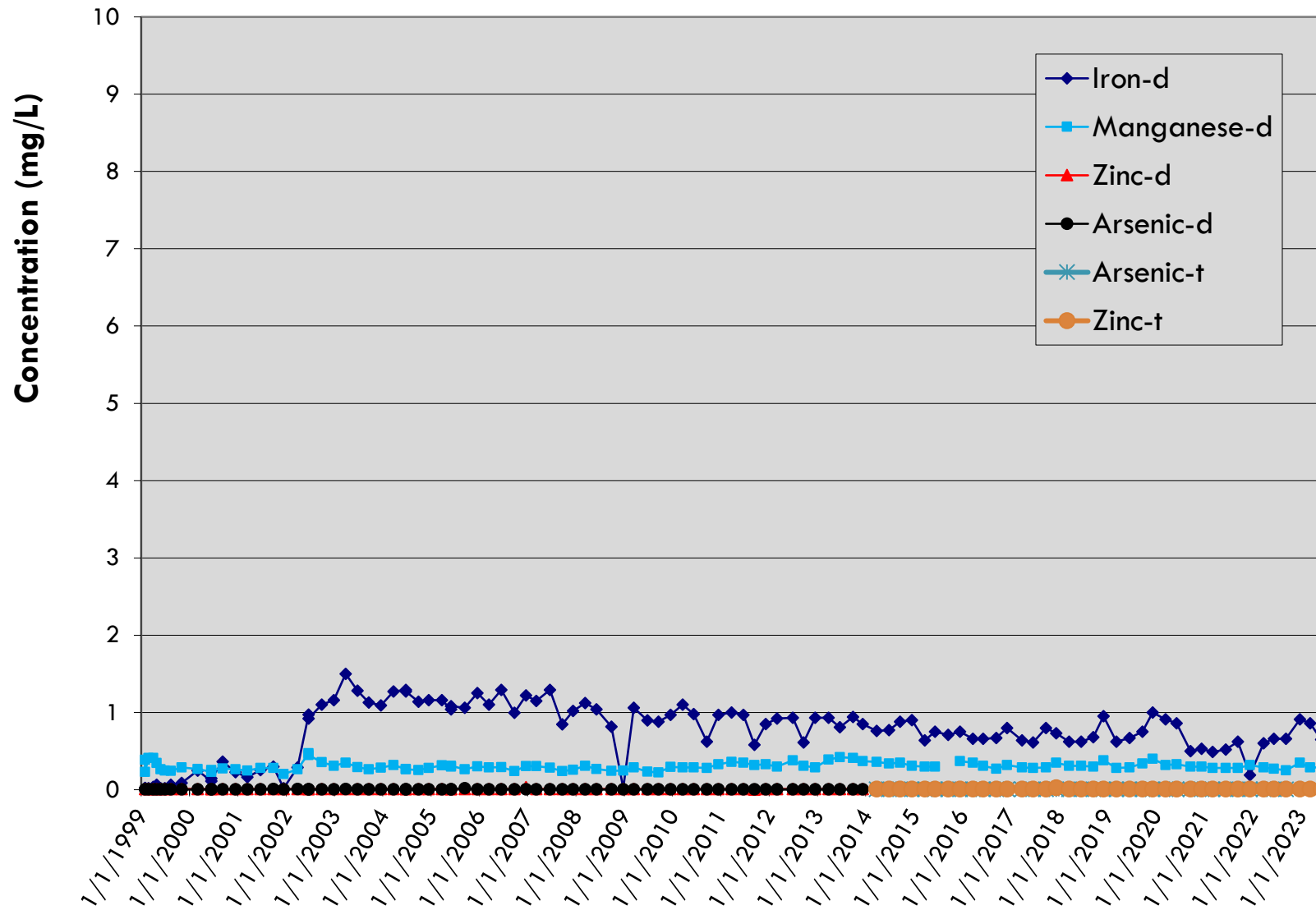
MW-1A

LRI Landfill, Pierce County, Washington



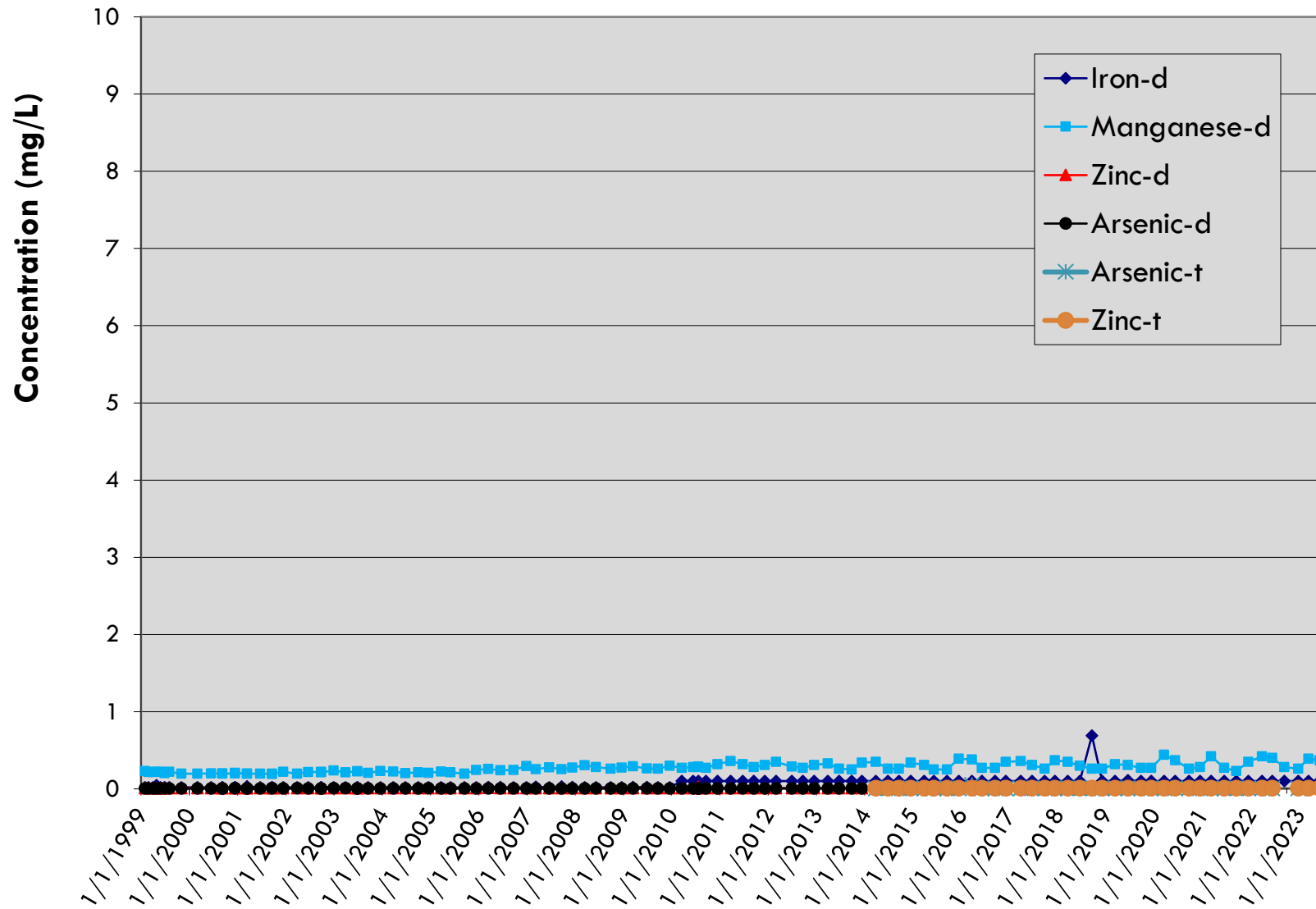
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LRI Landfill, Pierce County, Washington

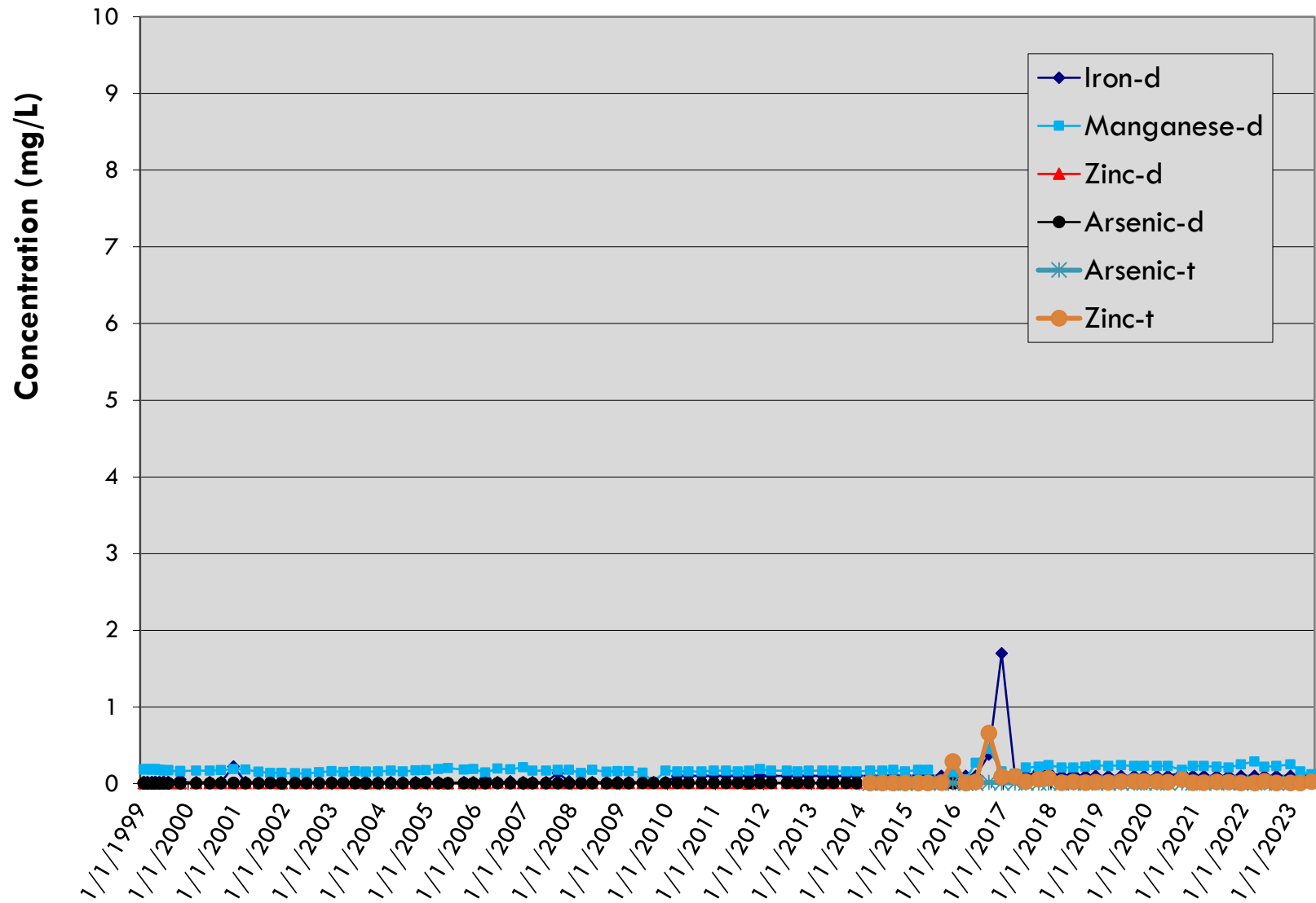


MW-3

LRI Landfill, Pierce County, Washington

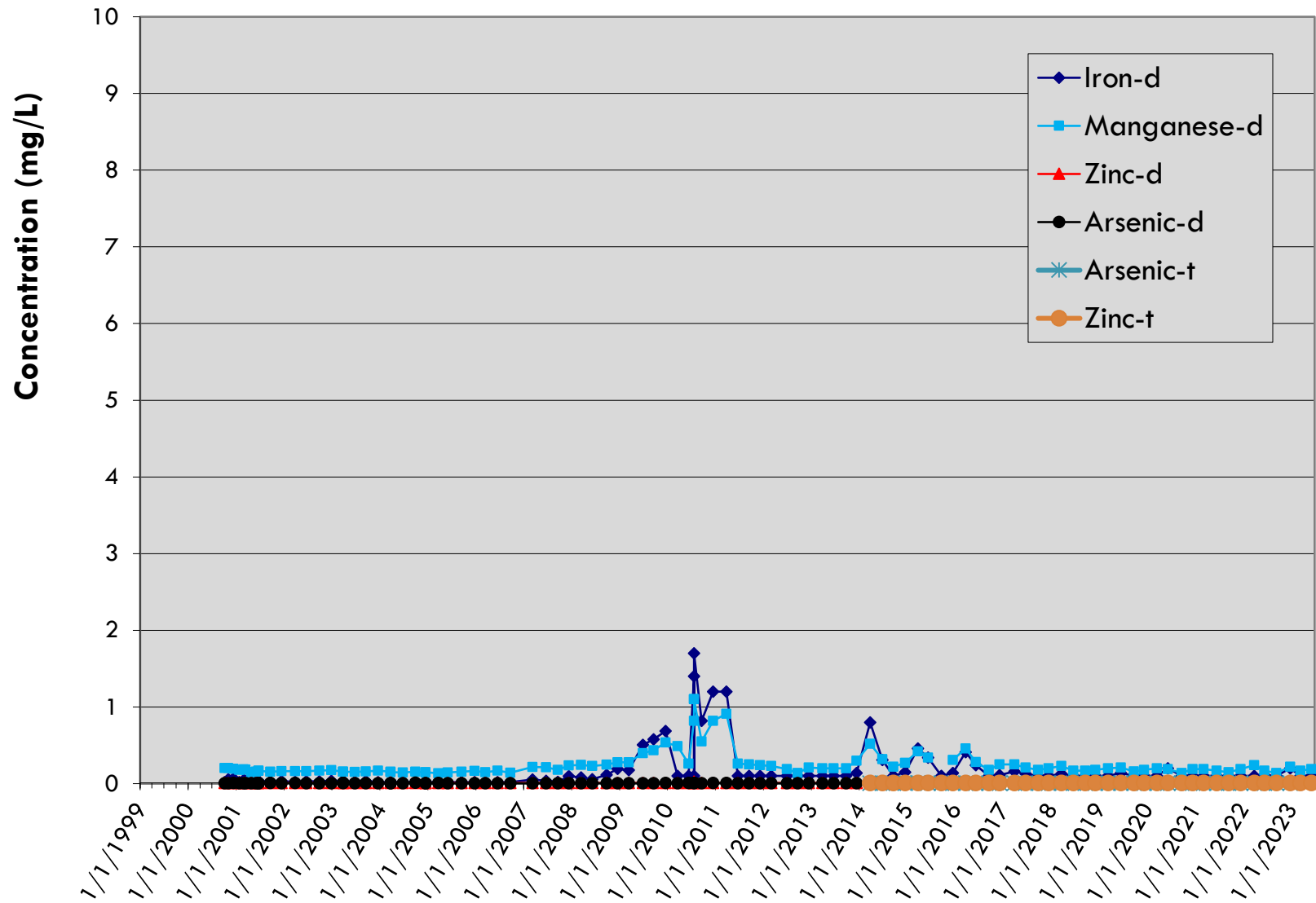


MW-4
LRI Landfill, Pierce County, Washington

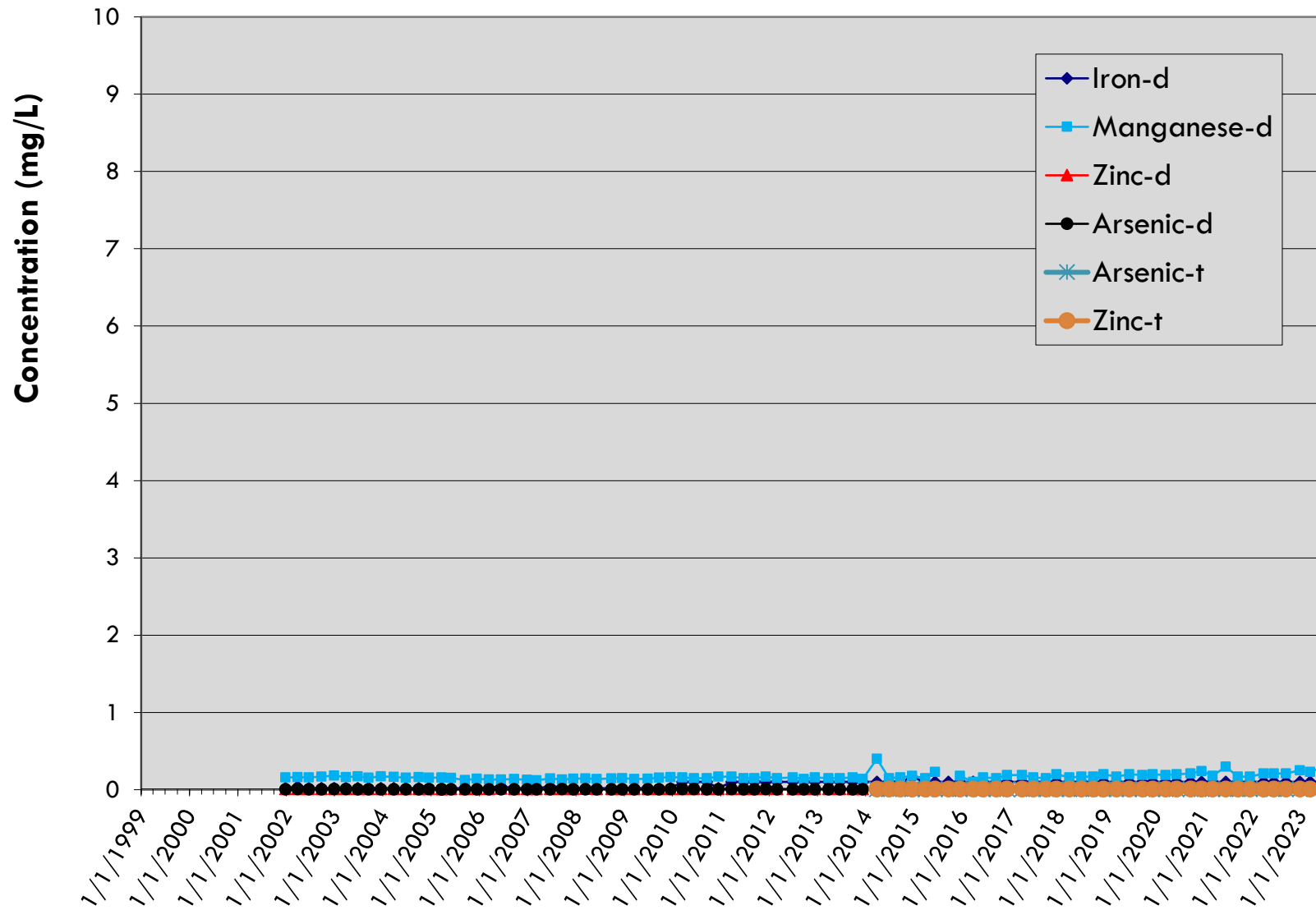


MW-5A

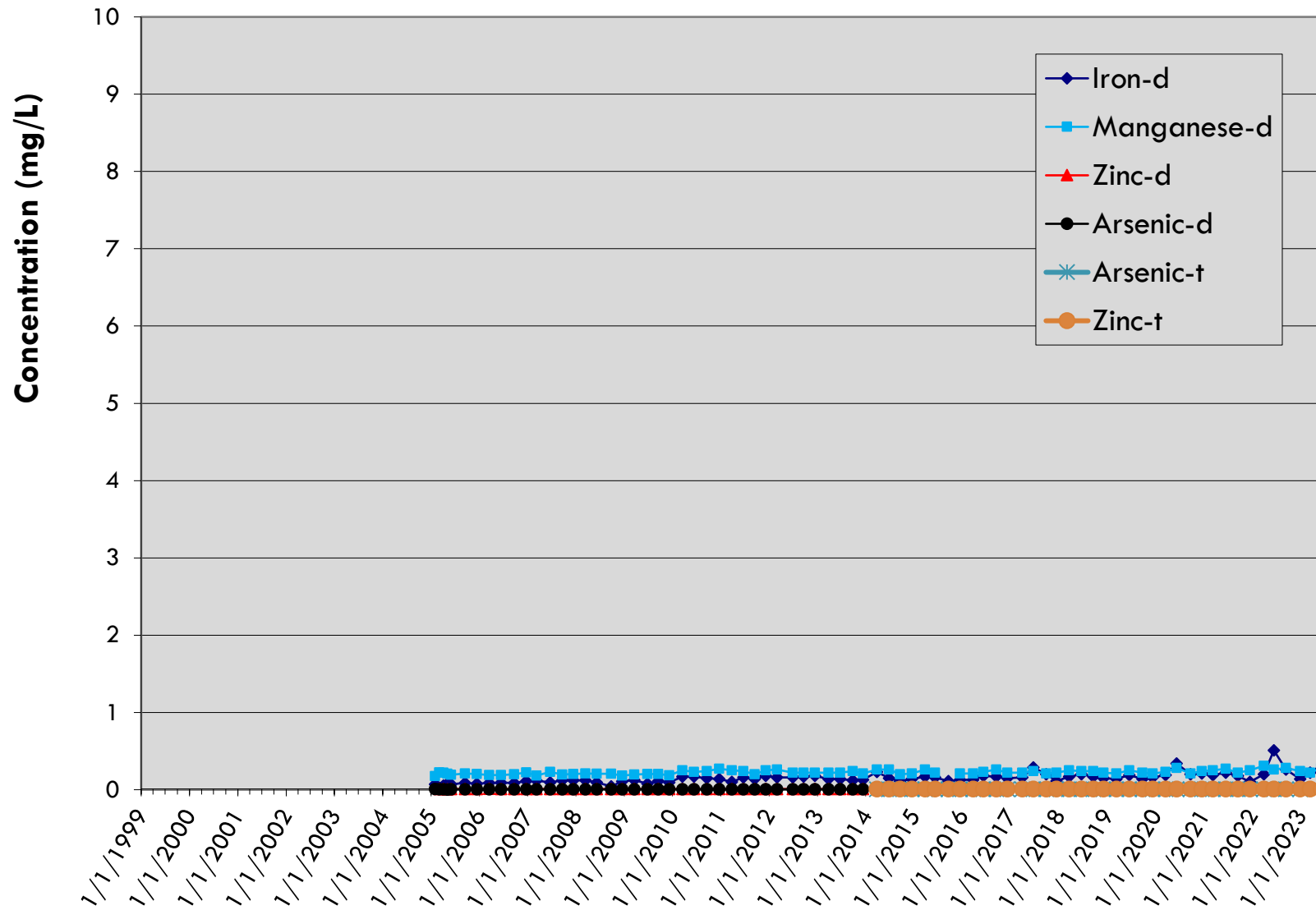
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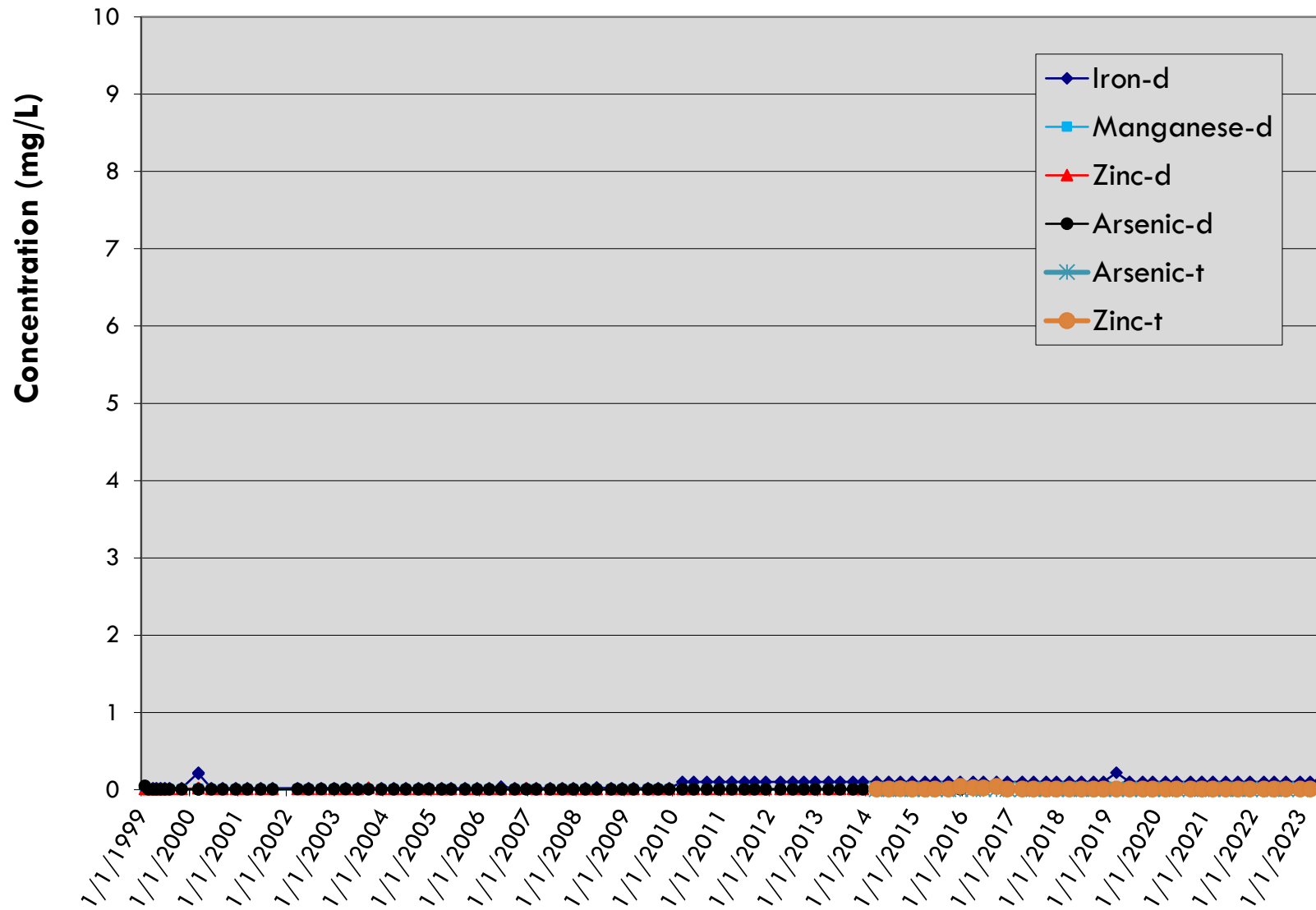
MW-6
LRI Landfill, Pierce County, Washington



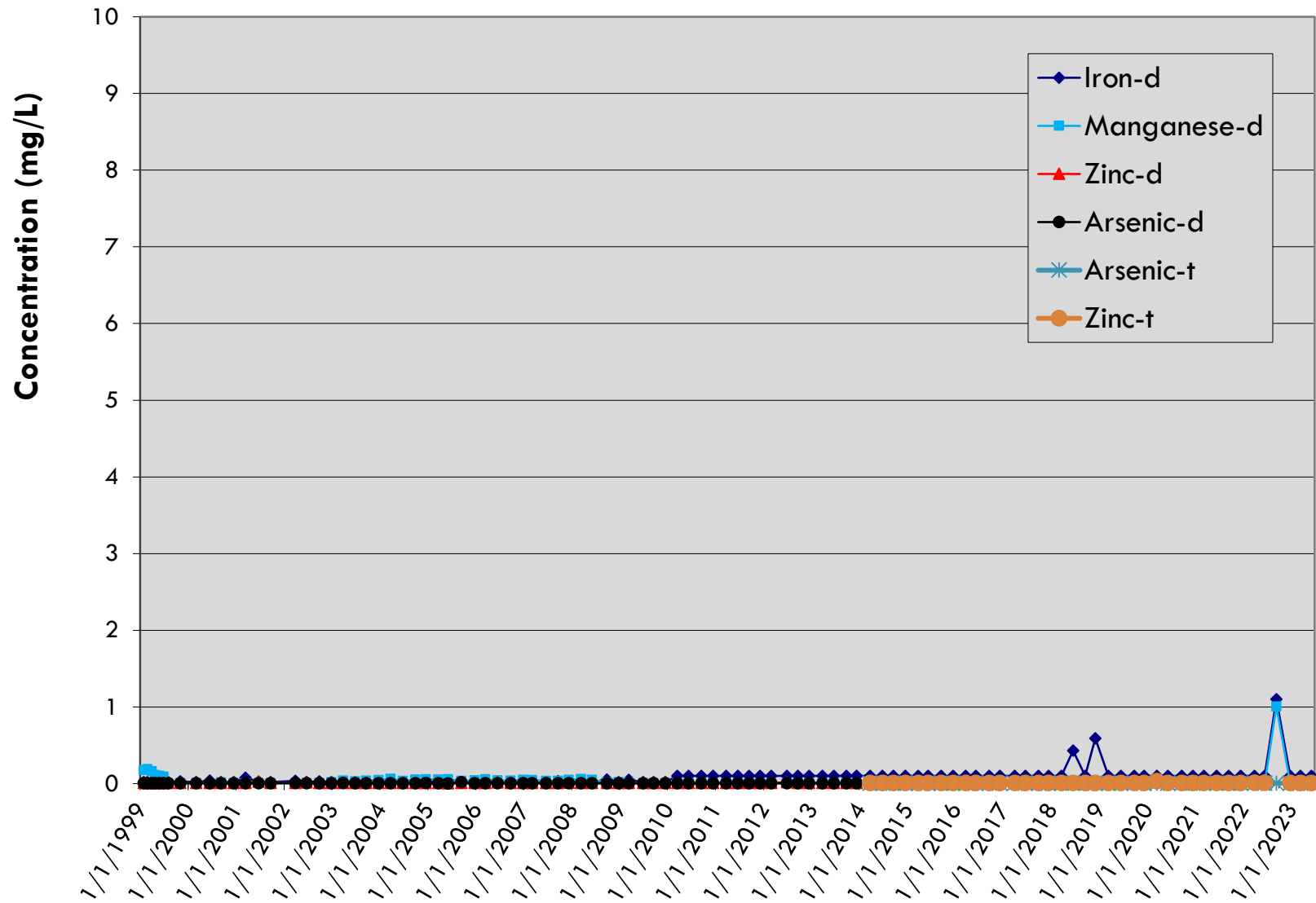
MW-7
LRI Landfill, Pierce County, Washington



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

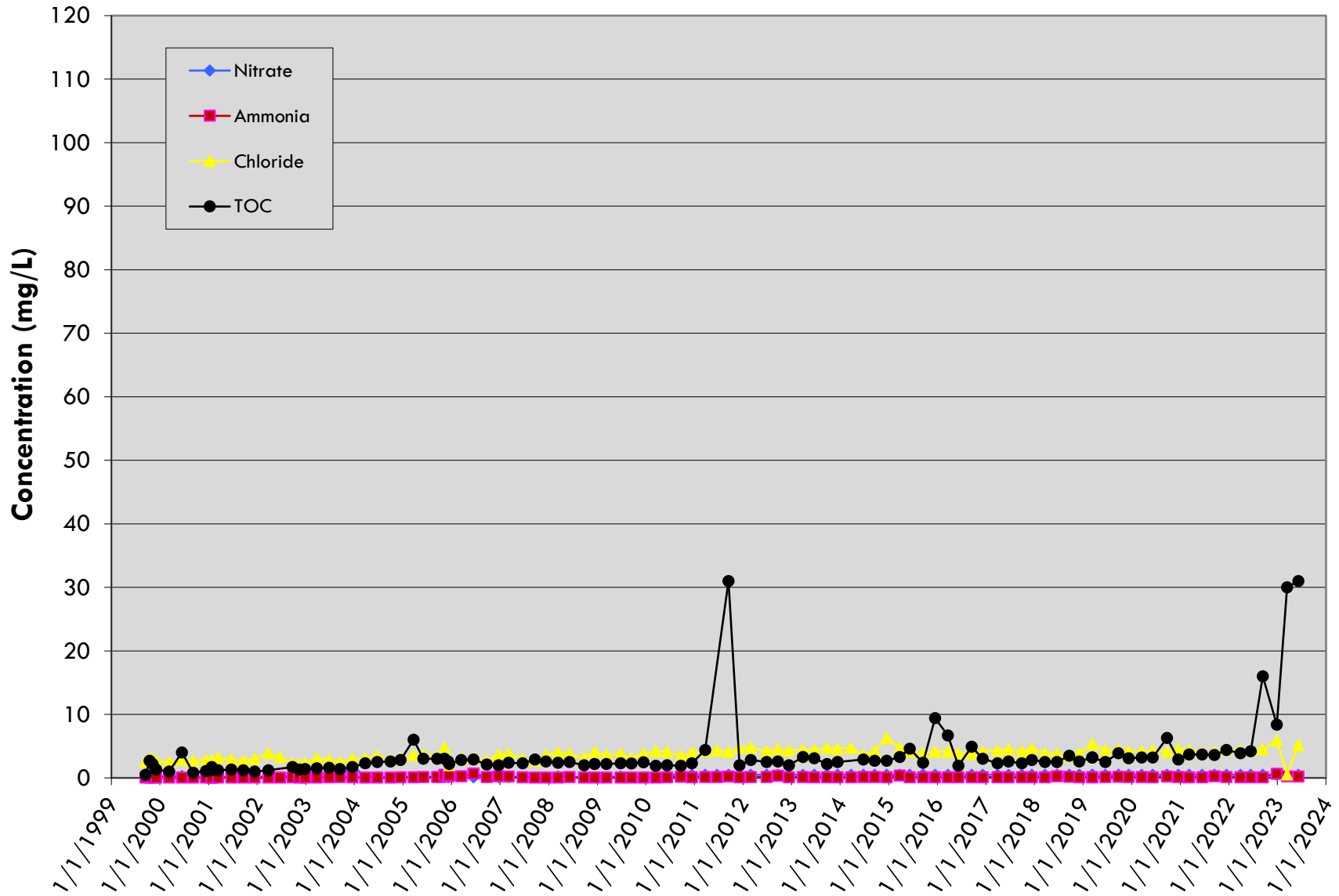


MW-10 (Background) LRI Landfill, Pierce County, Washington



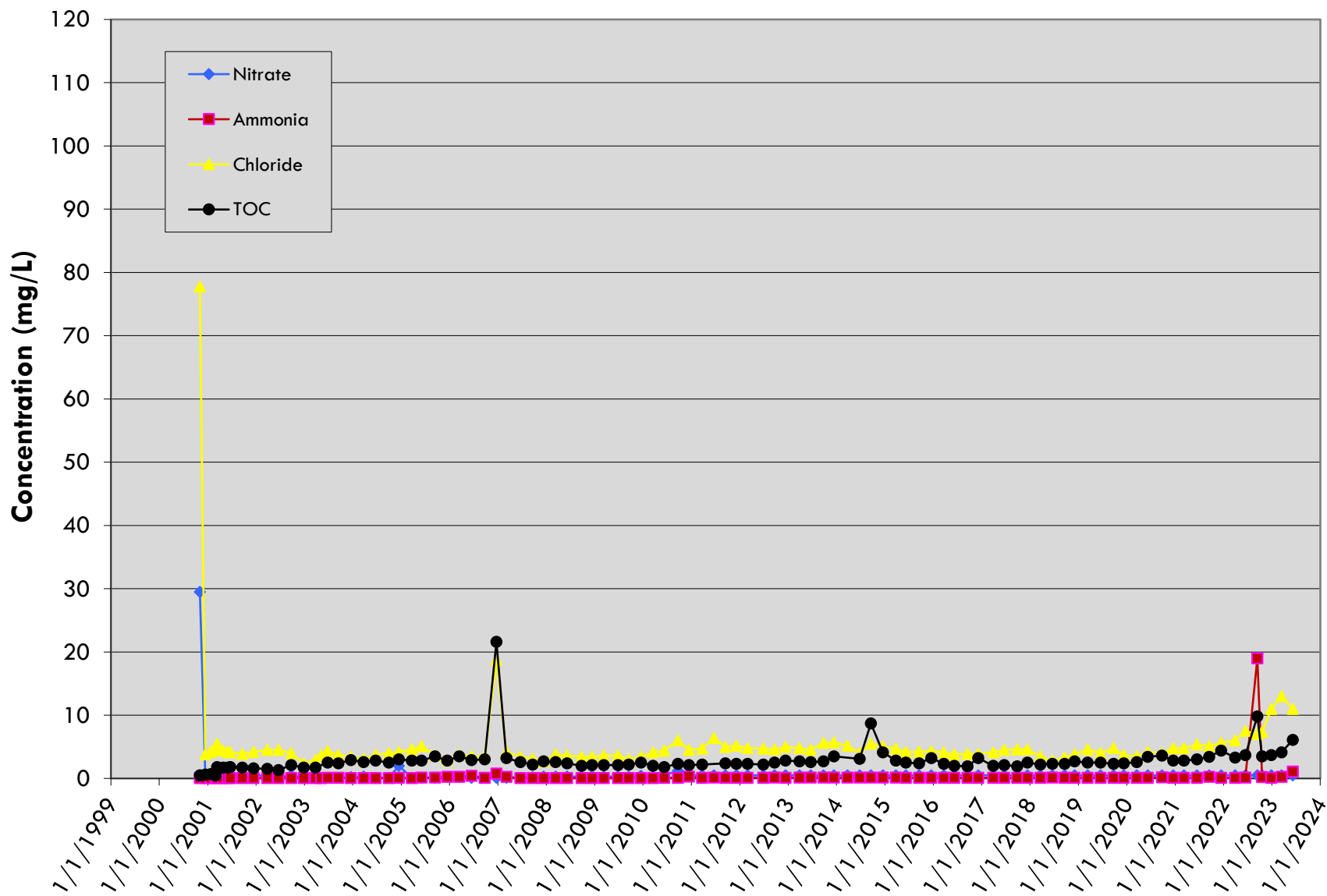
LDCS-1

LRI Landfill, Pierce County, Washington



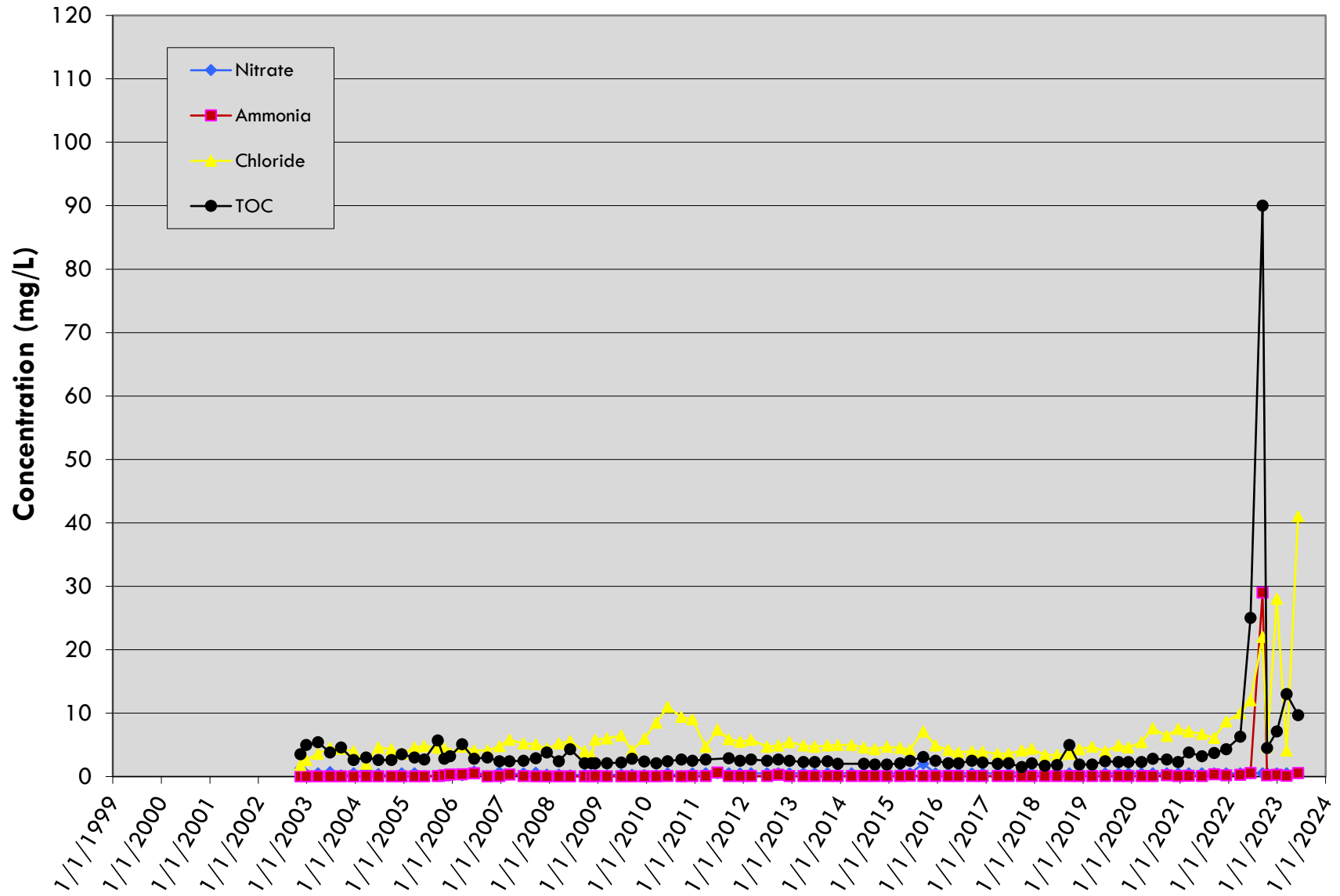
LDCS-2A

LRI Landfill, Pierce County, Washington



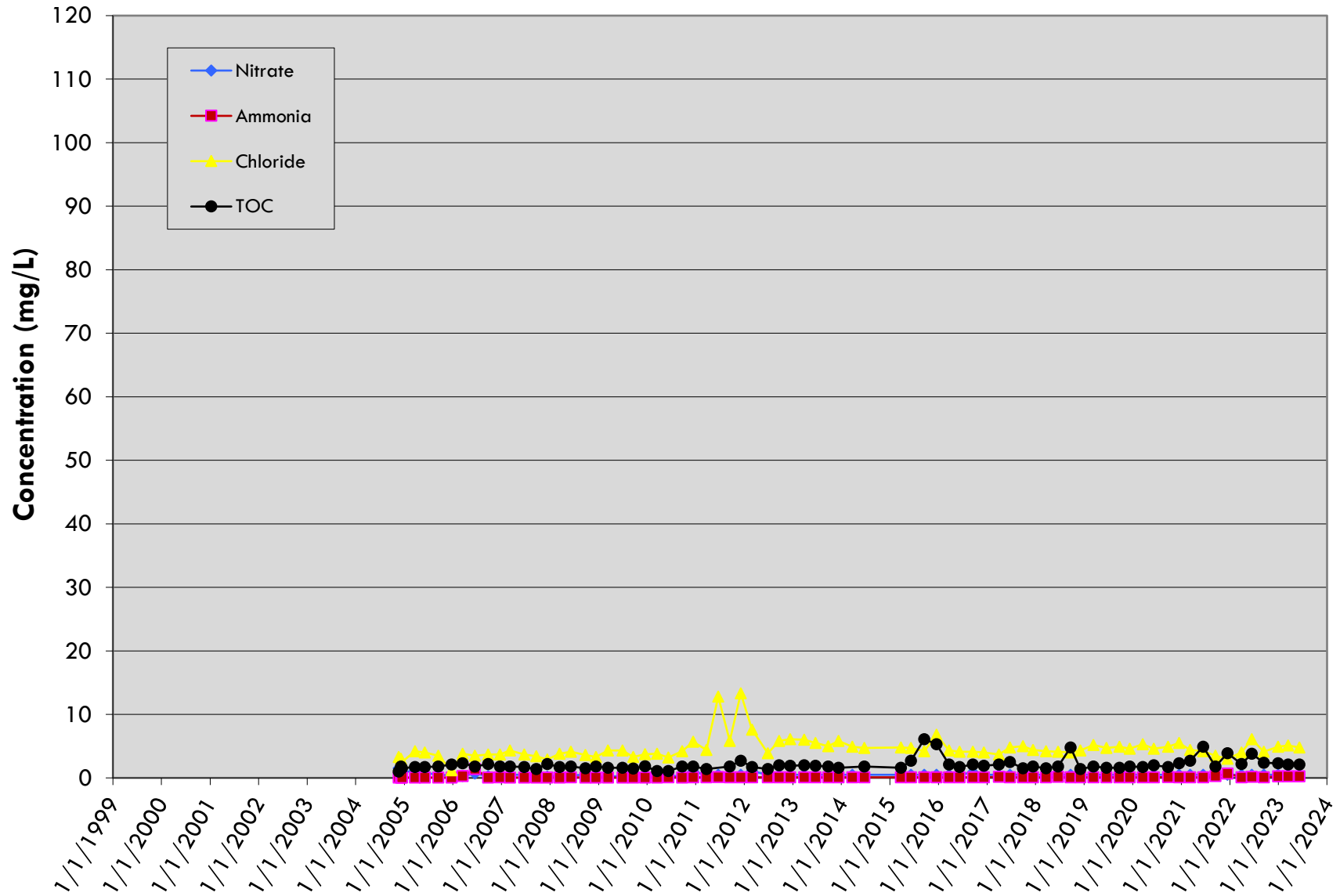
LDCS-2B

LRI Landfill, Pierce County, Washington



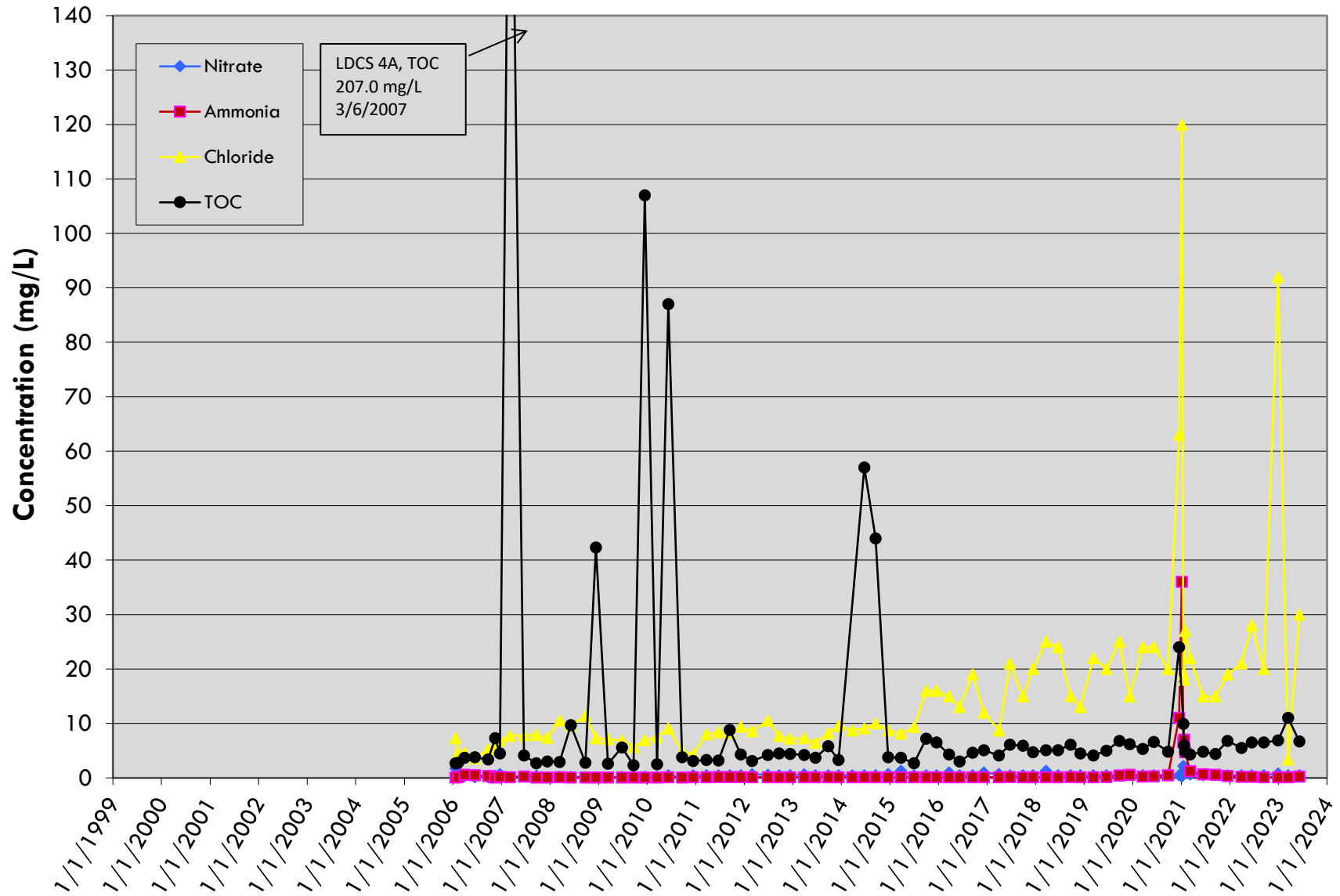
LDCS-3A

LRI Landfill, Pierce County, Washington



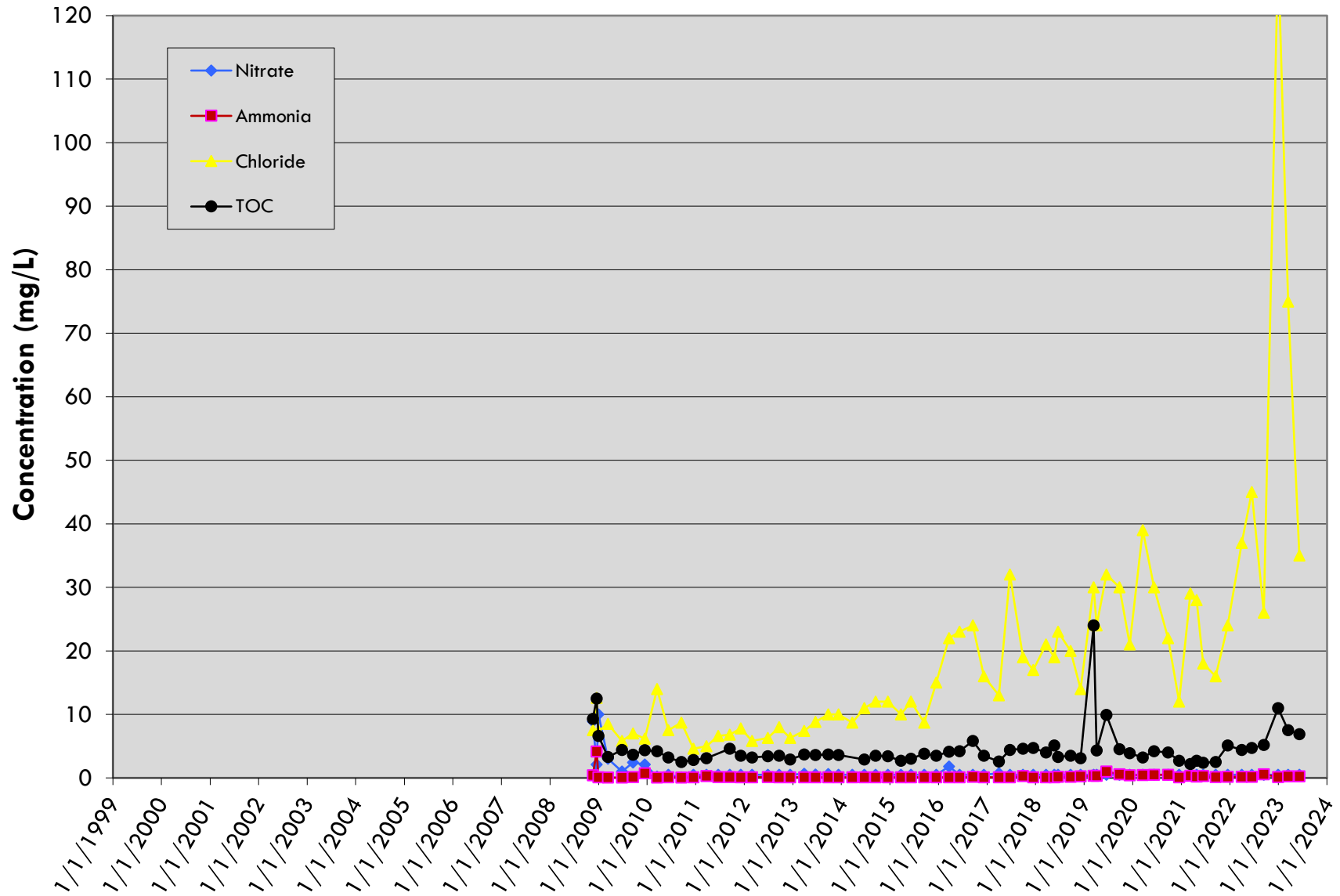
LDCS-4A

LRI Landfill, Pierce County, Washington



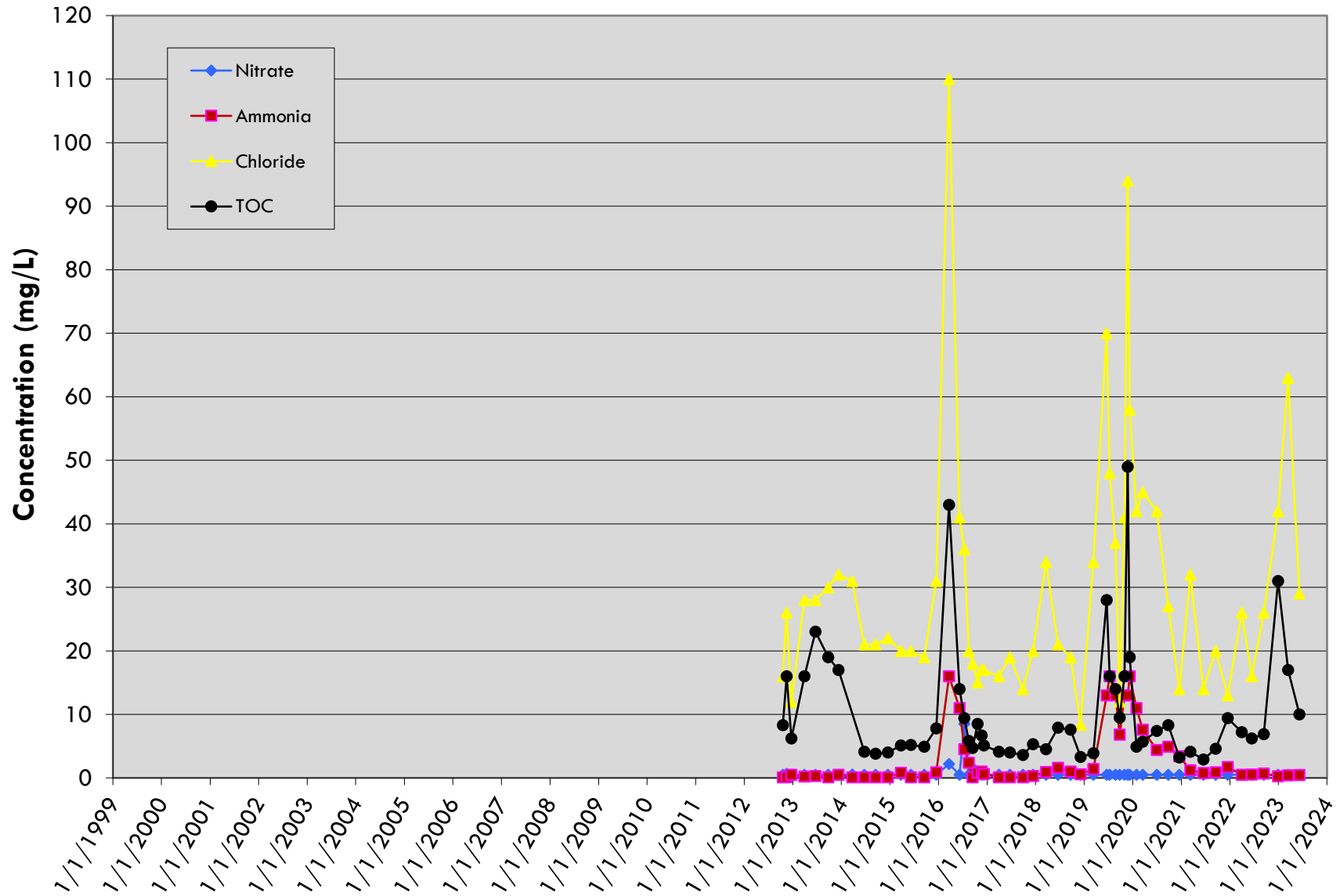
LDCS-4B

LRI Landfill, Pierce County, Washington



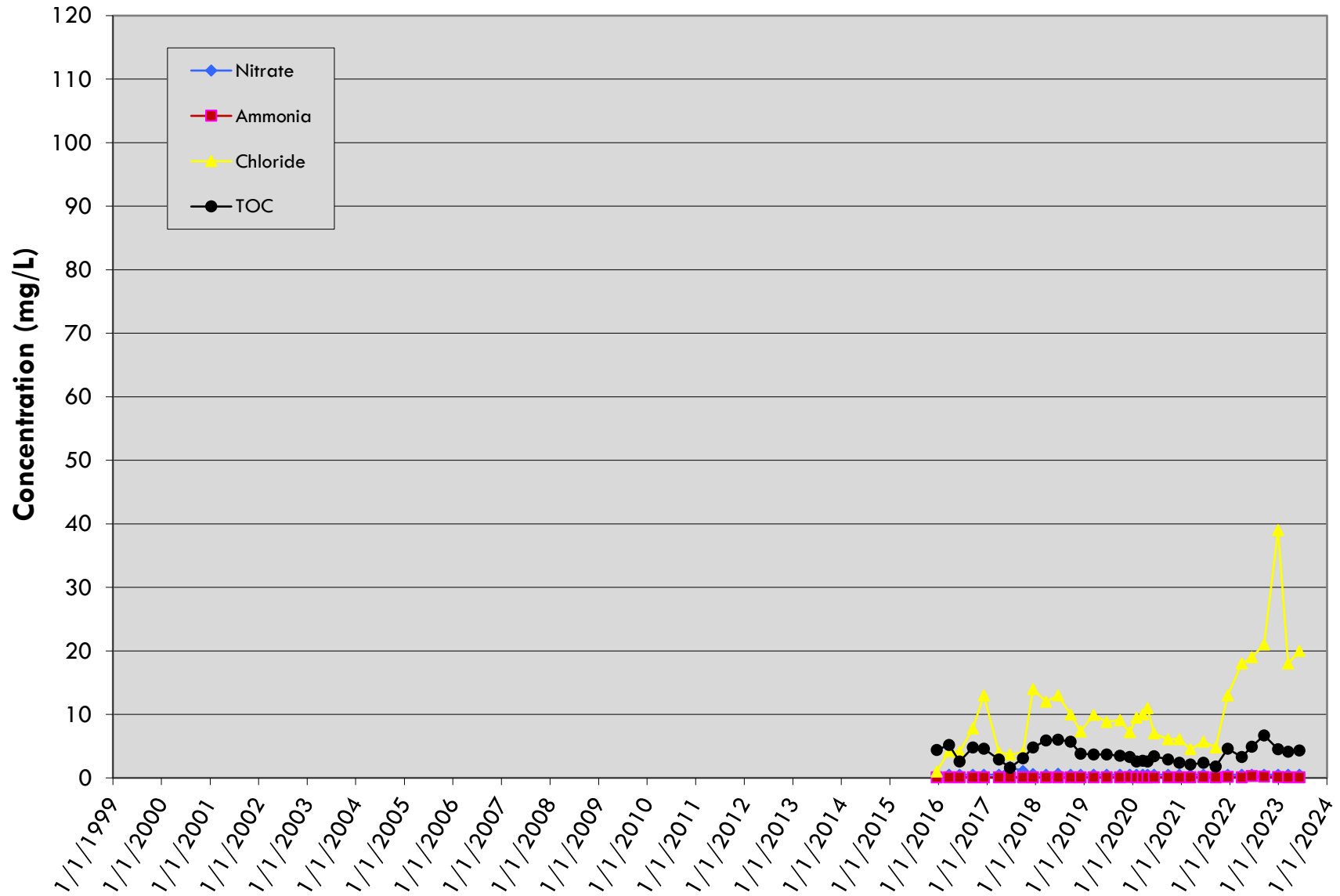
LDCS-5

LRI Landfill, Pierce County, Washington



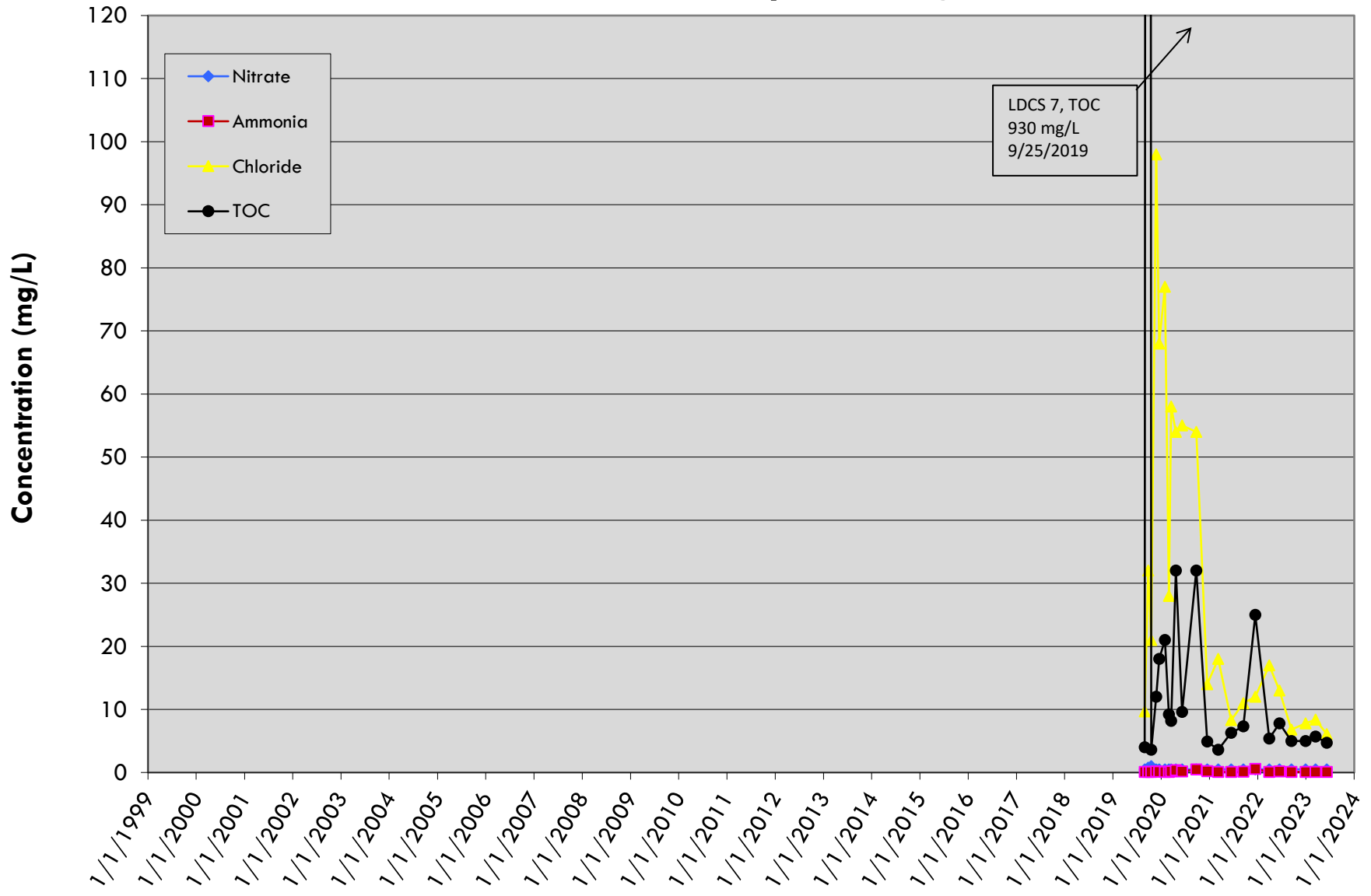
LDCS-6A

LRI Landfill, Pierce County, Washington



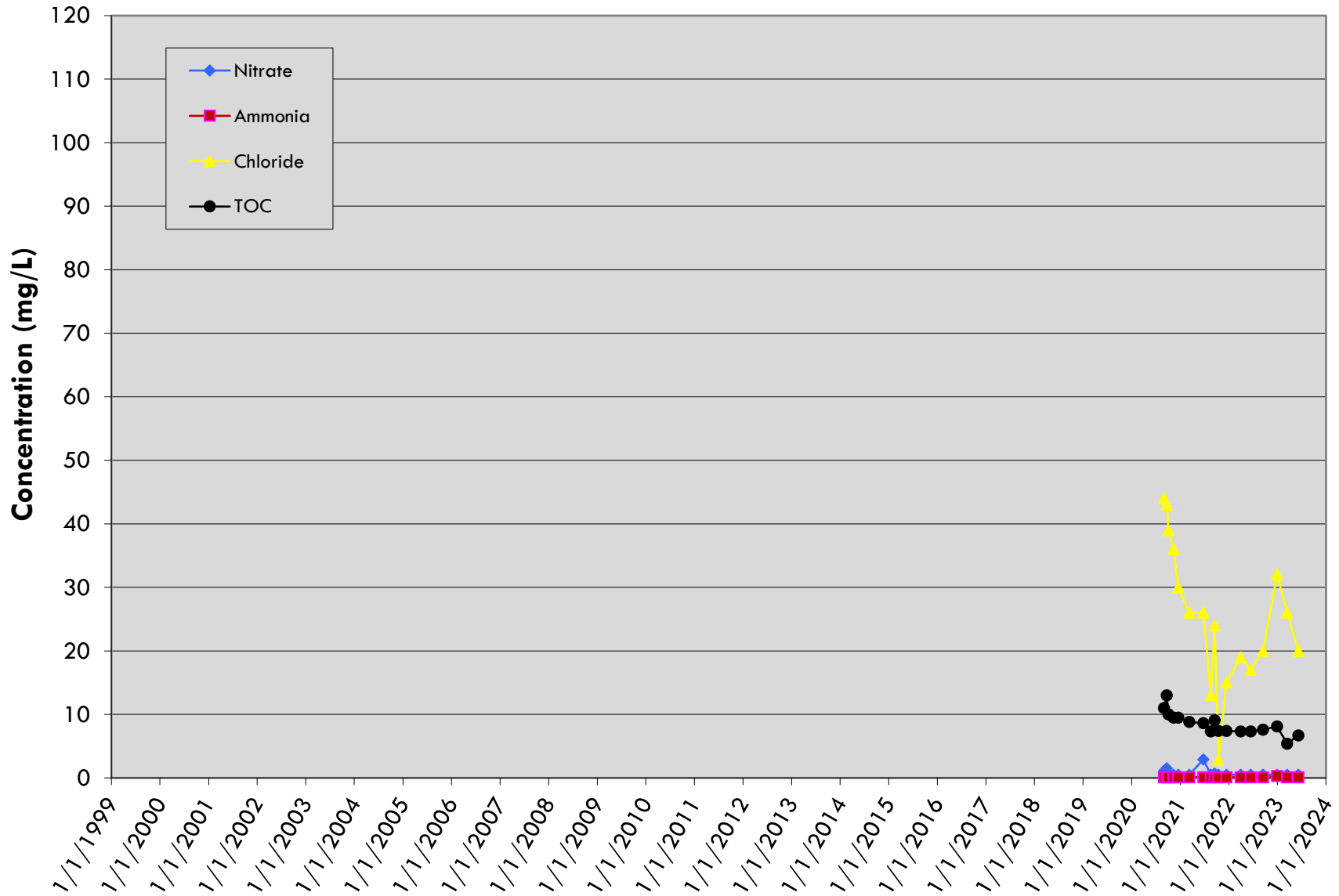
LDCS-7

LRI Landfill, Pierce County, Washington



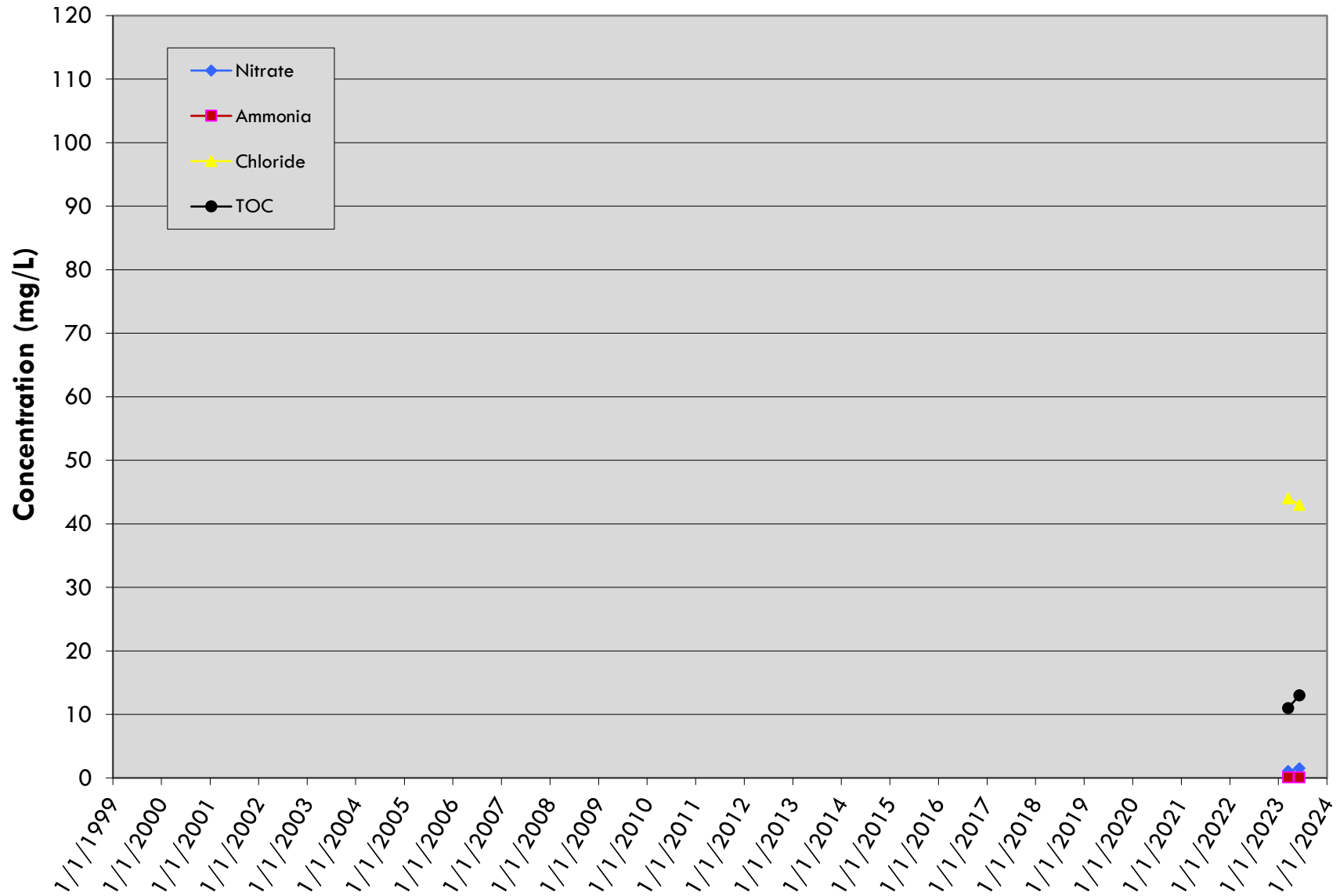
LDCS-8

LRI Landfill, Pierce County, Washington



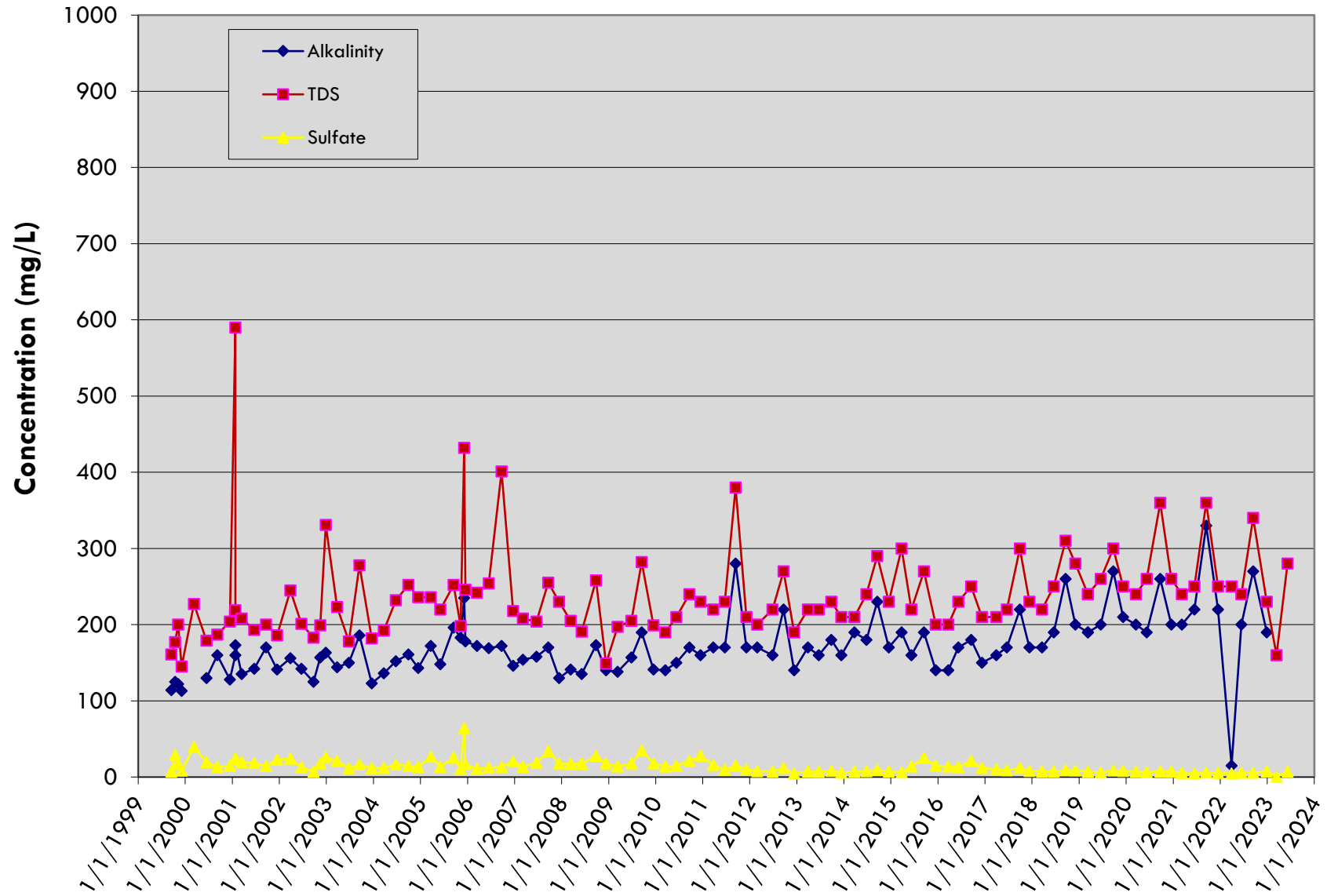
LDCS-9

LRI Landfill, Pierce County, Washington



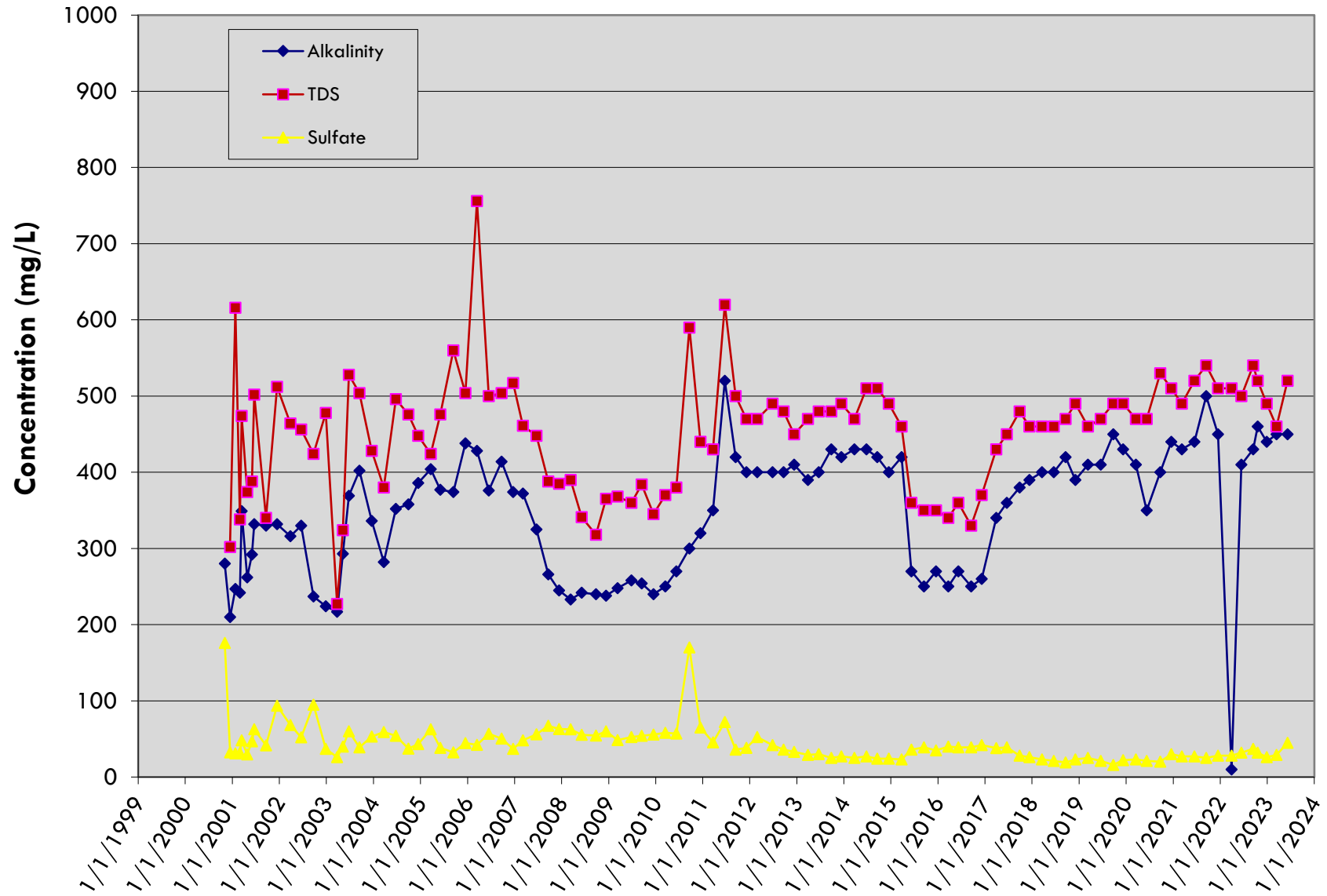
LDCS-1

LRI Landfill, Pierce County, Washington



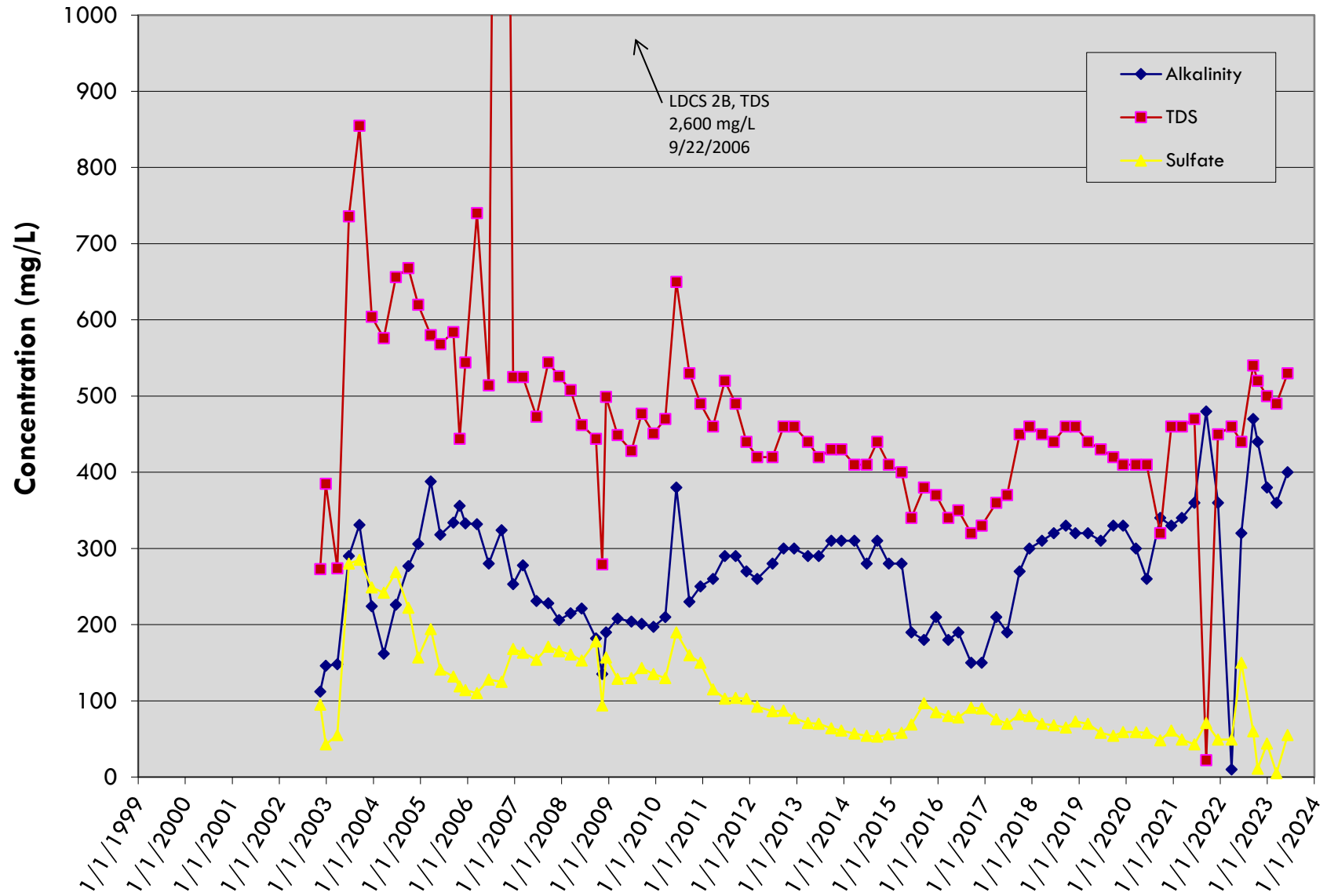
LDCS-2A

LRI Landfill, Pierce County, Washington



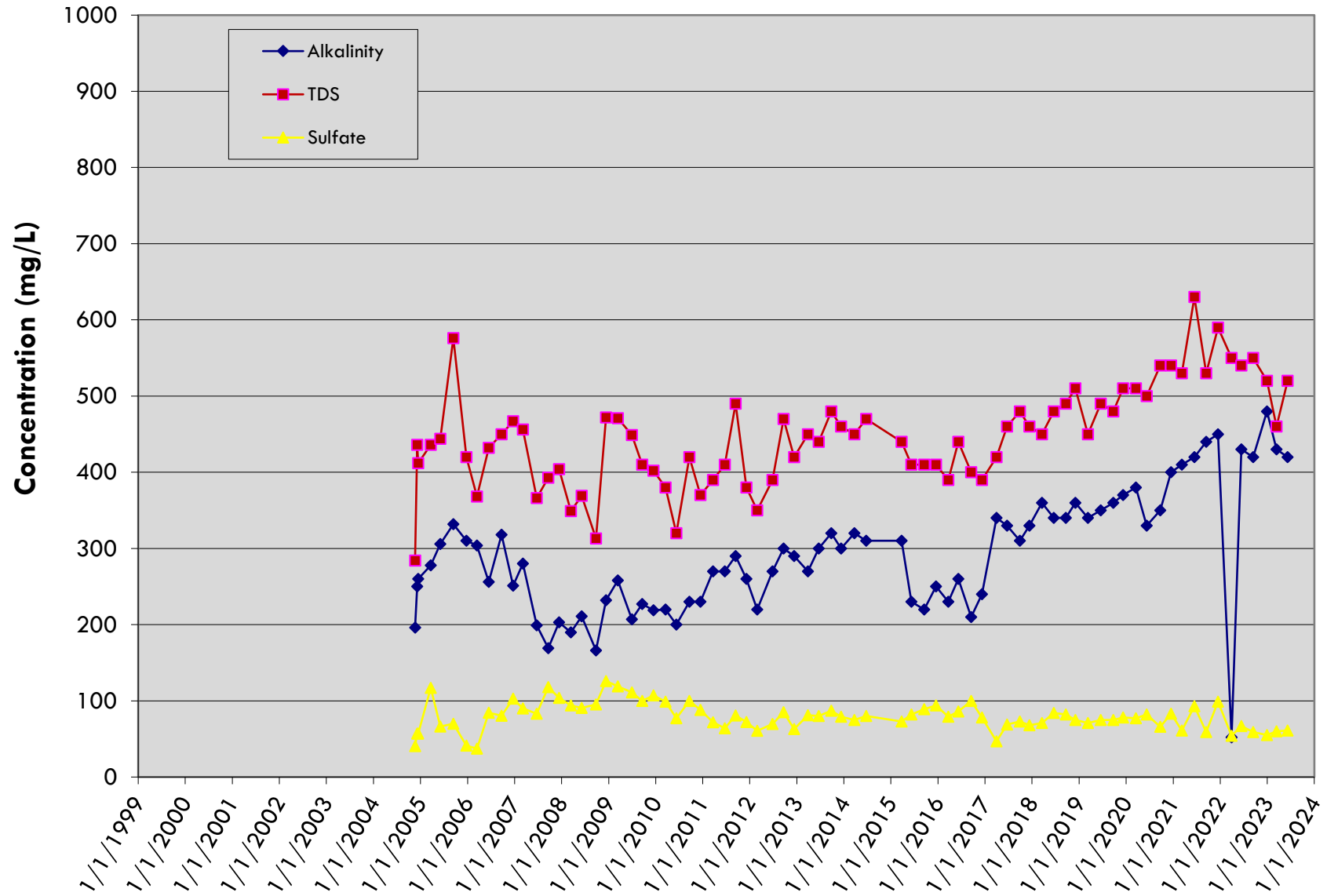
LDCS-2B

LRI Landfill, Pierce County, Washington



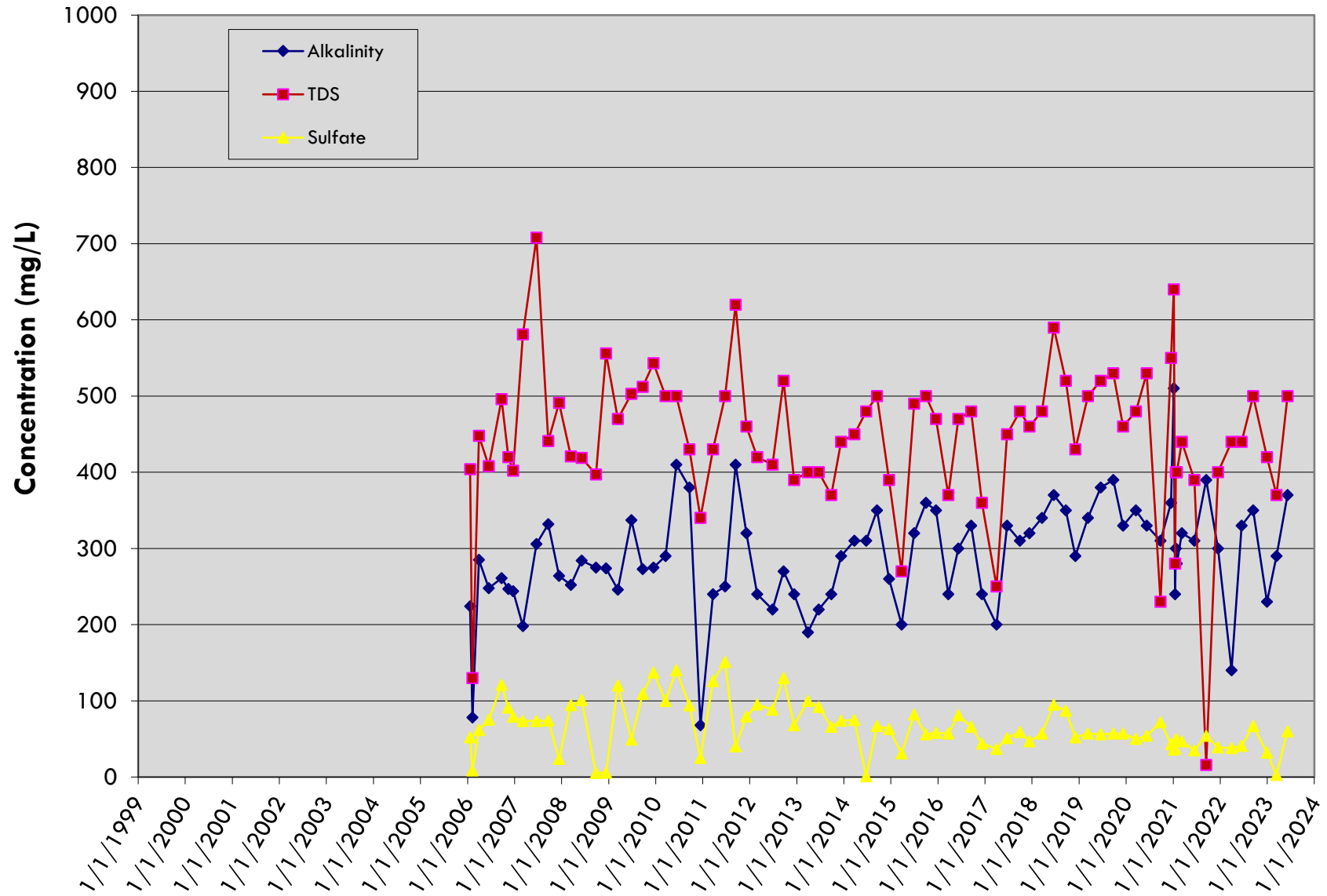
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LRI Landfill, Pierce County, Washington



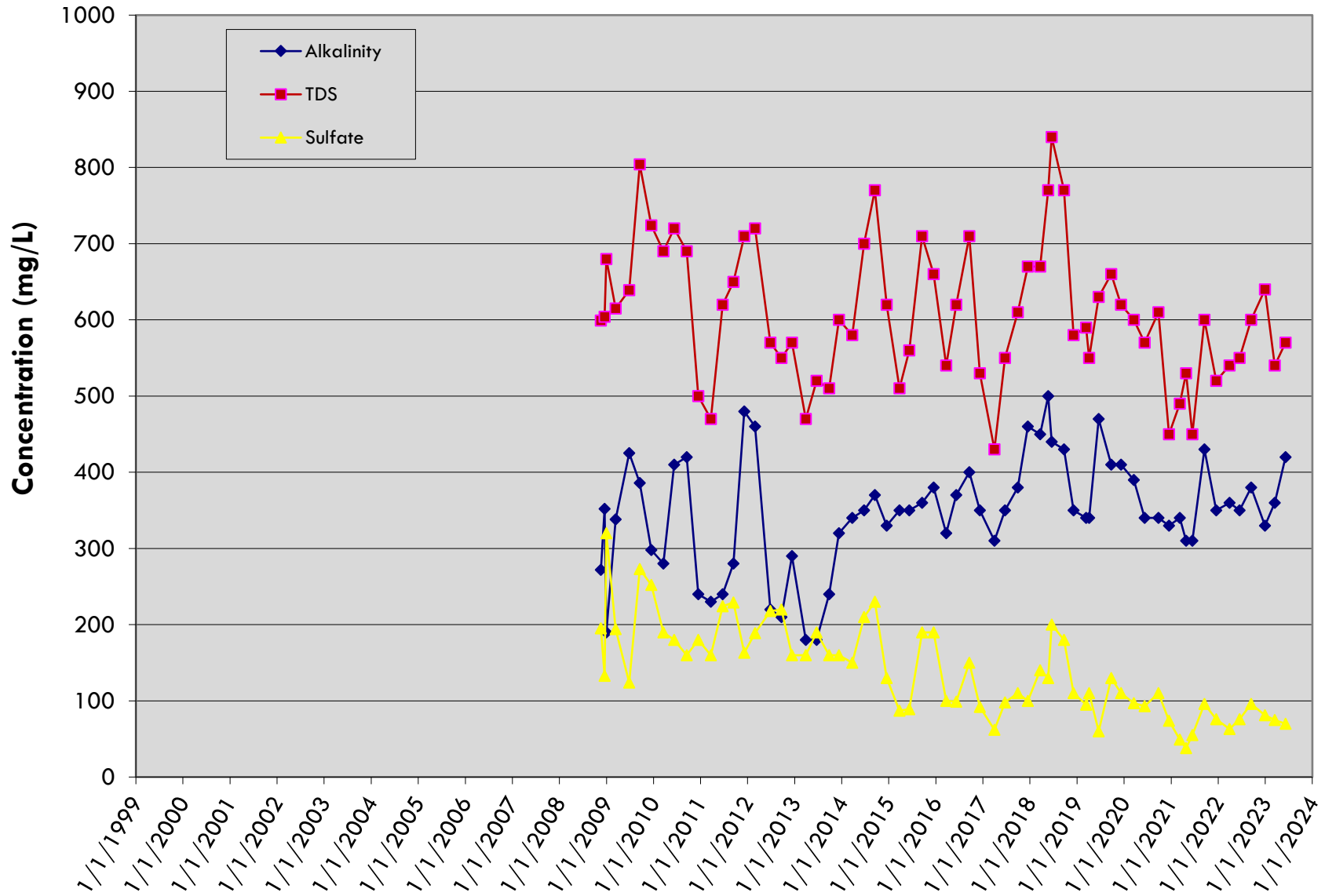
LDCS-4A

LRI Landfill, Pierce County, Washington



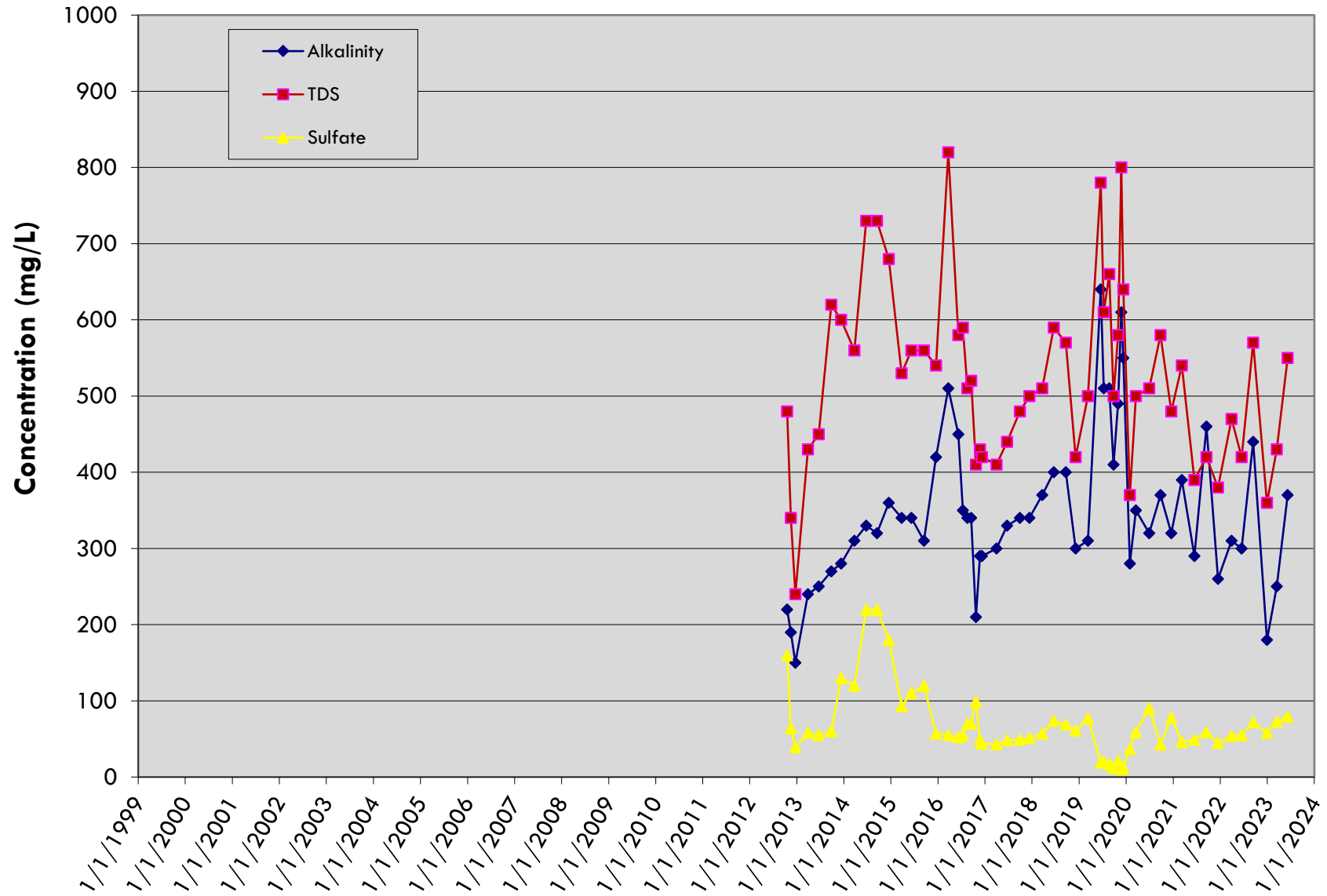
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LRI Landfill, Pierce County, Washington



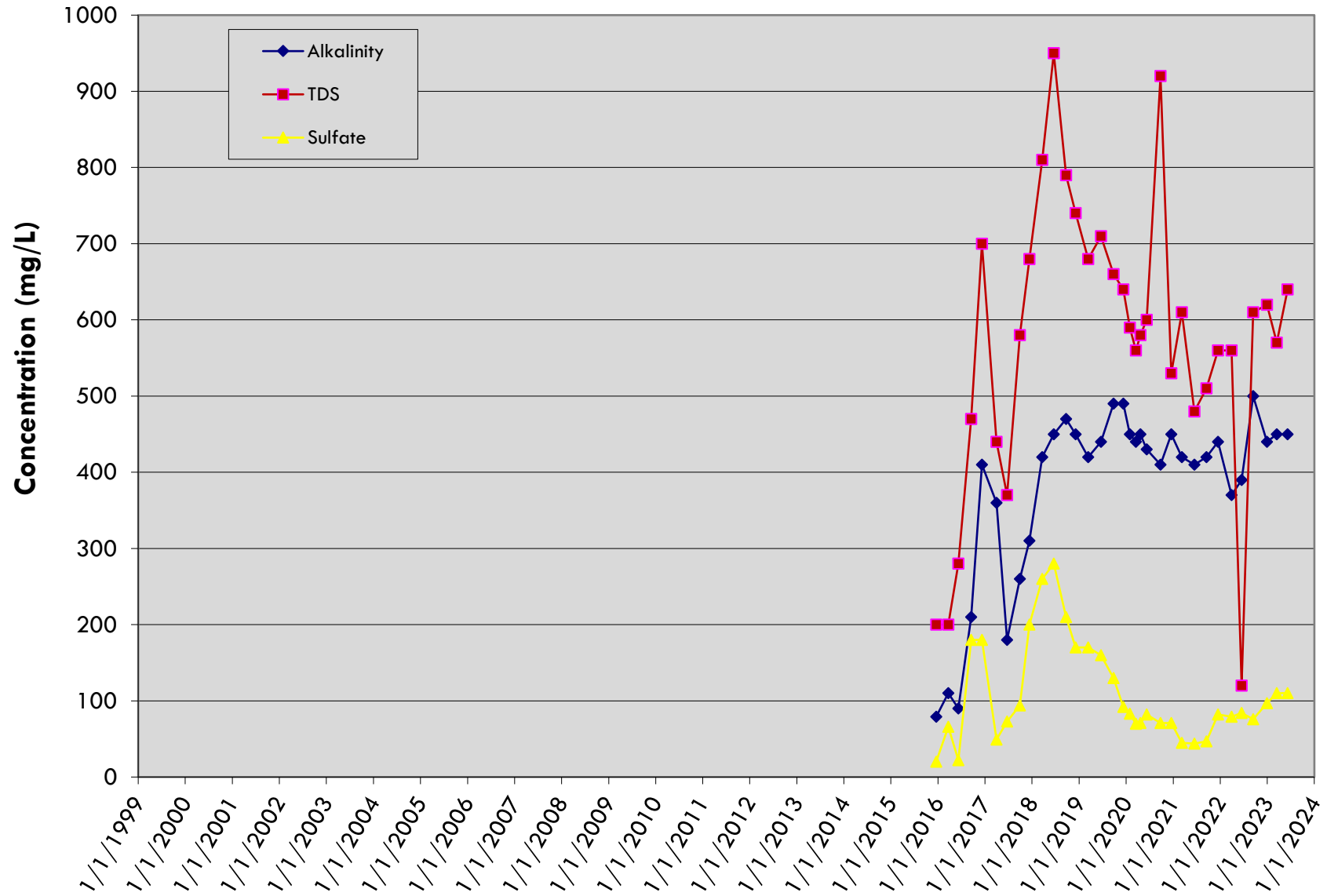
LDCS-5

LRI Landfill, Pierce County, Washington



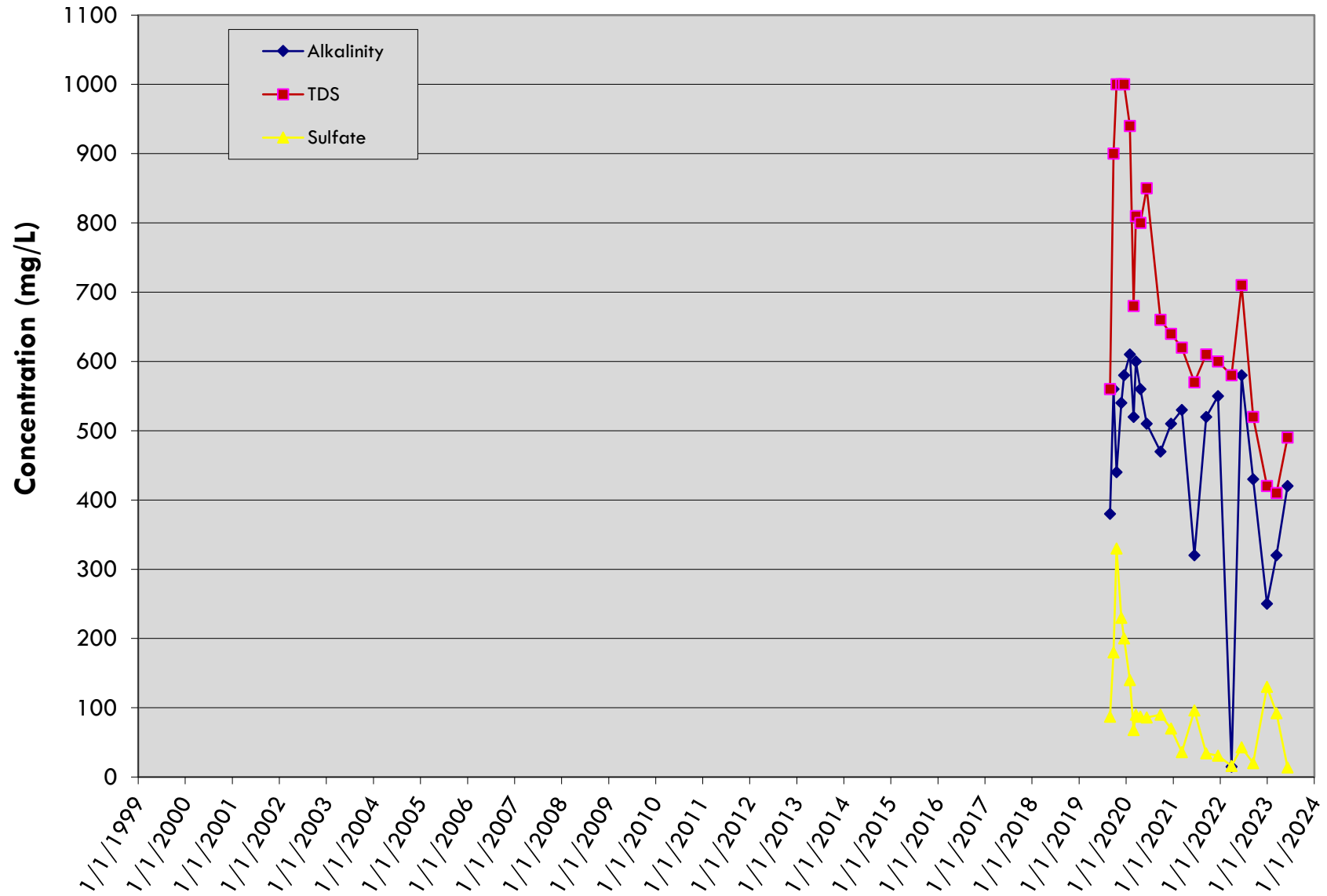
LDCS-6A

LRI Landfill, Pierce County, Washington



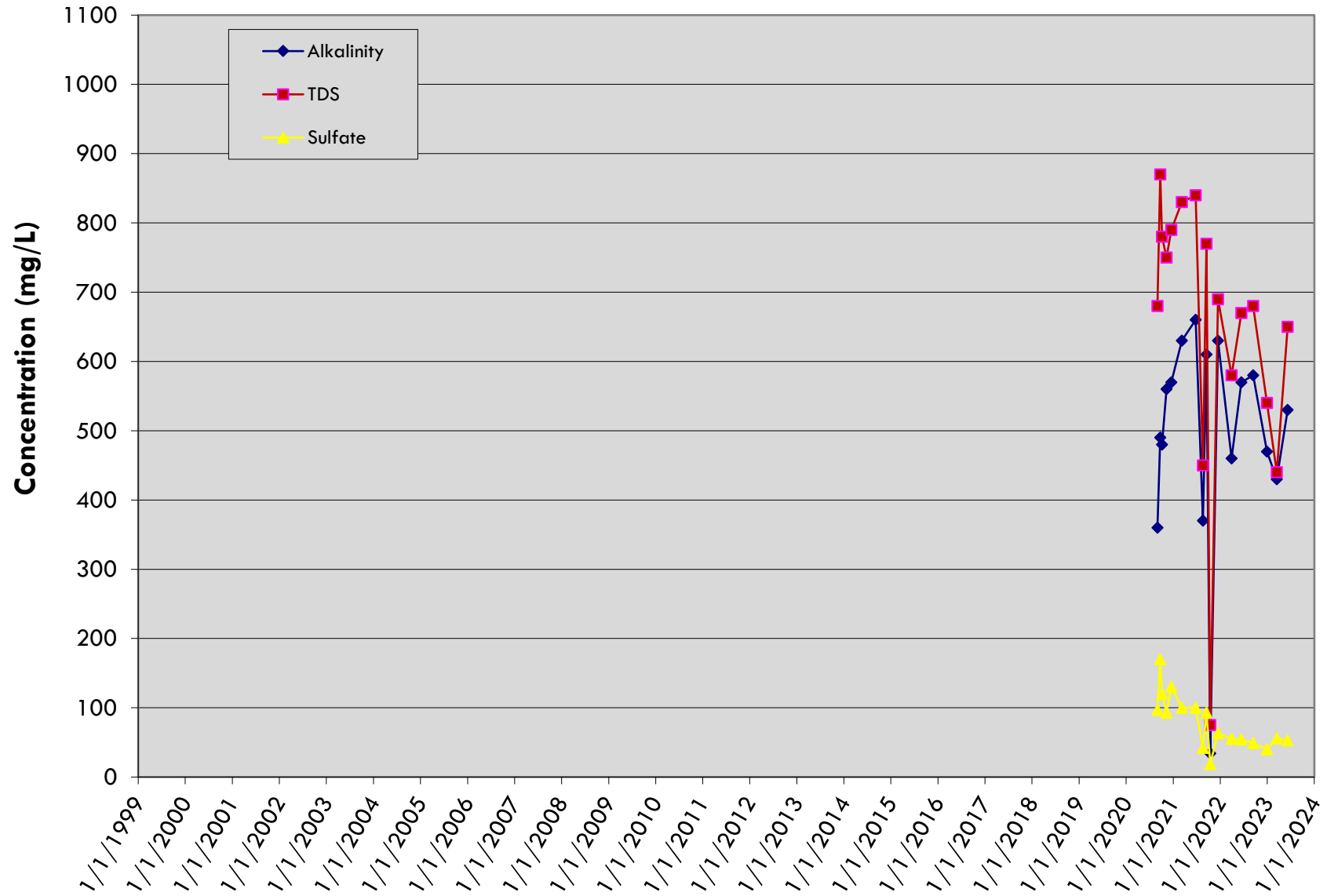
LDCS-7

LRI Landfill, Pierce County, Washington



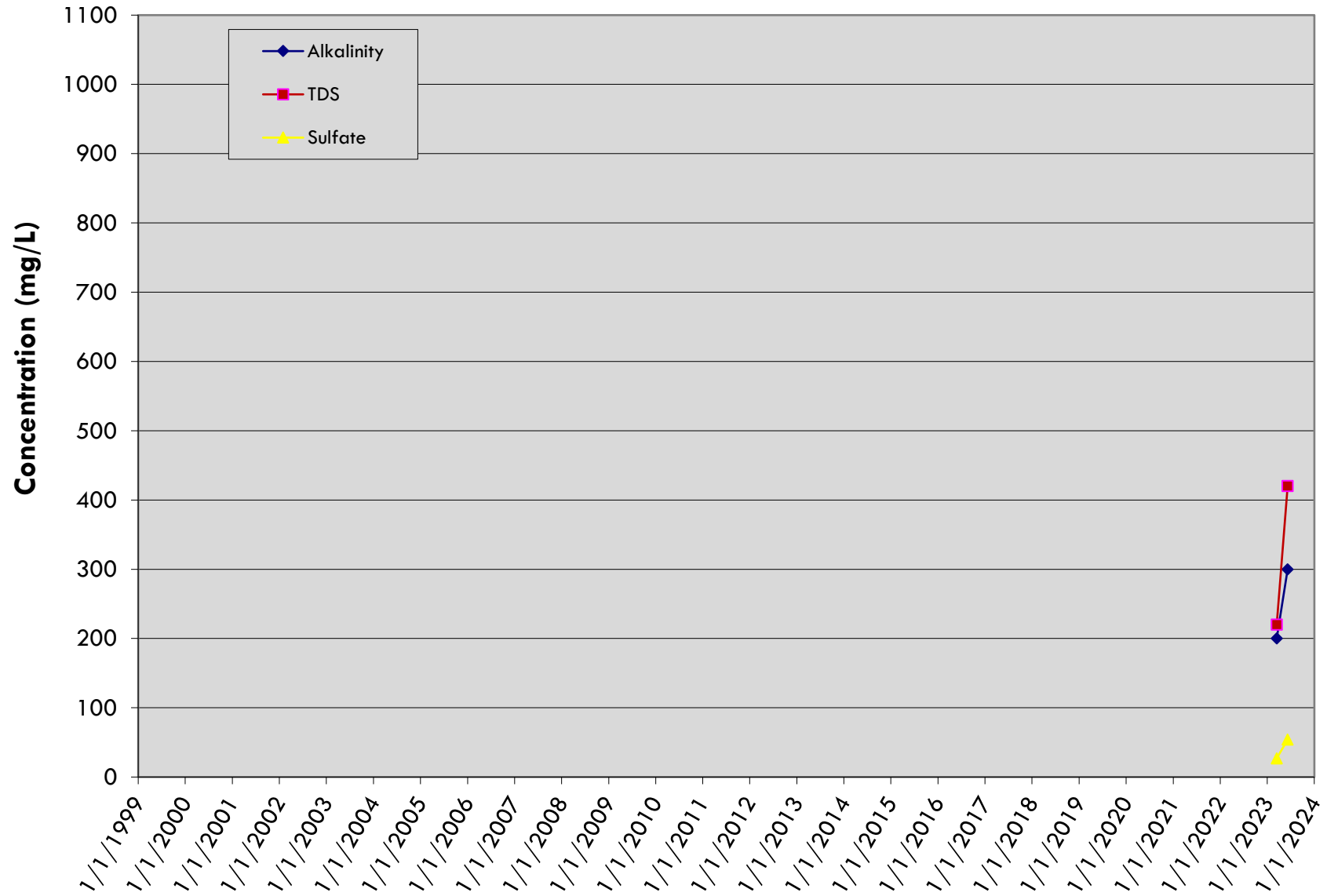
LDCS-8

LRI Landfill, Pierce County, Washington



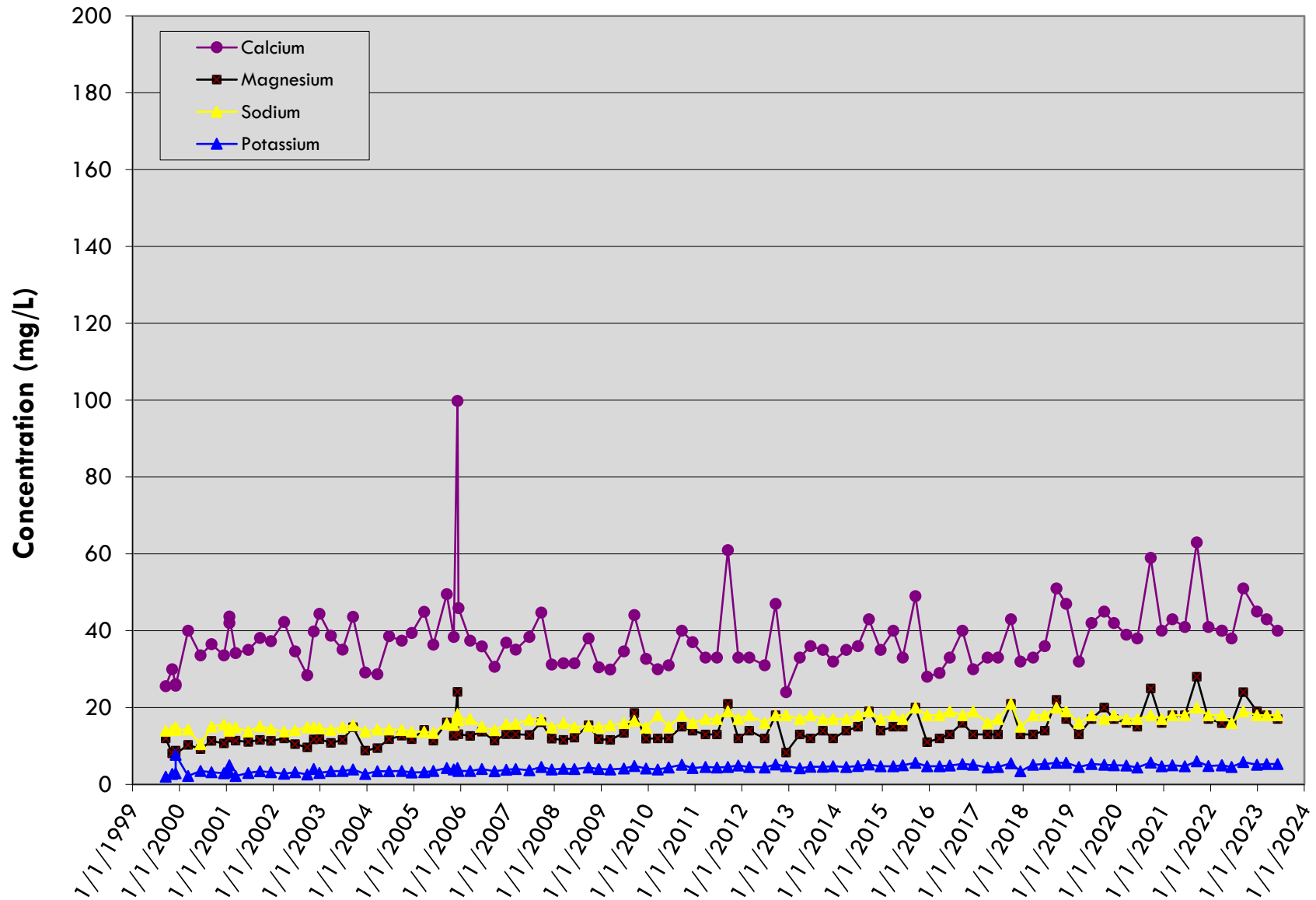
LDCS-9

LRI Landfill, Pierce County, Washington



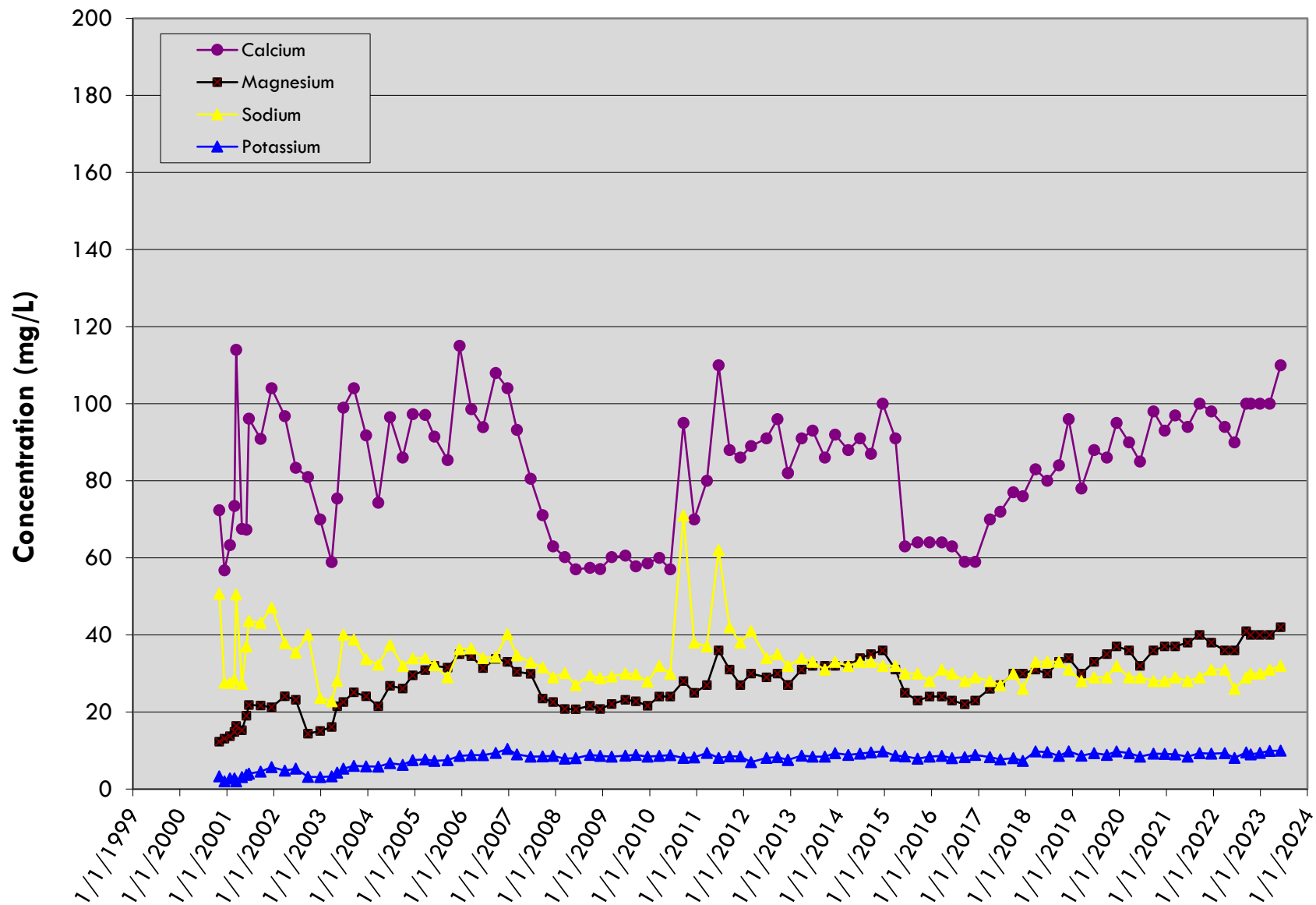
LDCS-1

LRI Landfill, Pierce County, Washington



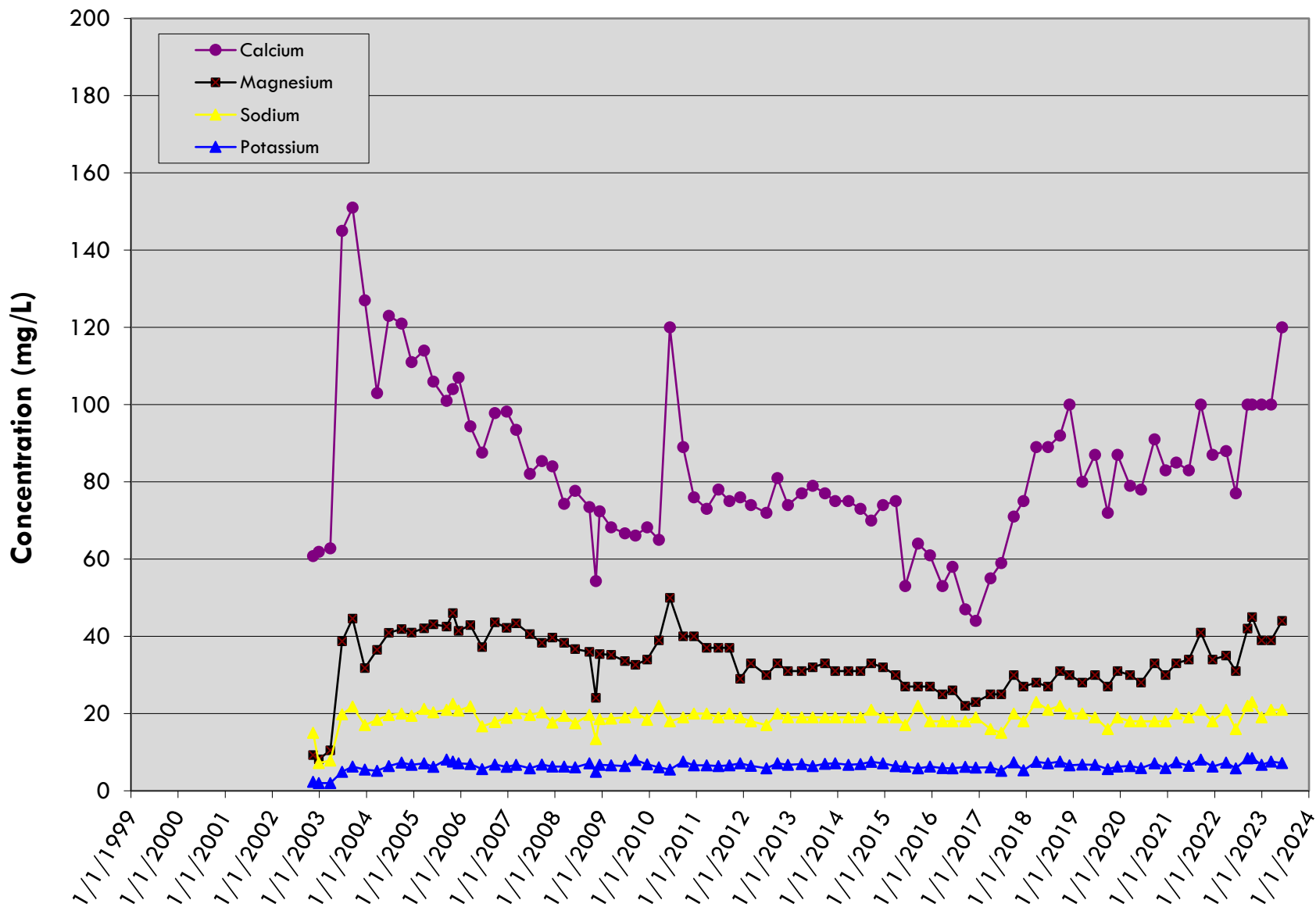
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LRI Landfill, Pierce County, Washington



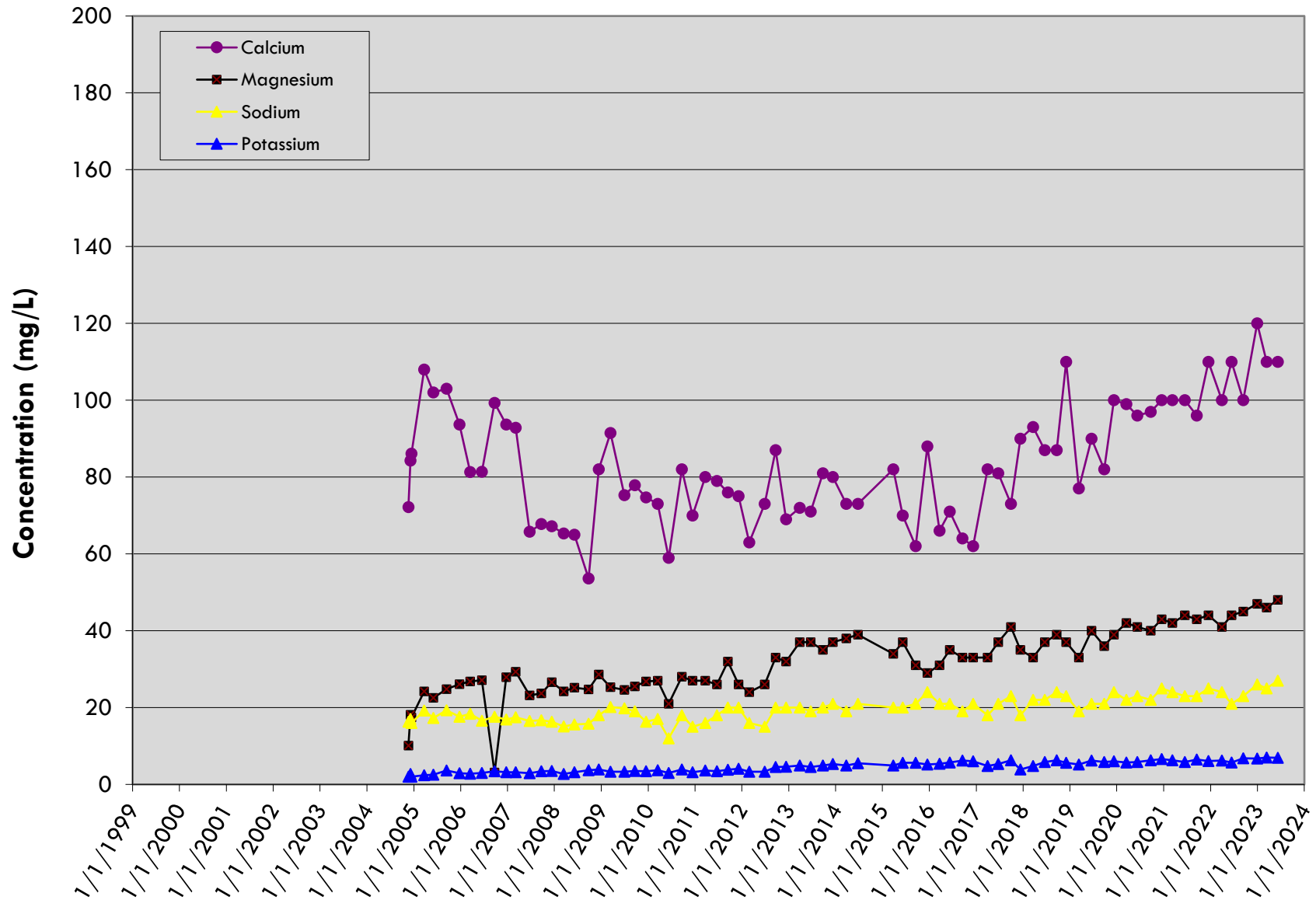
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LRI Landfill, Pierce County, Washington



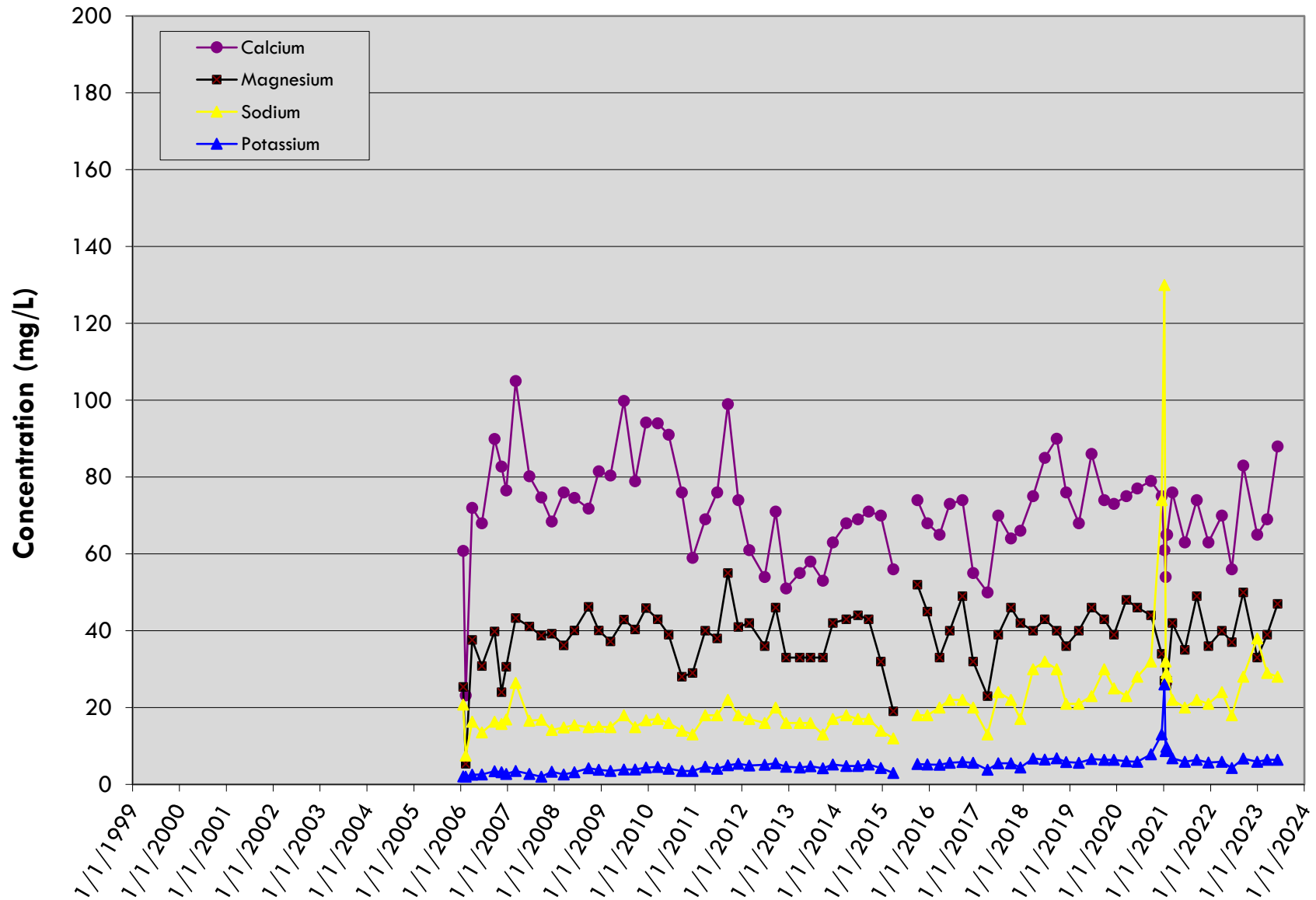
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LRI Landfill, Pierce County, Washington



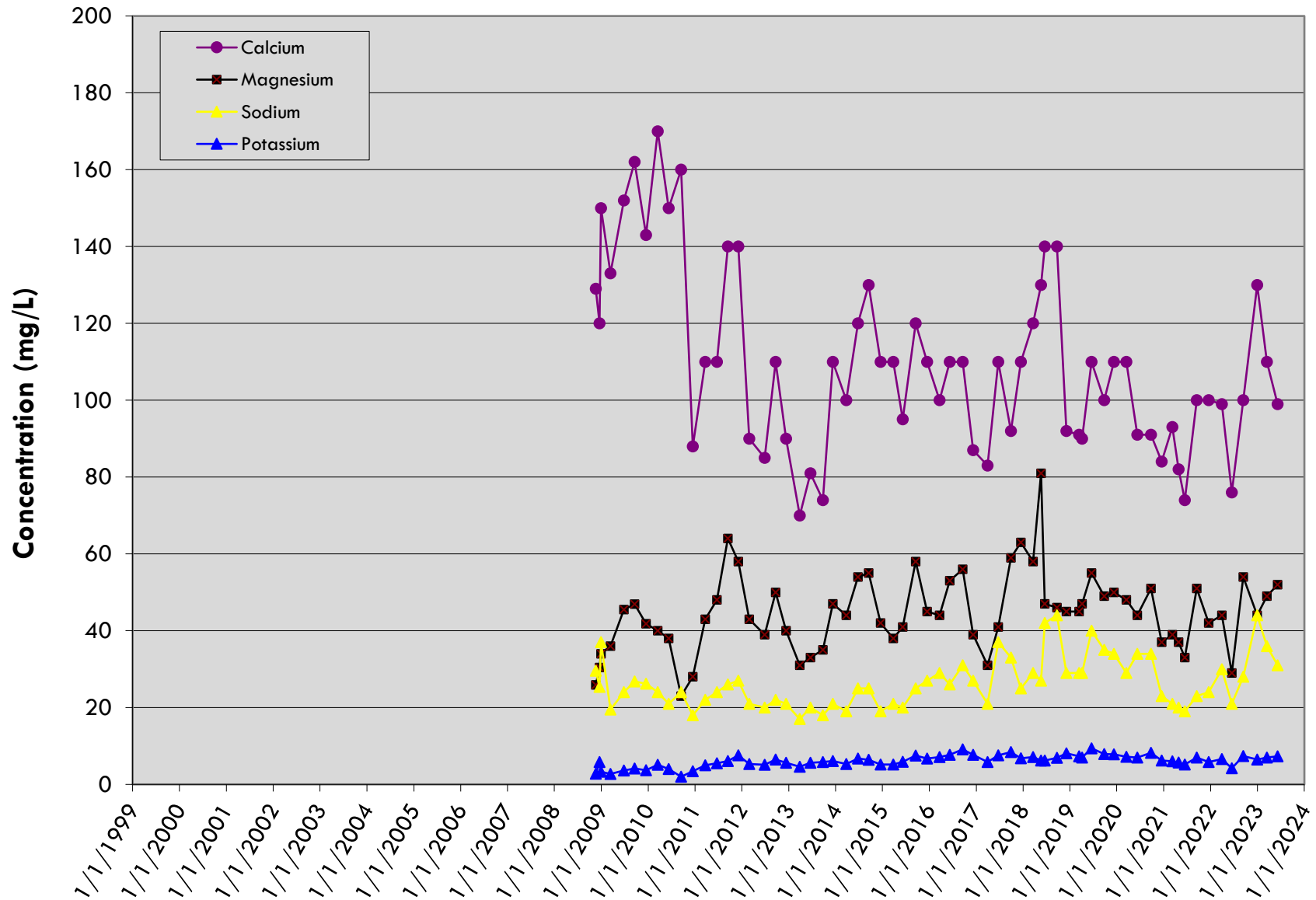
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LRI Landfill, Pierce County, Washington



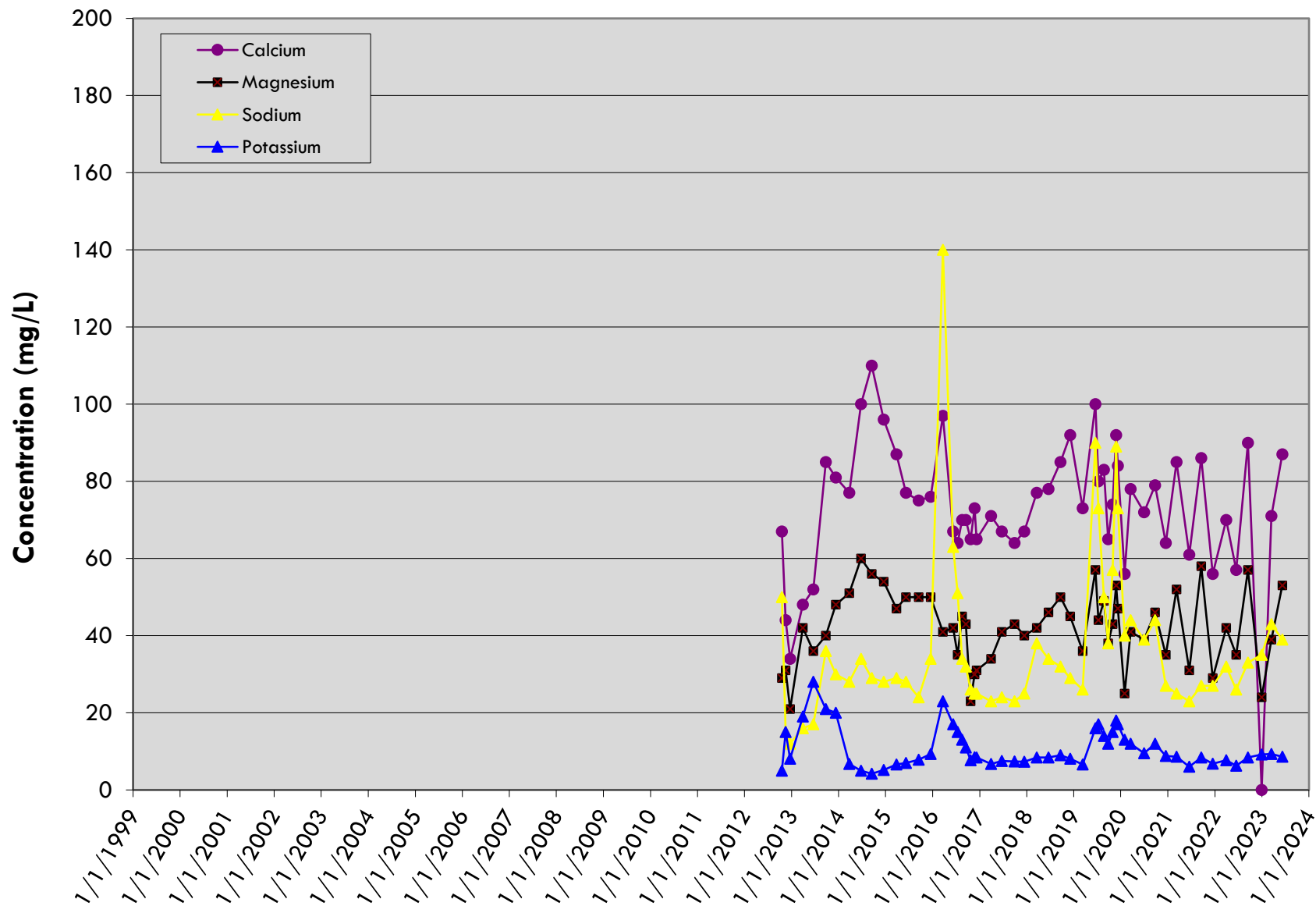
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LRI Landfill, Pierce County, Washington



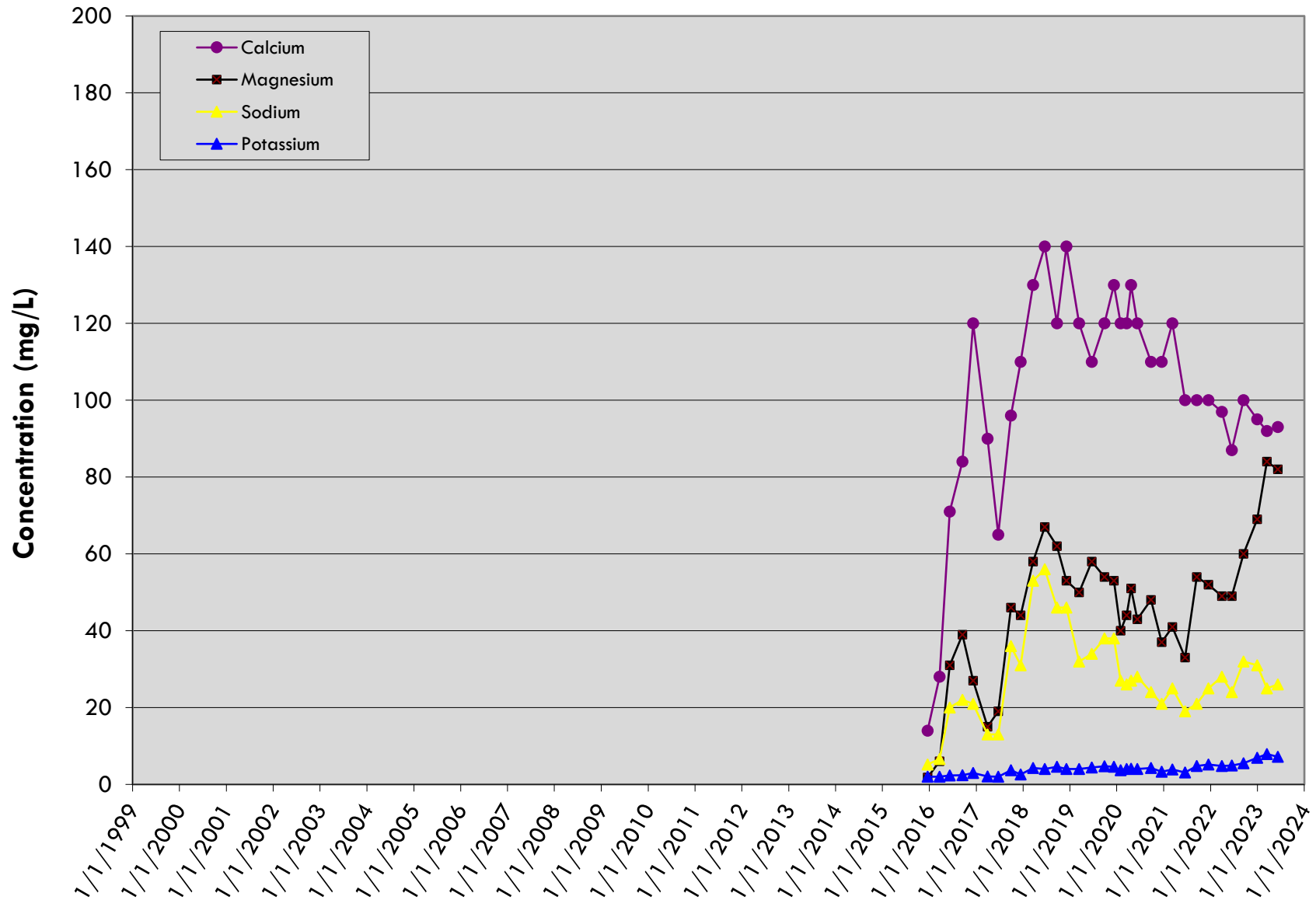
LDCS-5

LRI Landfill, Pierce County, Washington



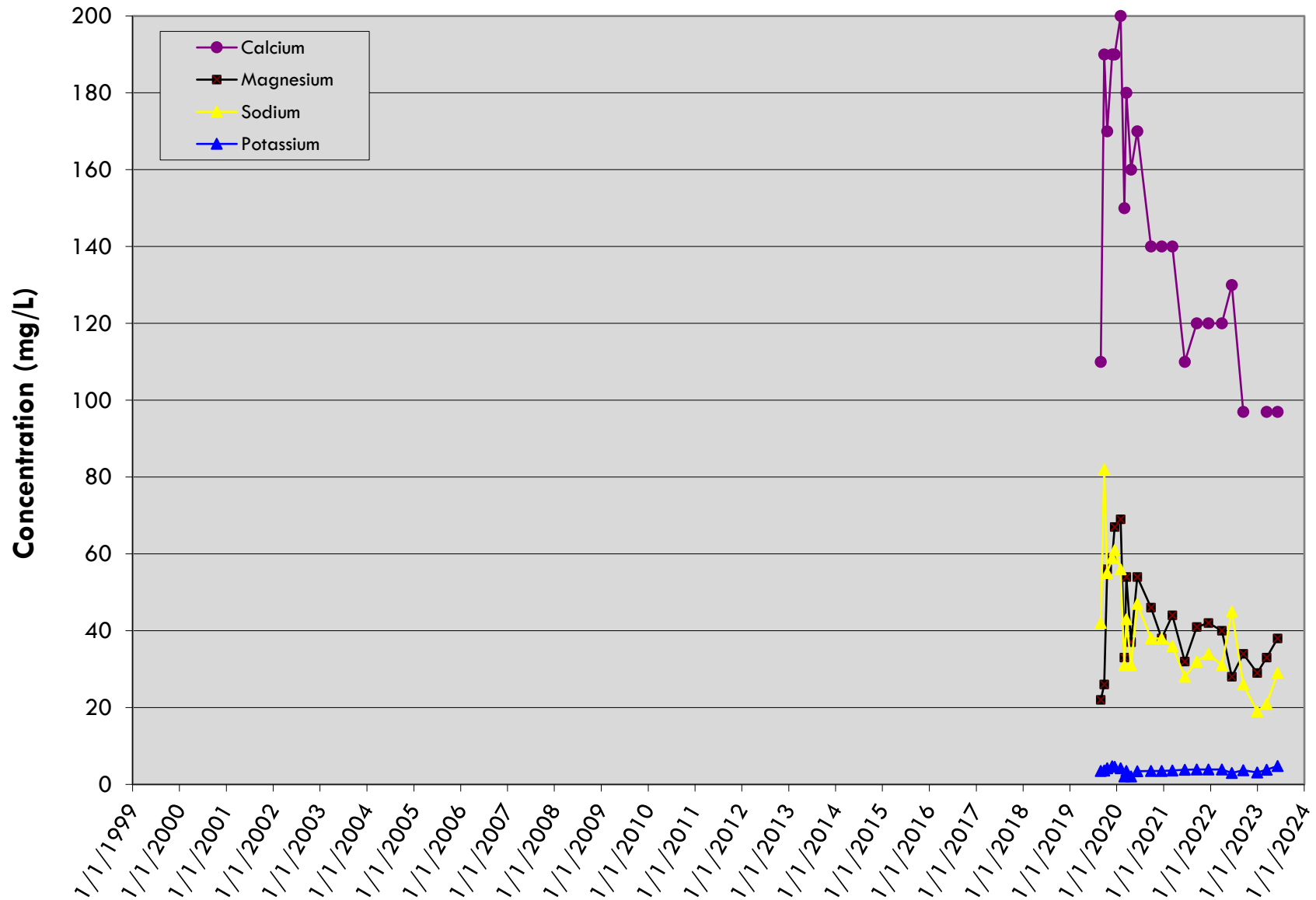
LDCS-6A

LRI Landfill, Pierce County, Washington



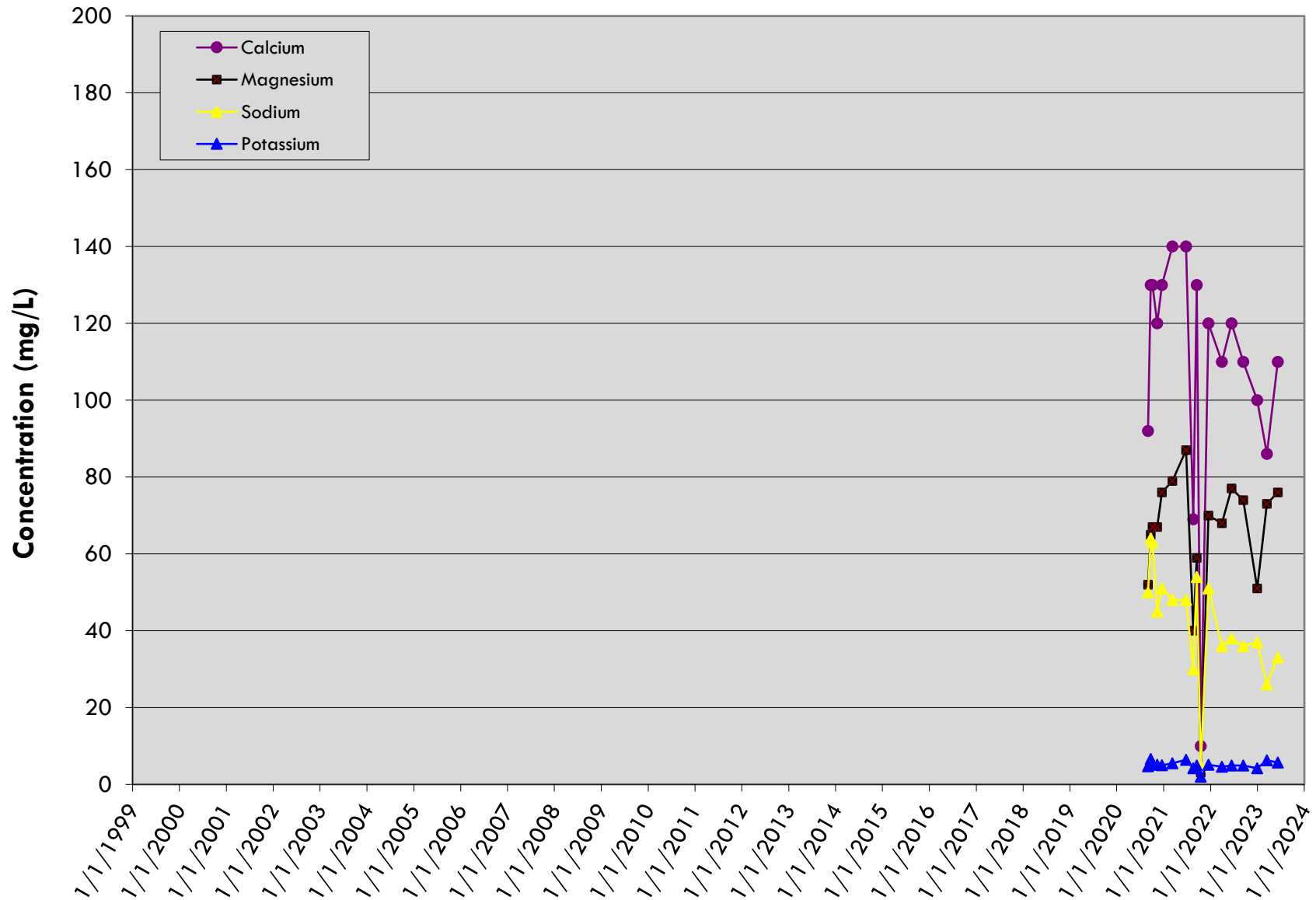
LDCS-7

LRI Landfill, Pierce County, Washington



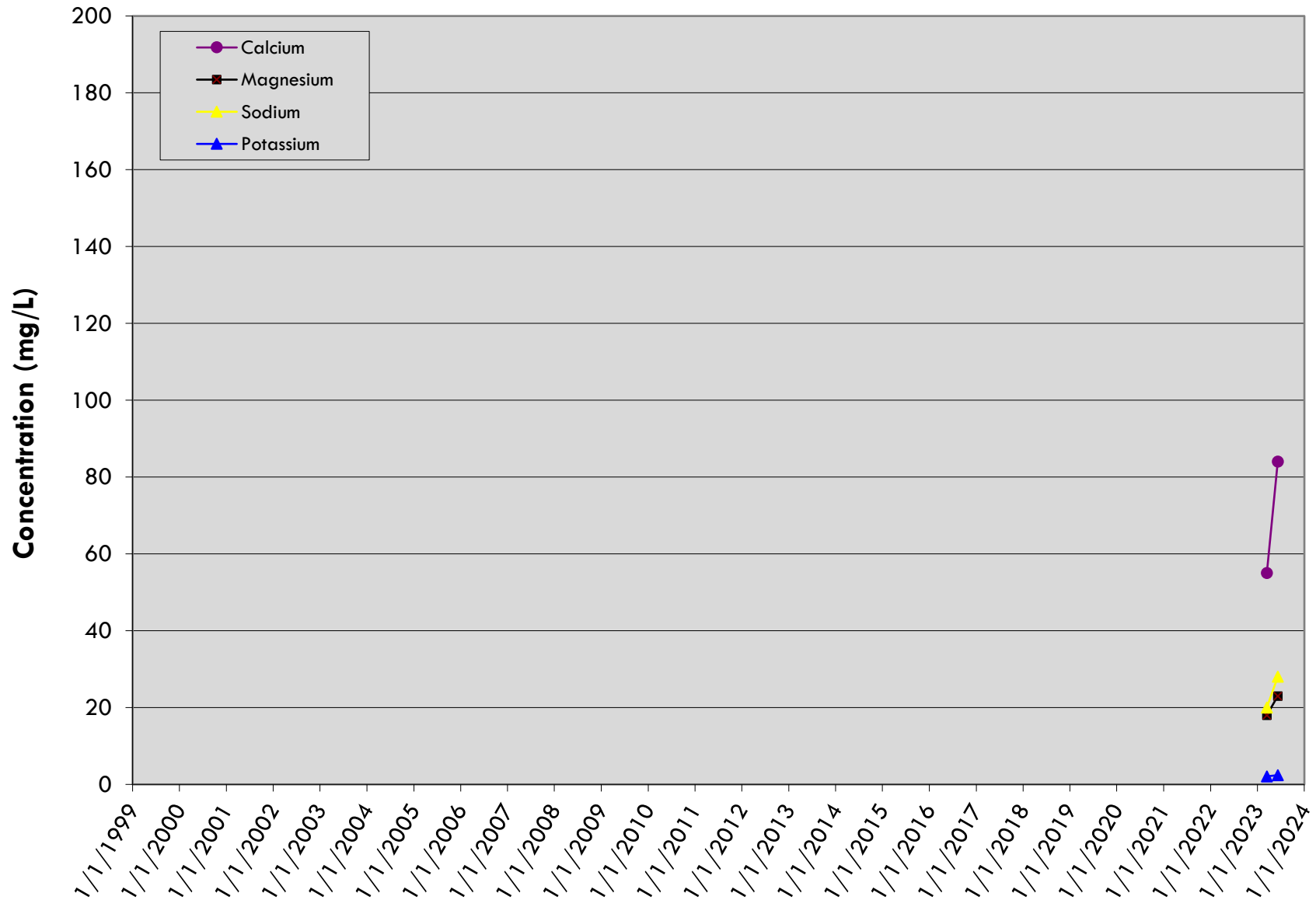
LDCS-8

LRI Landfill, Pierce County, Washington



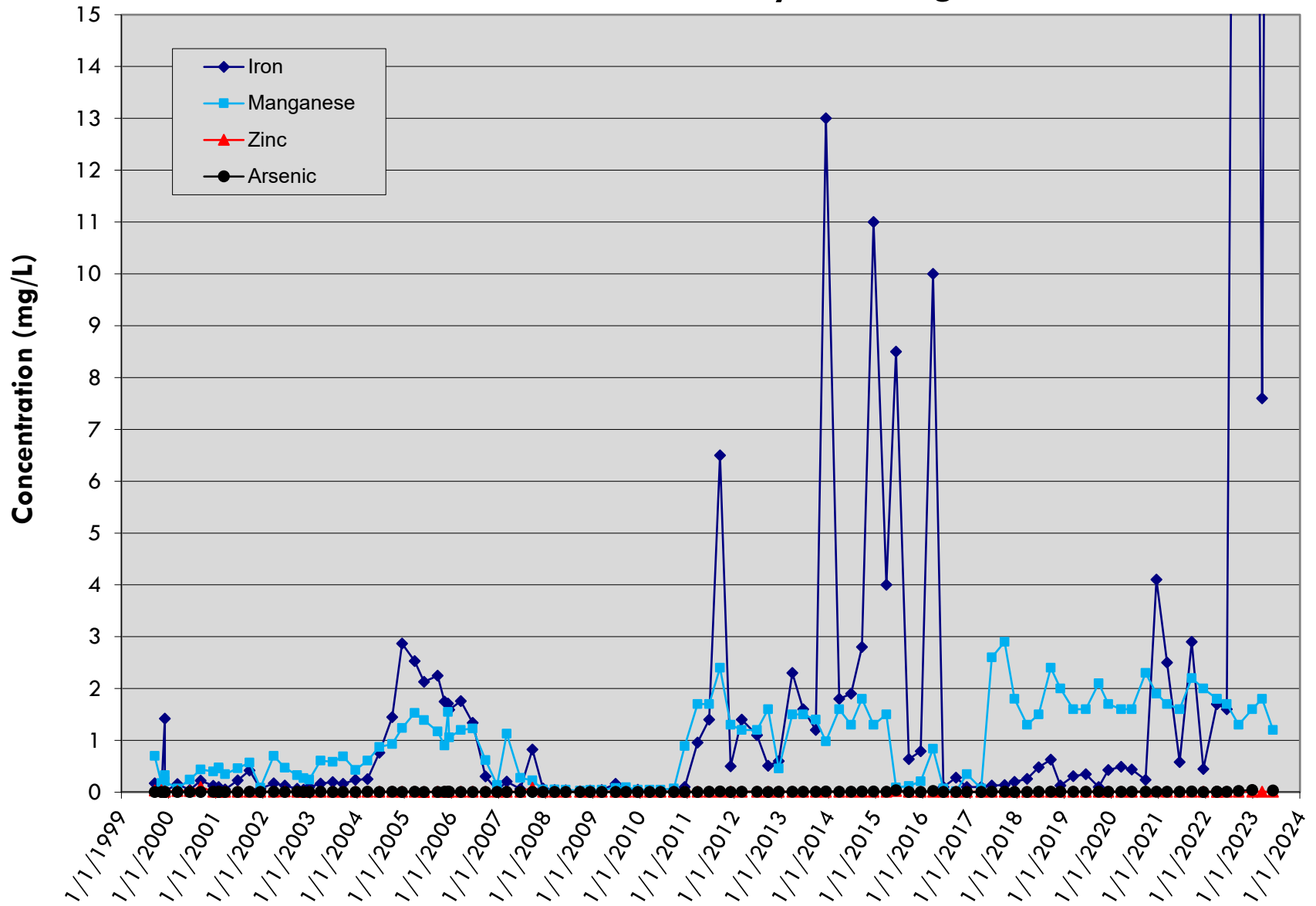
LDCS-9

LRI Landfill, Pierce County, Washington



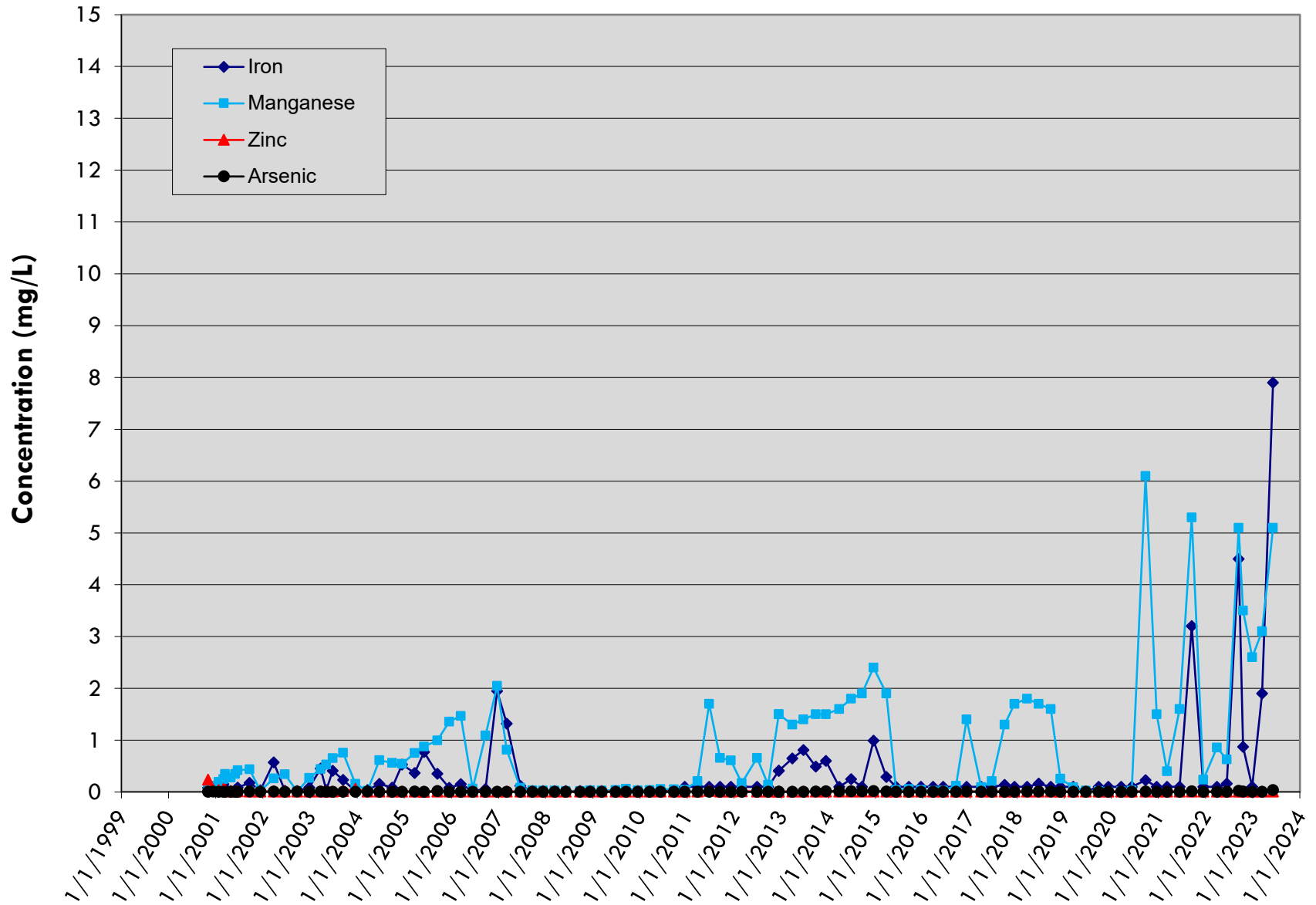
LDCS-1

LRI Landfill, Pierce County, Washington



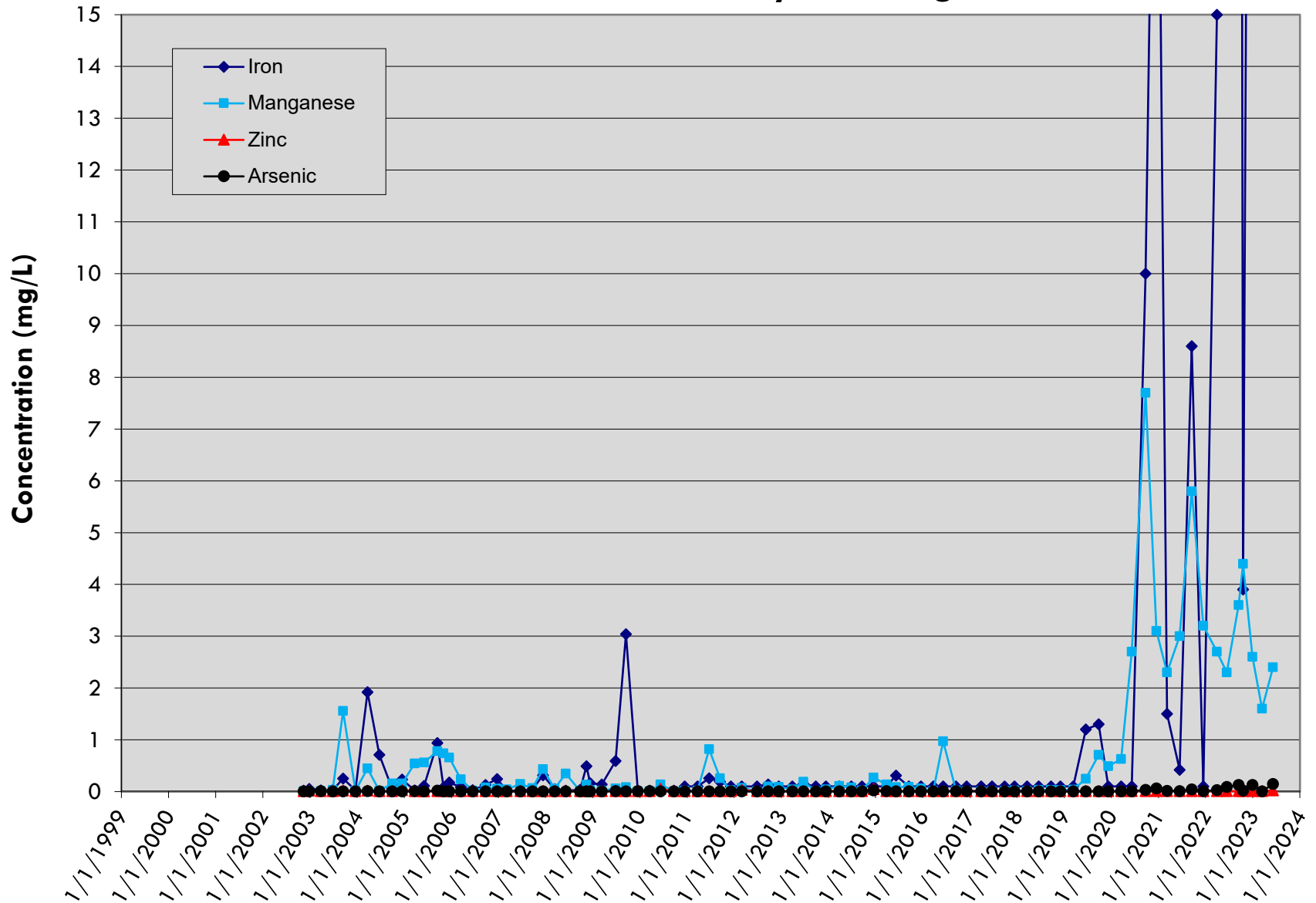
LDCS-2A

LRI Landfill, Pierce County, Washington



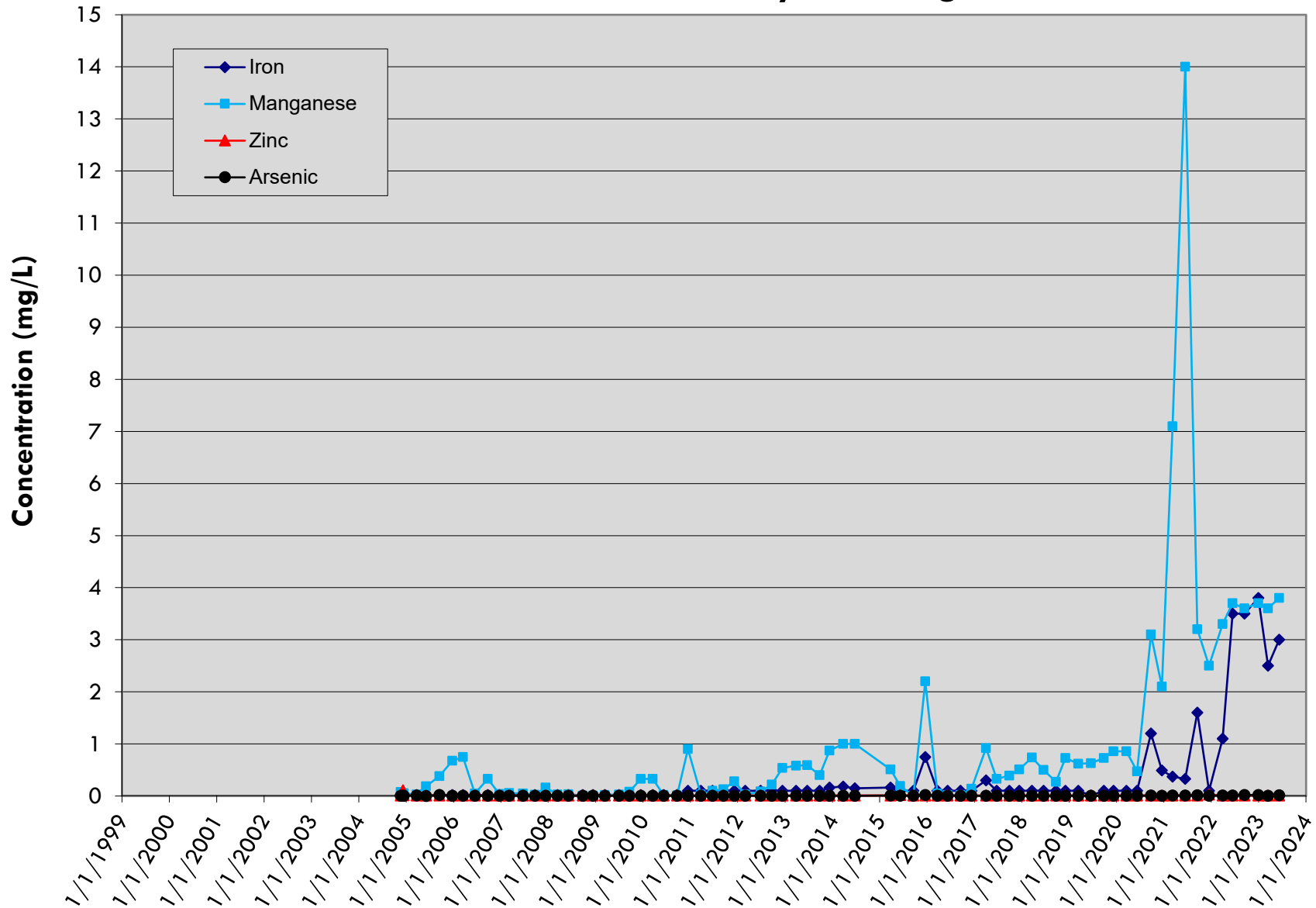
LDCS-2B

LRI Landfill, Pierce County, Washington



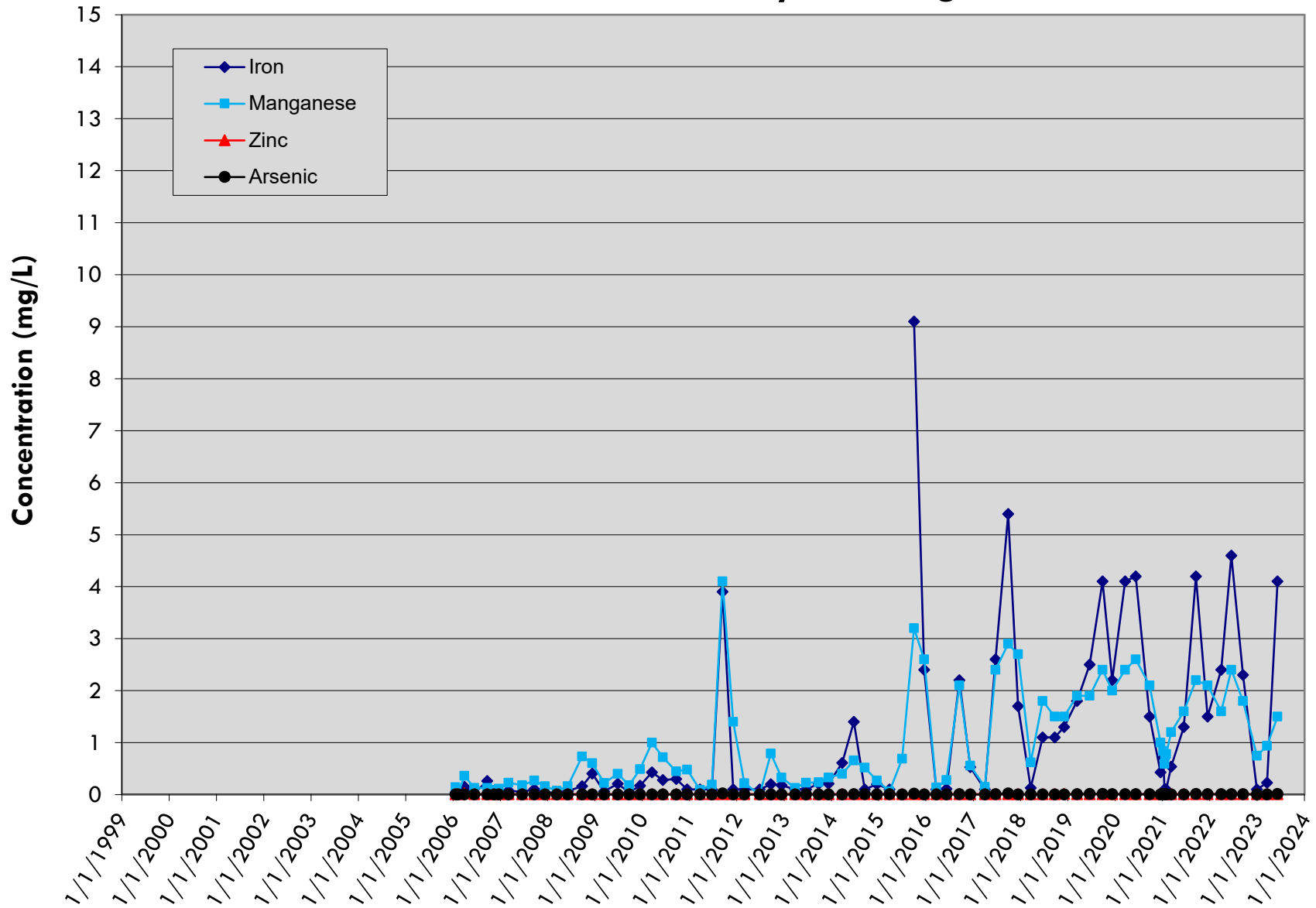
LDCS-3A

LRI Landfill, Pierce County, Washington



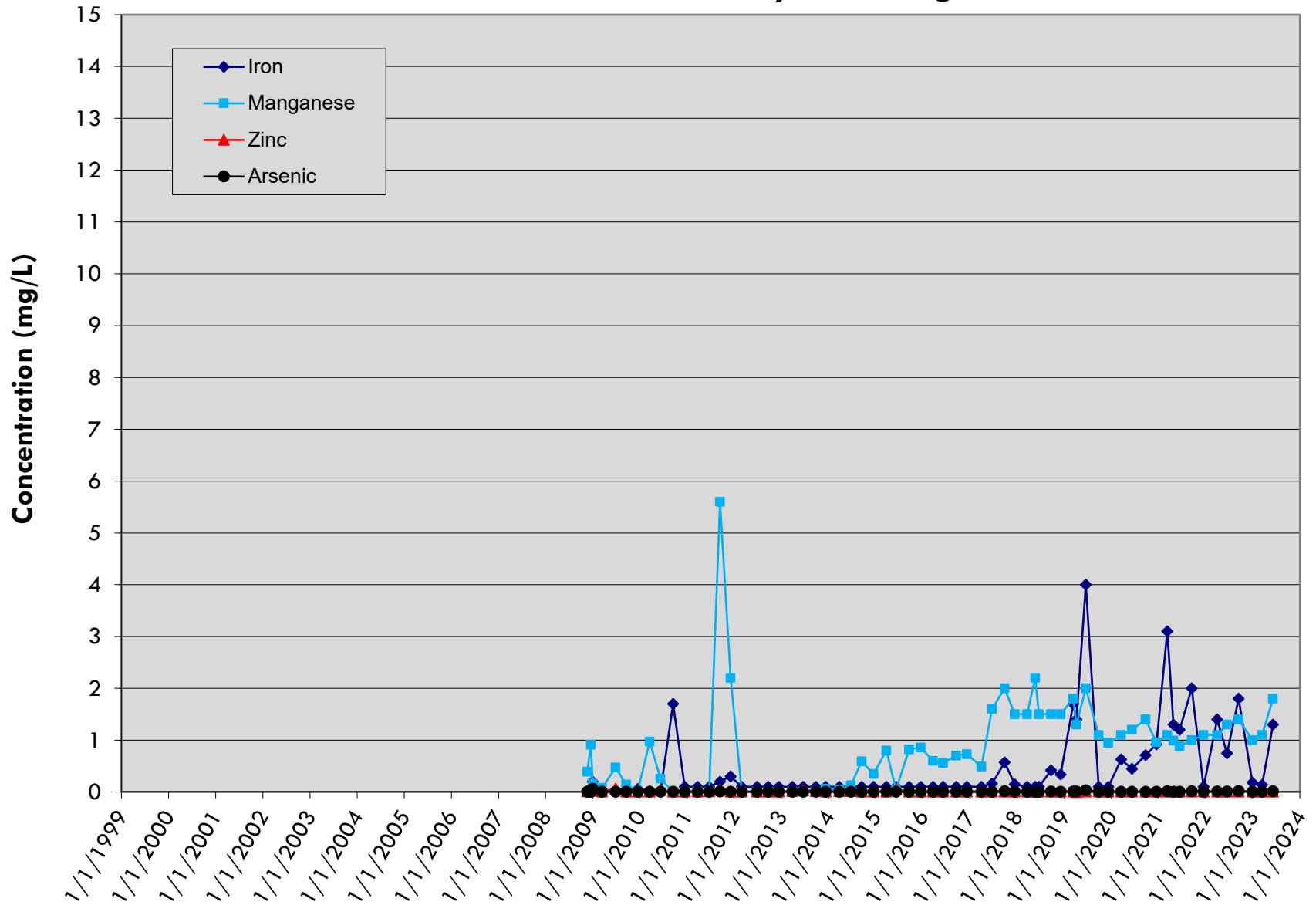
LDCS-4A

LRI Landfill, Pierce County, Washington



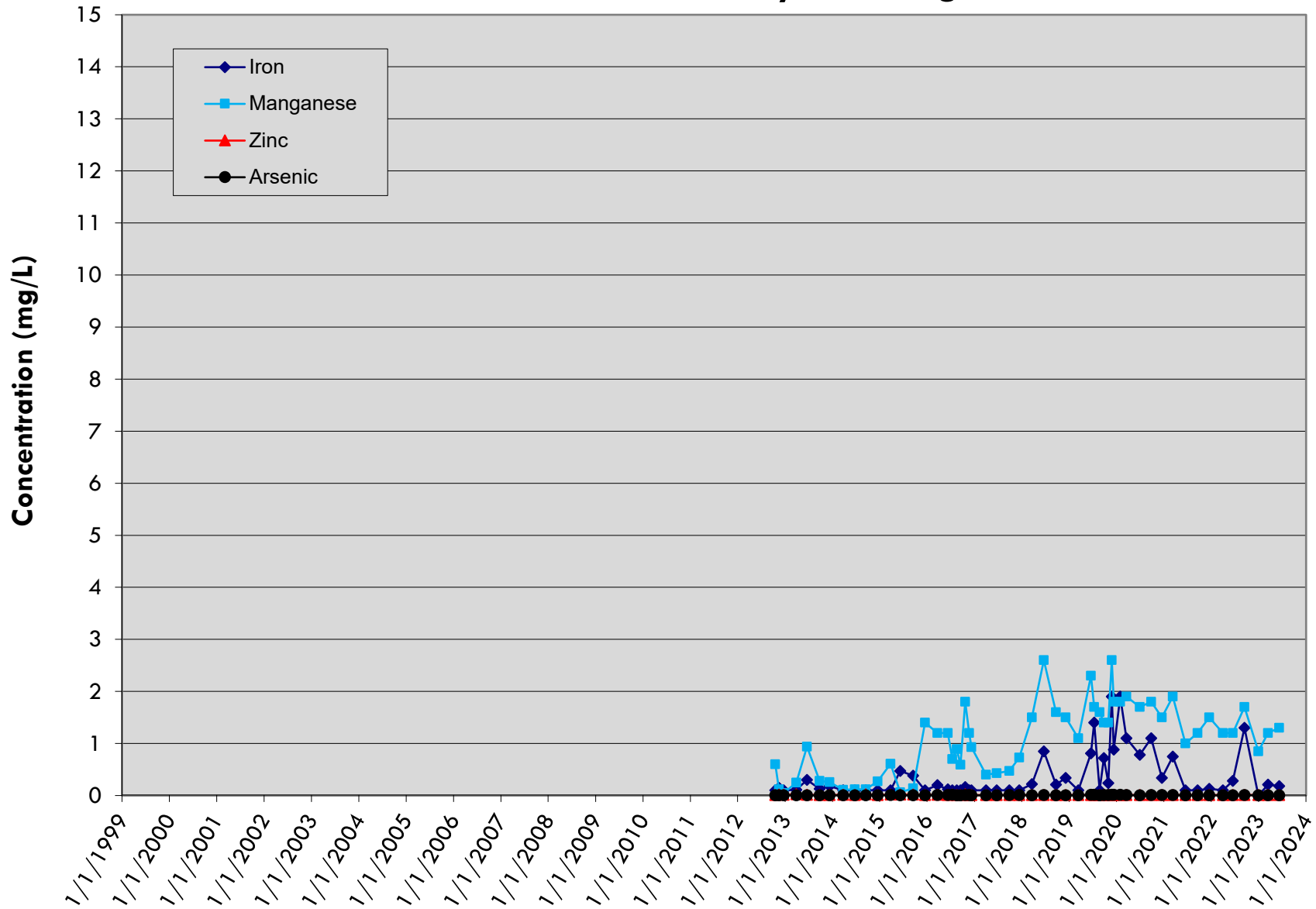
LDCS-4B

LRI Landfill, Pierce County, Washington



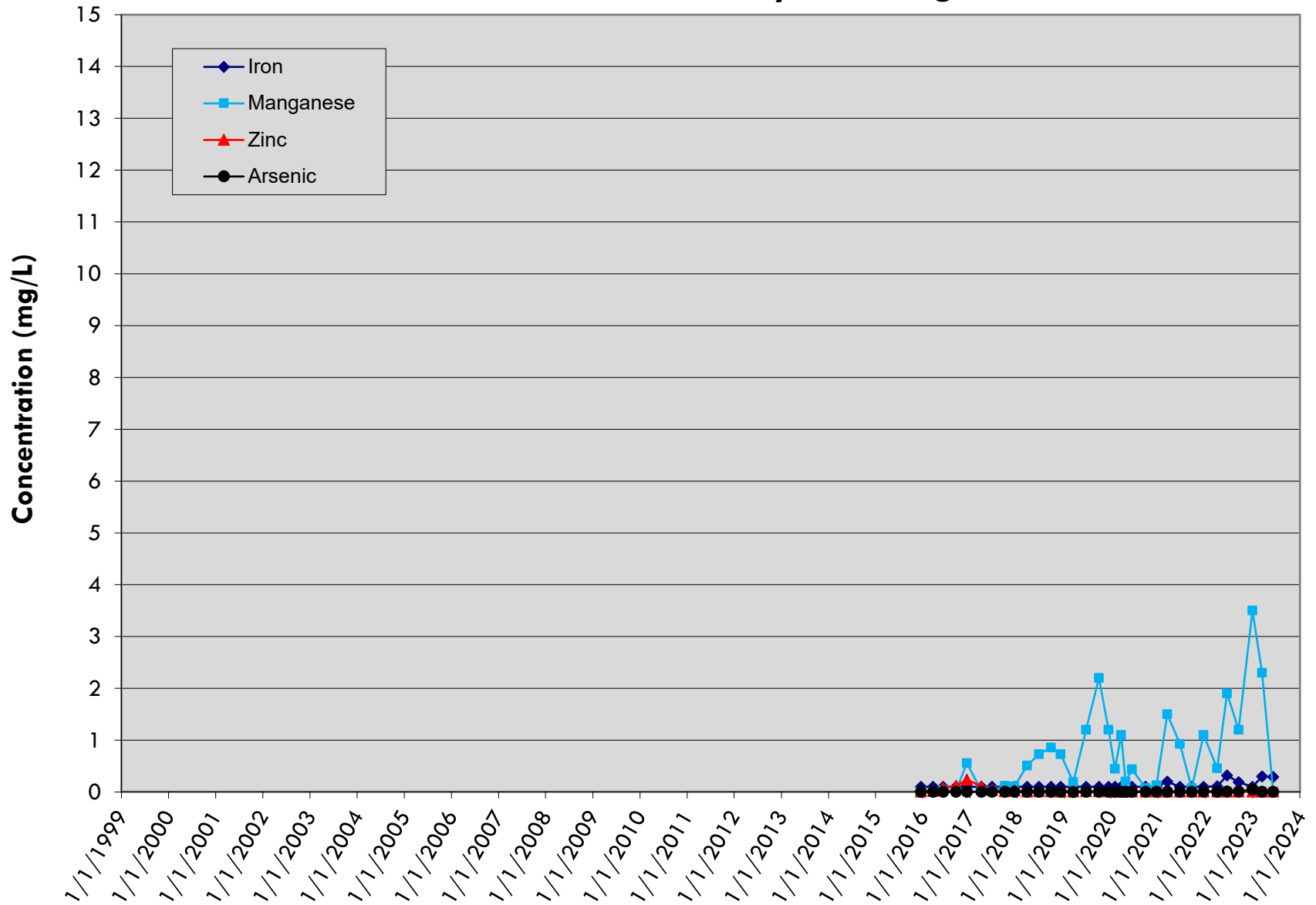
LDCS-5

LRI Landfill, Pierce County, Washington



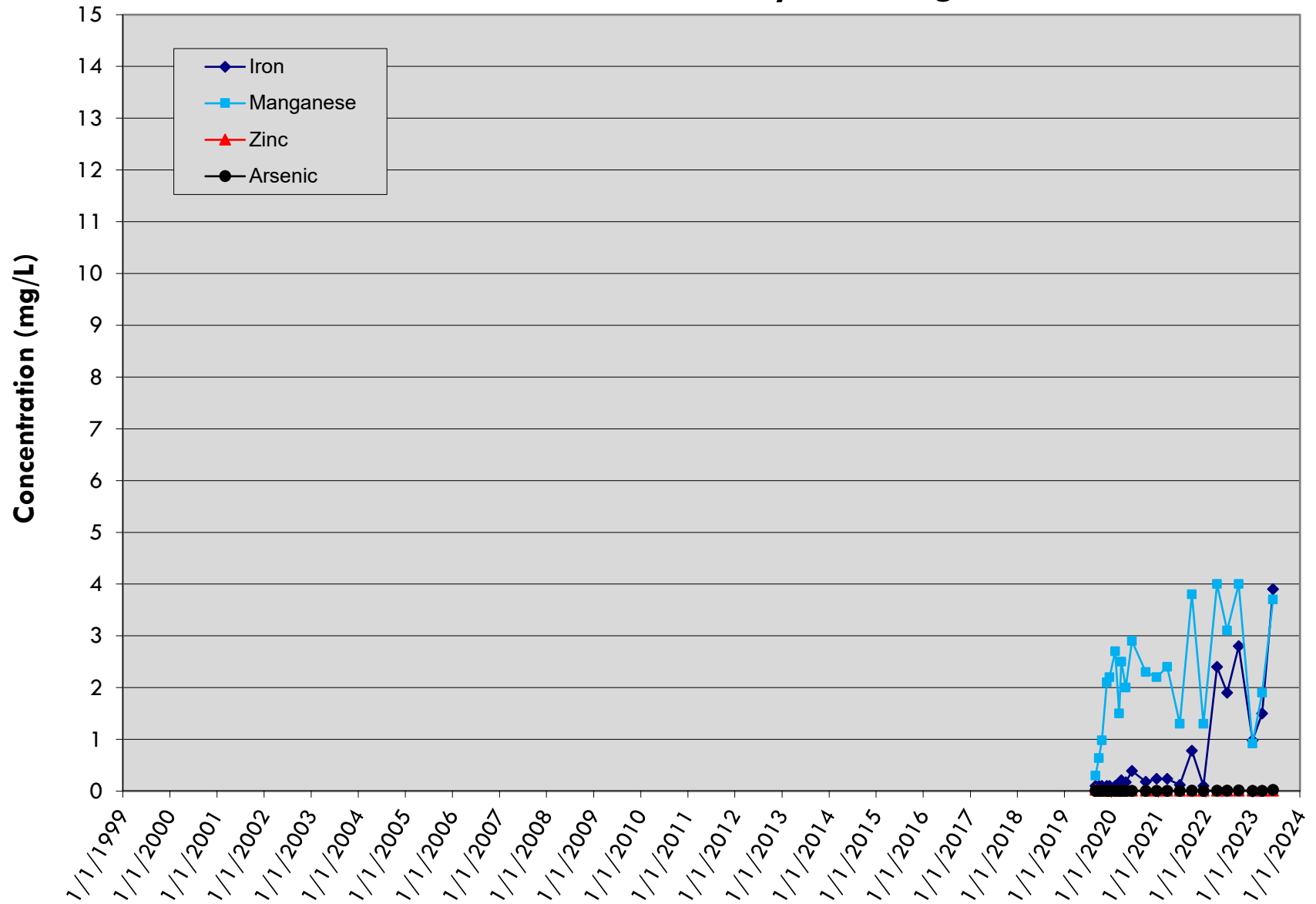
LDCS-6A

LRI Landfill, Pierce County, Washington



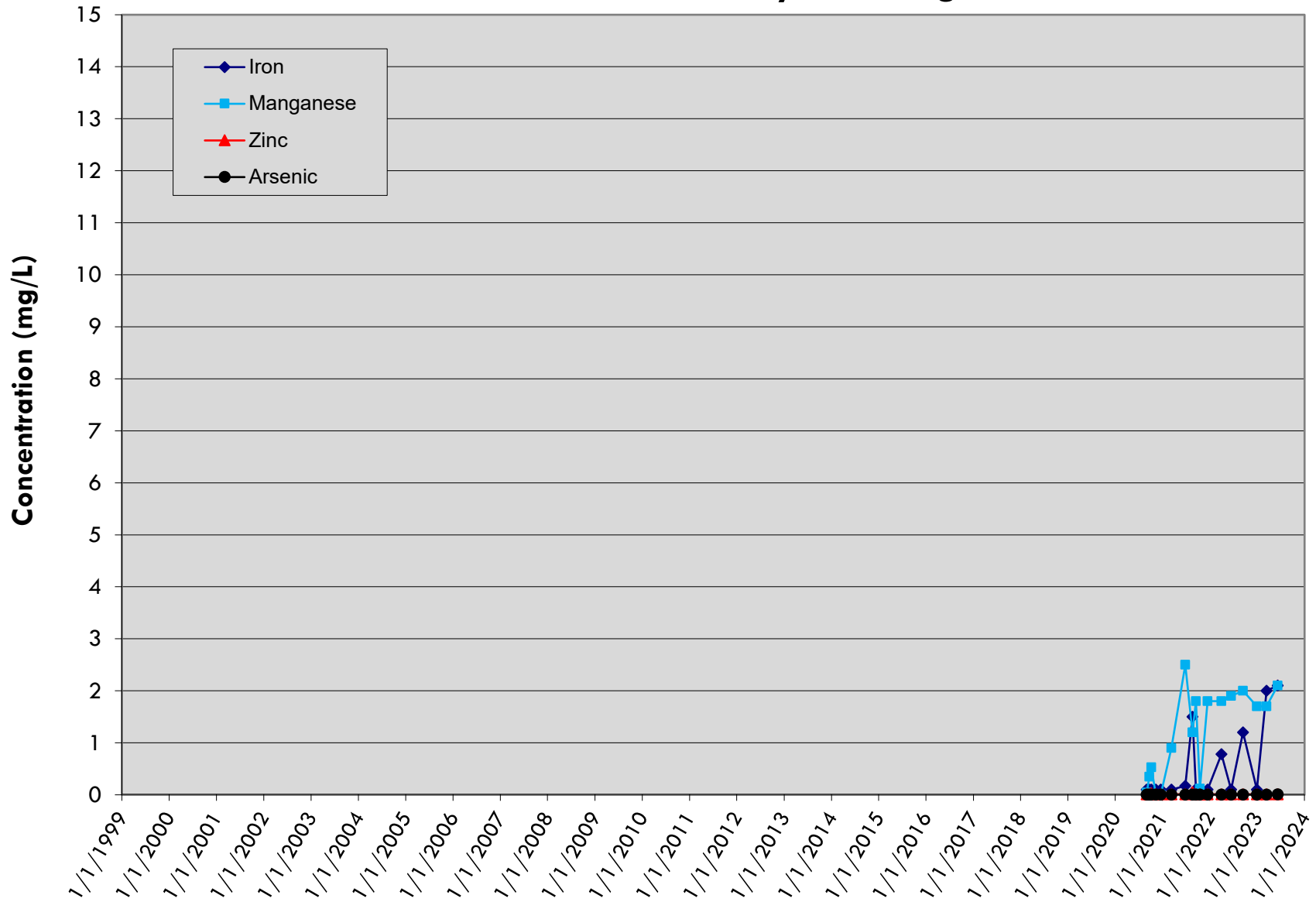
LDCS-7

LRI Landfill, Pierce County, Washington



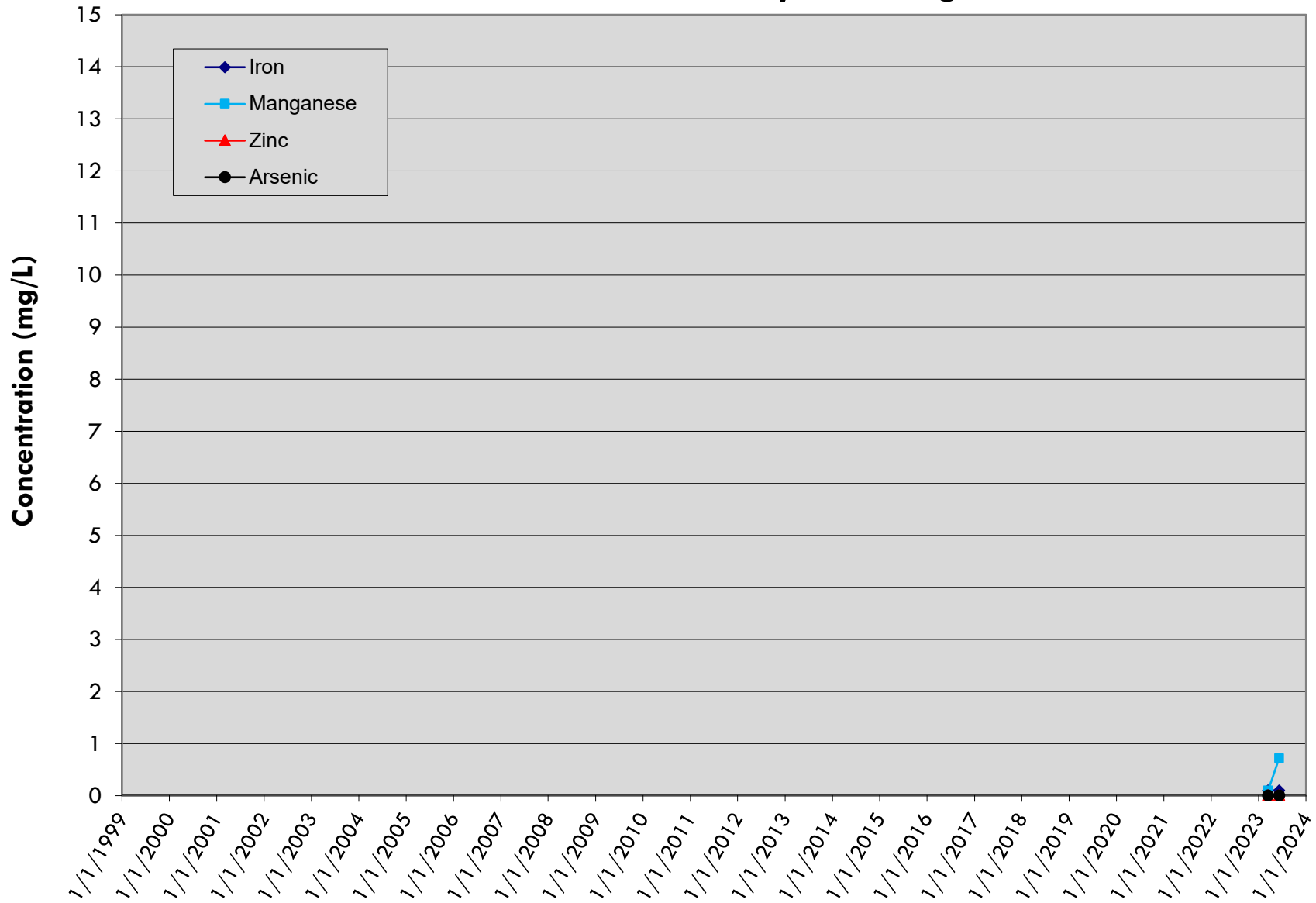
LDCS-8

LRI Landfill, Pierce County, Washington



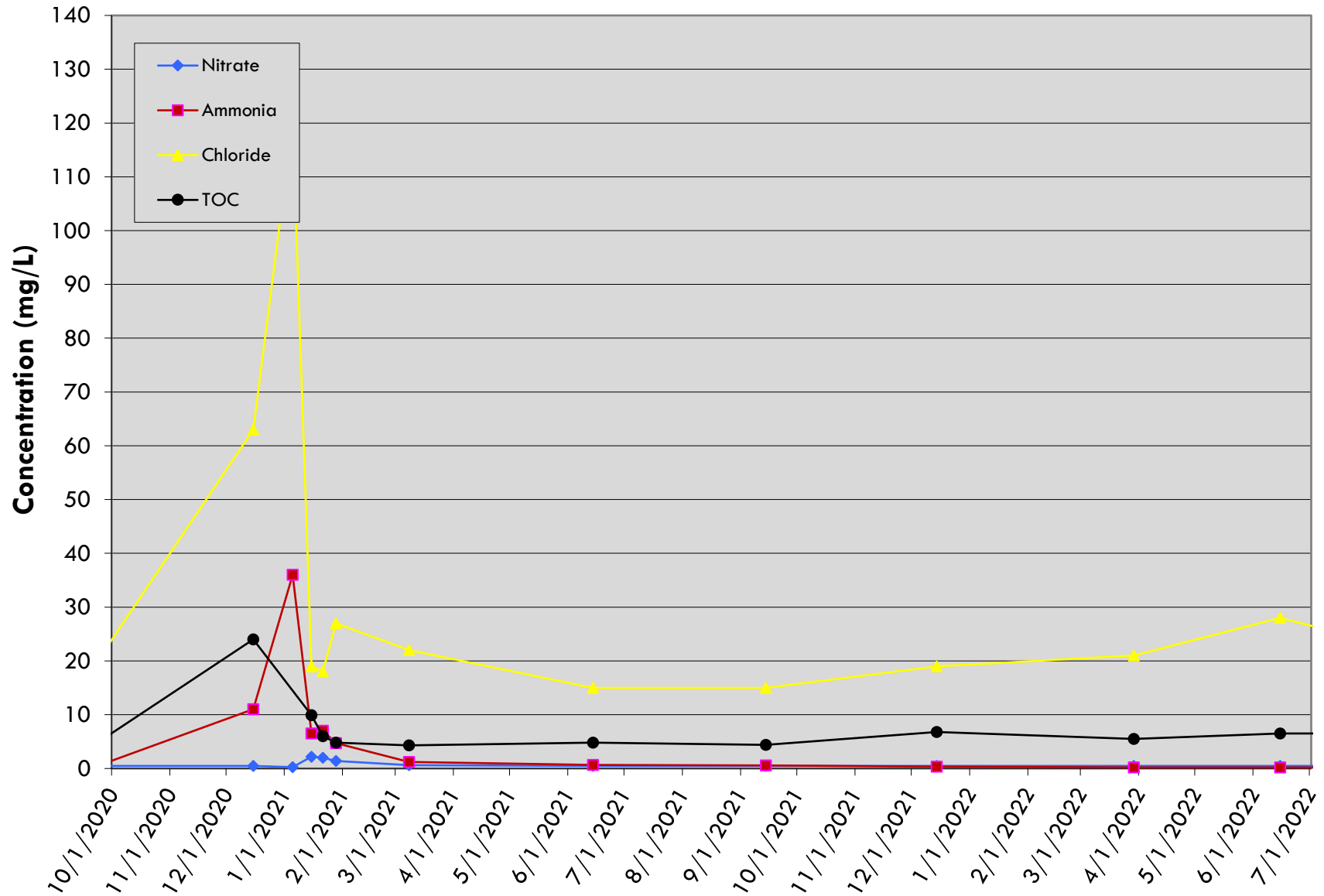
LDCS-9

LRI Landfill, Pierce County, Washington



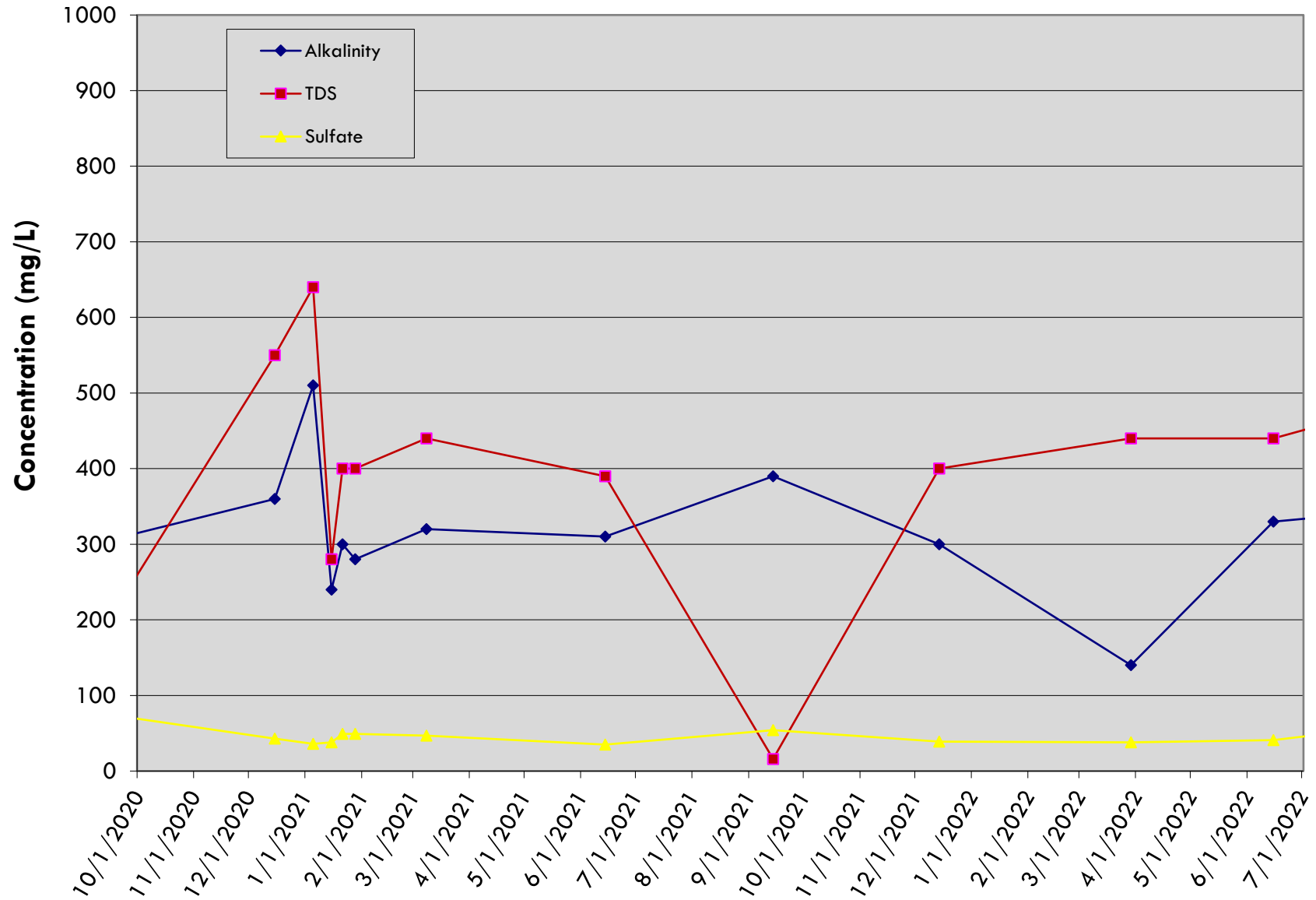
LDCS-4A

LRI Landfill, Pierce County, Washington



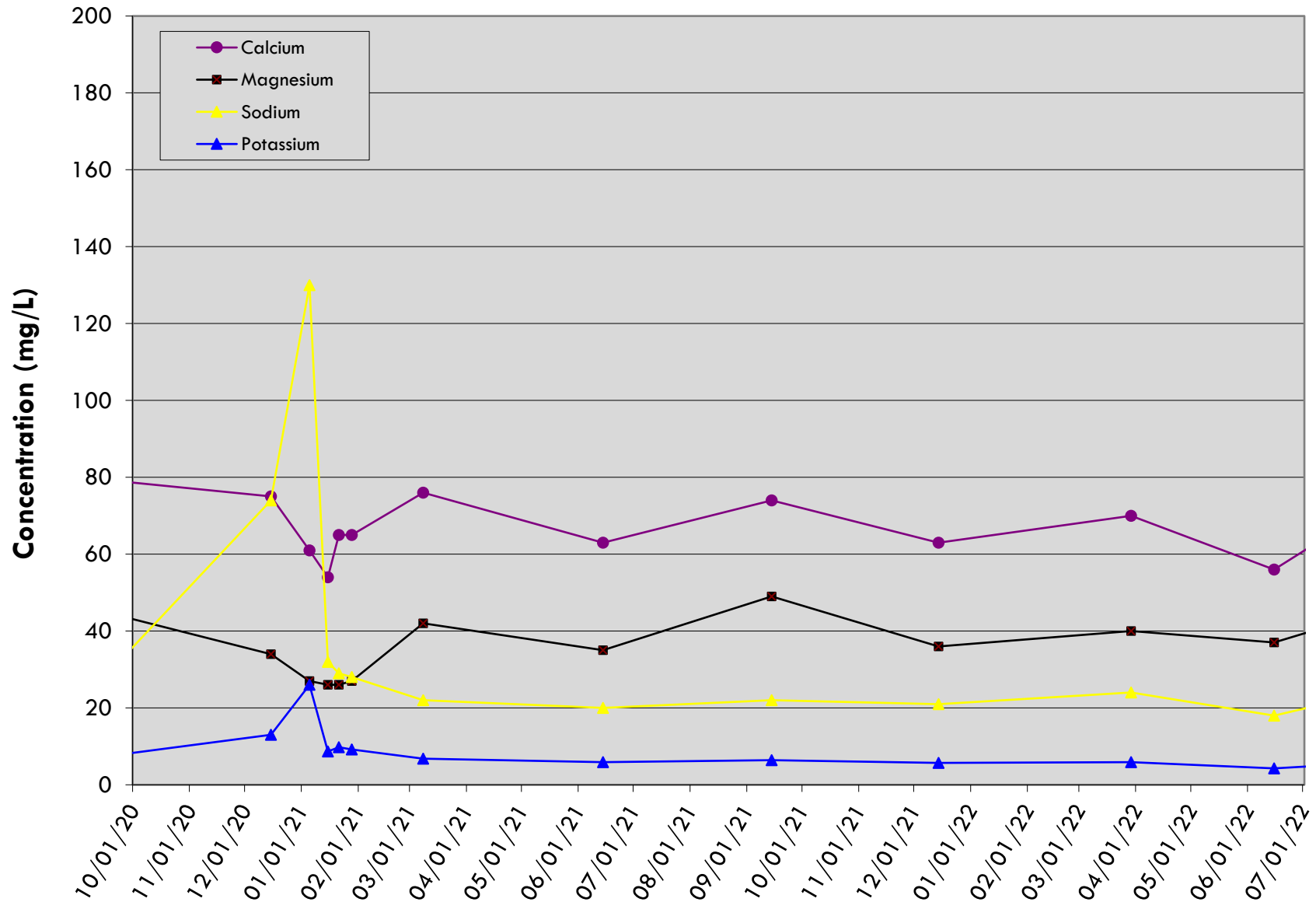
LDCS-4A

LRI Landfill, Pierce County, Washington



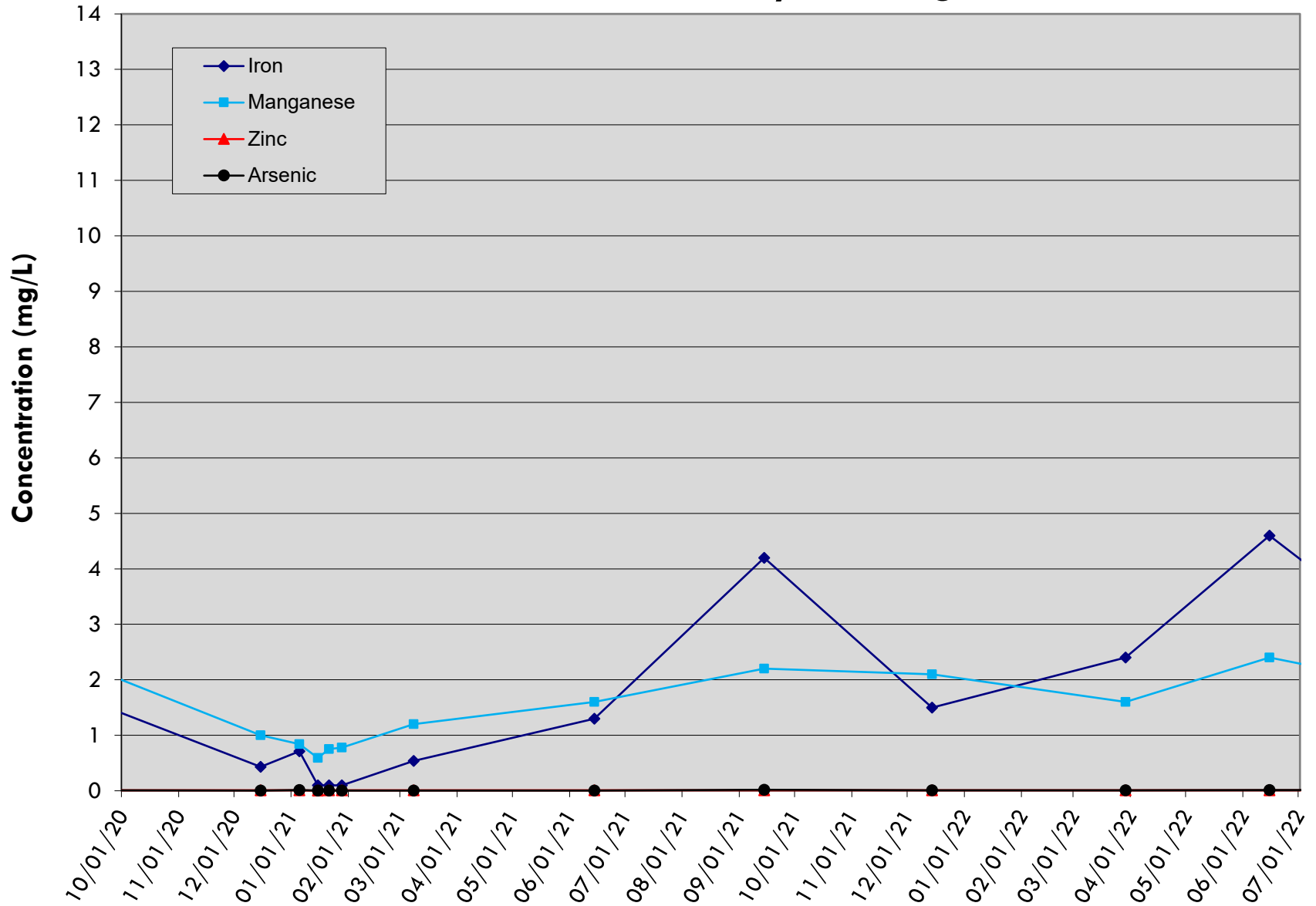
LDCS-4A

LRI Landfill, Pierce County, Washington



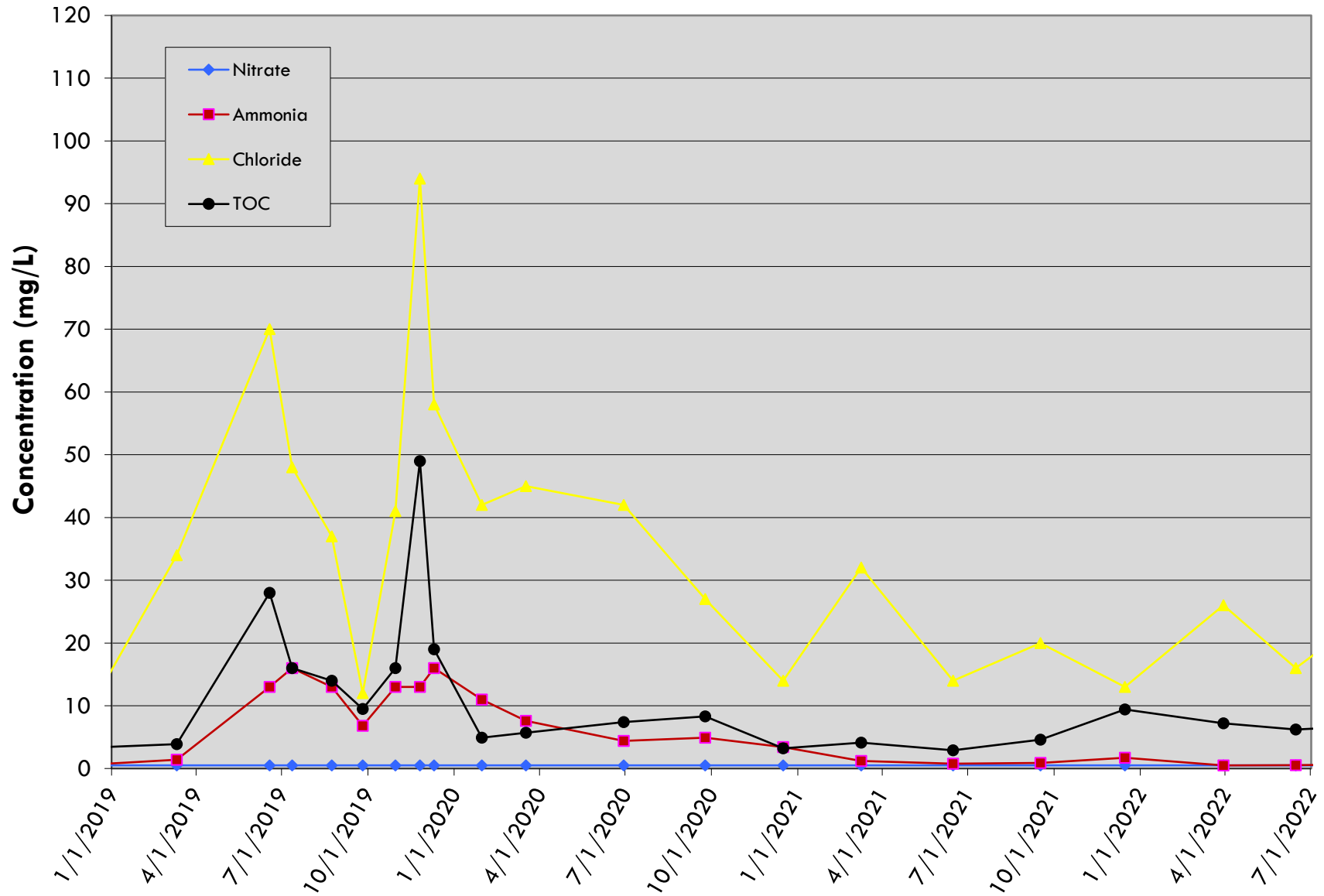
LDCS-4A

LRI Landfill, Pierce County, Washington



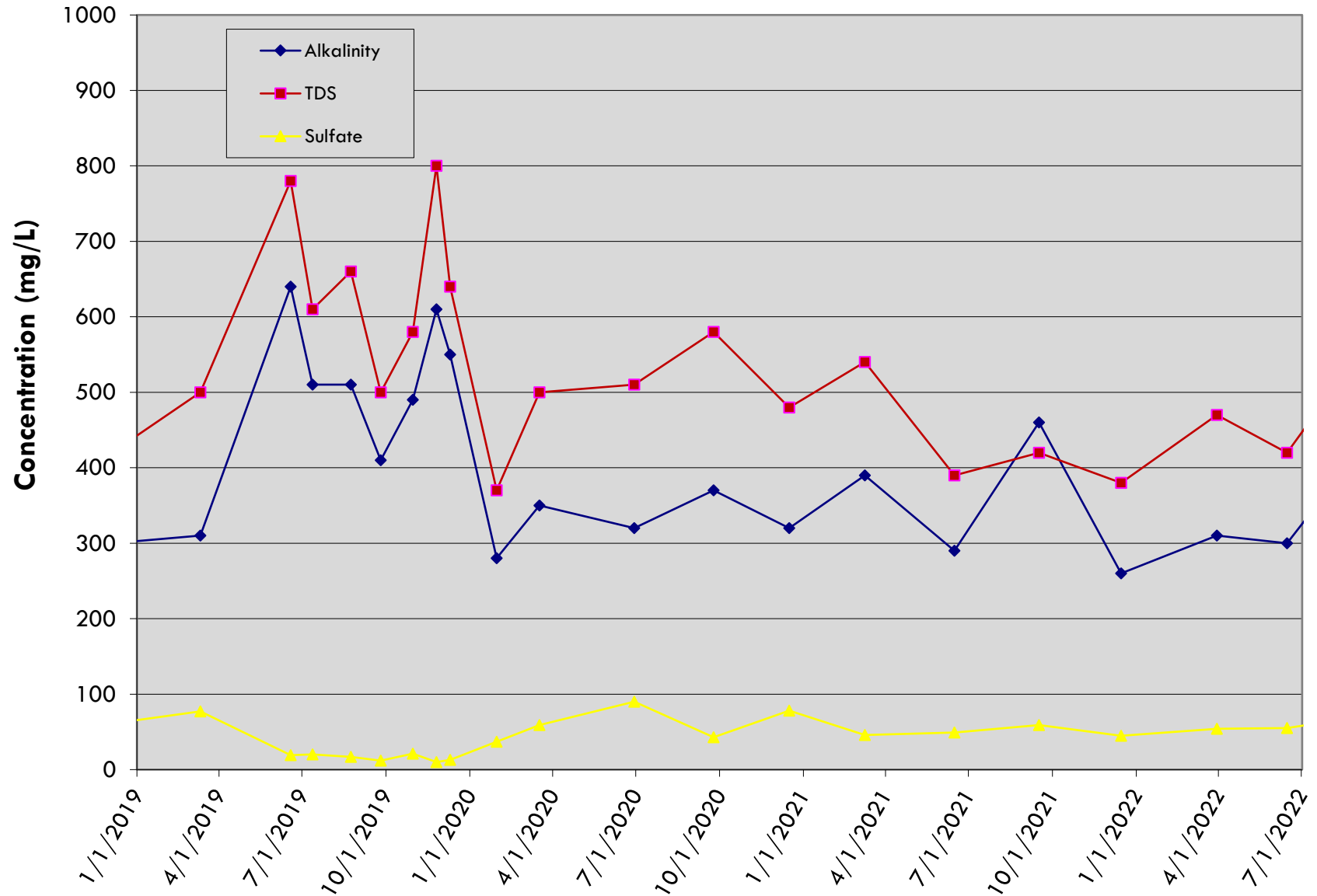
LDCS-5

LRI Landfill, Pierce County, Washington



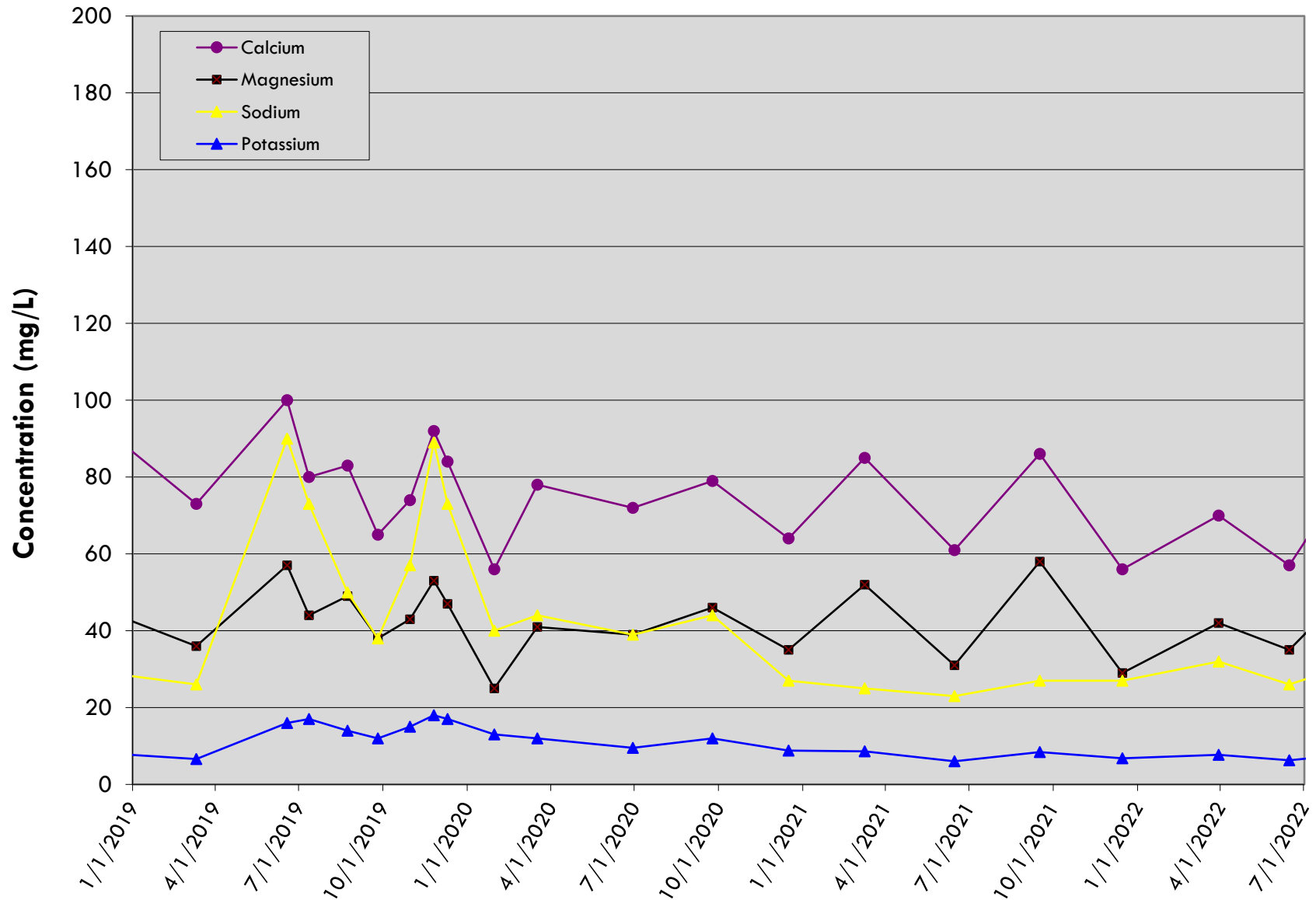
LDCS-5

LRI Landfill, Pierce County, Washington

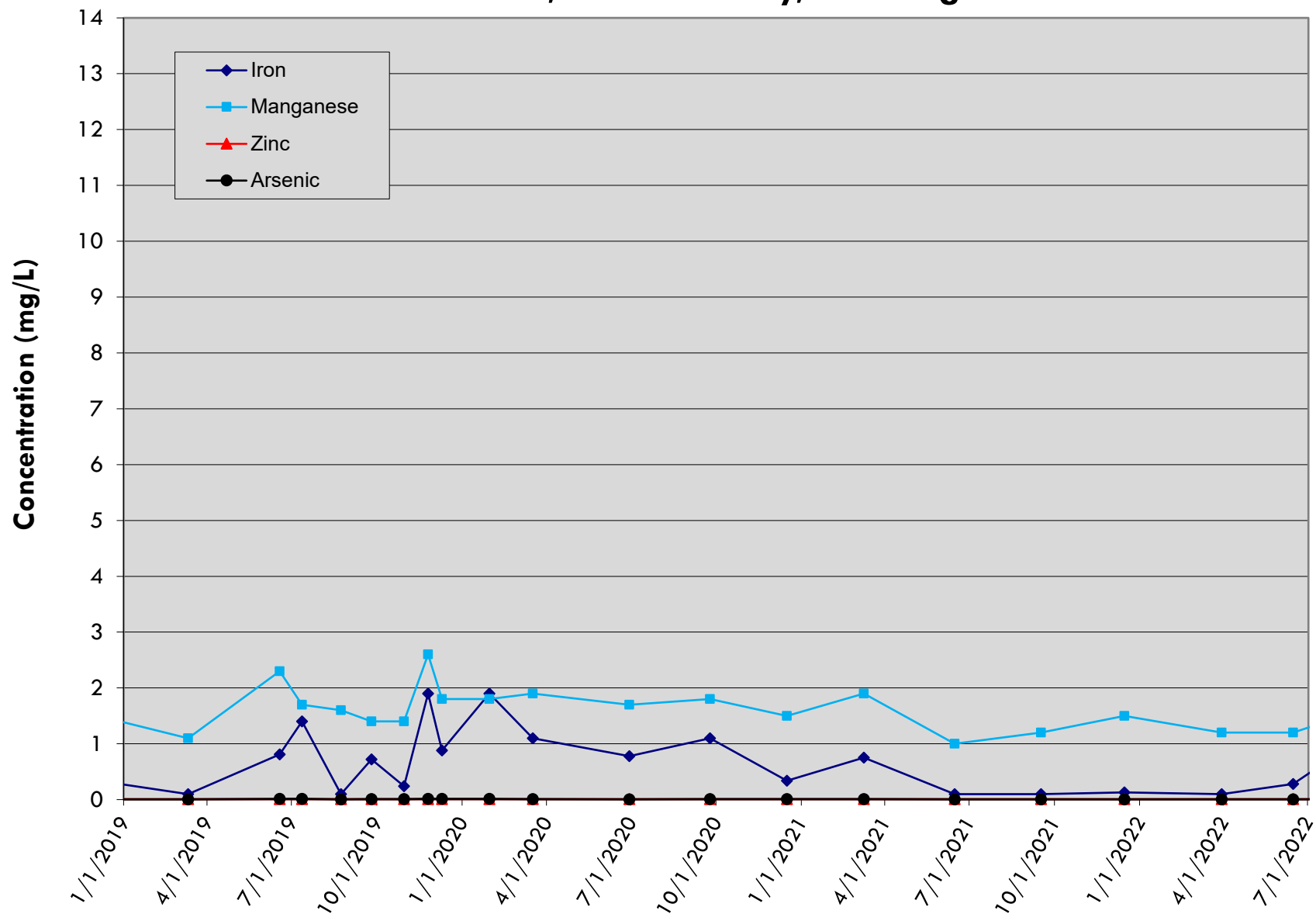


LDCS-5

LRI Landfill, Pierce County, Washington

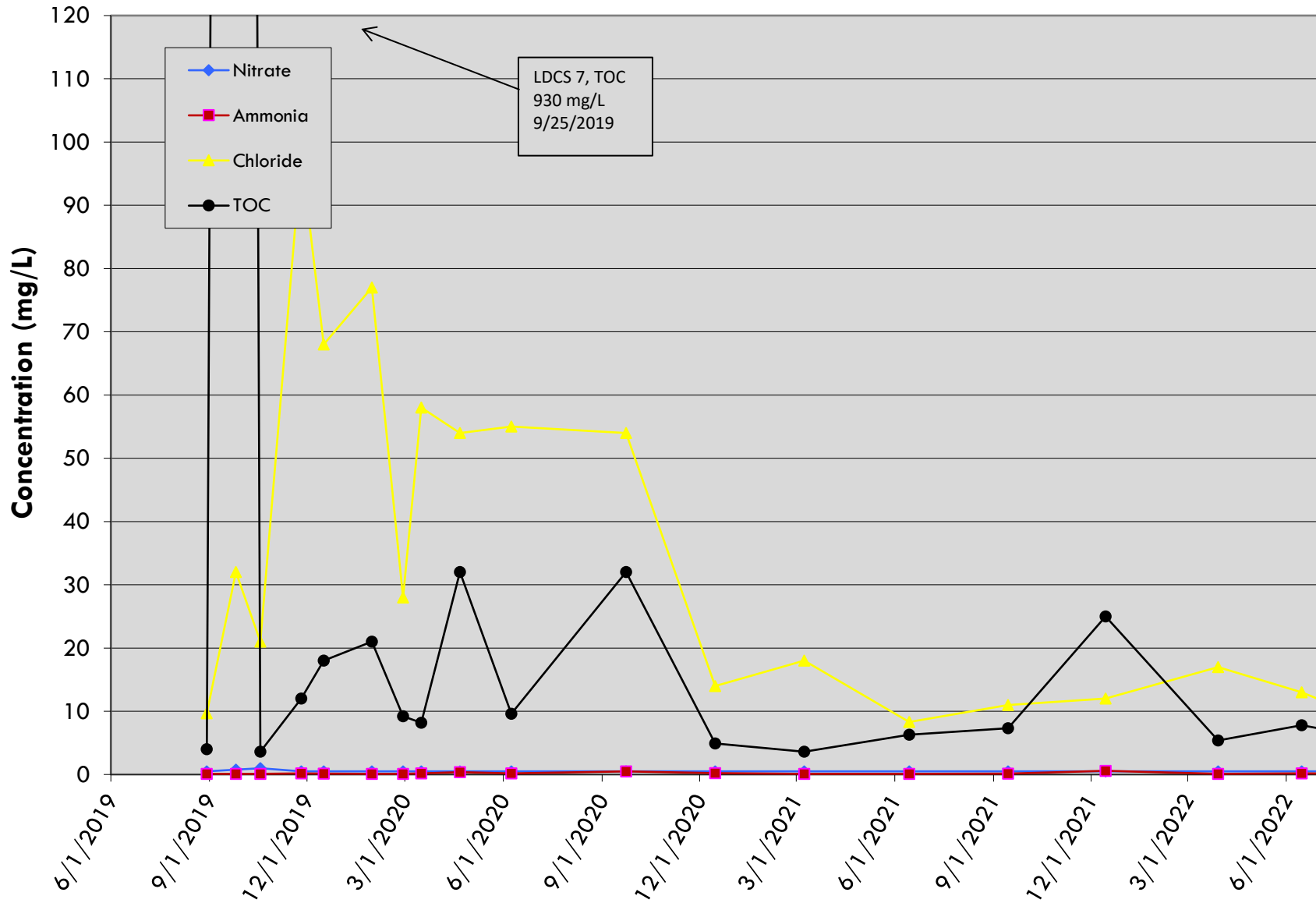


LRI Landfill, Pierce County, Washington



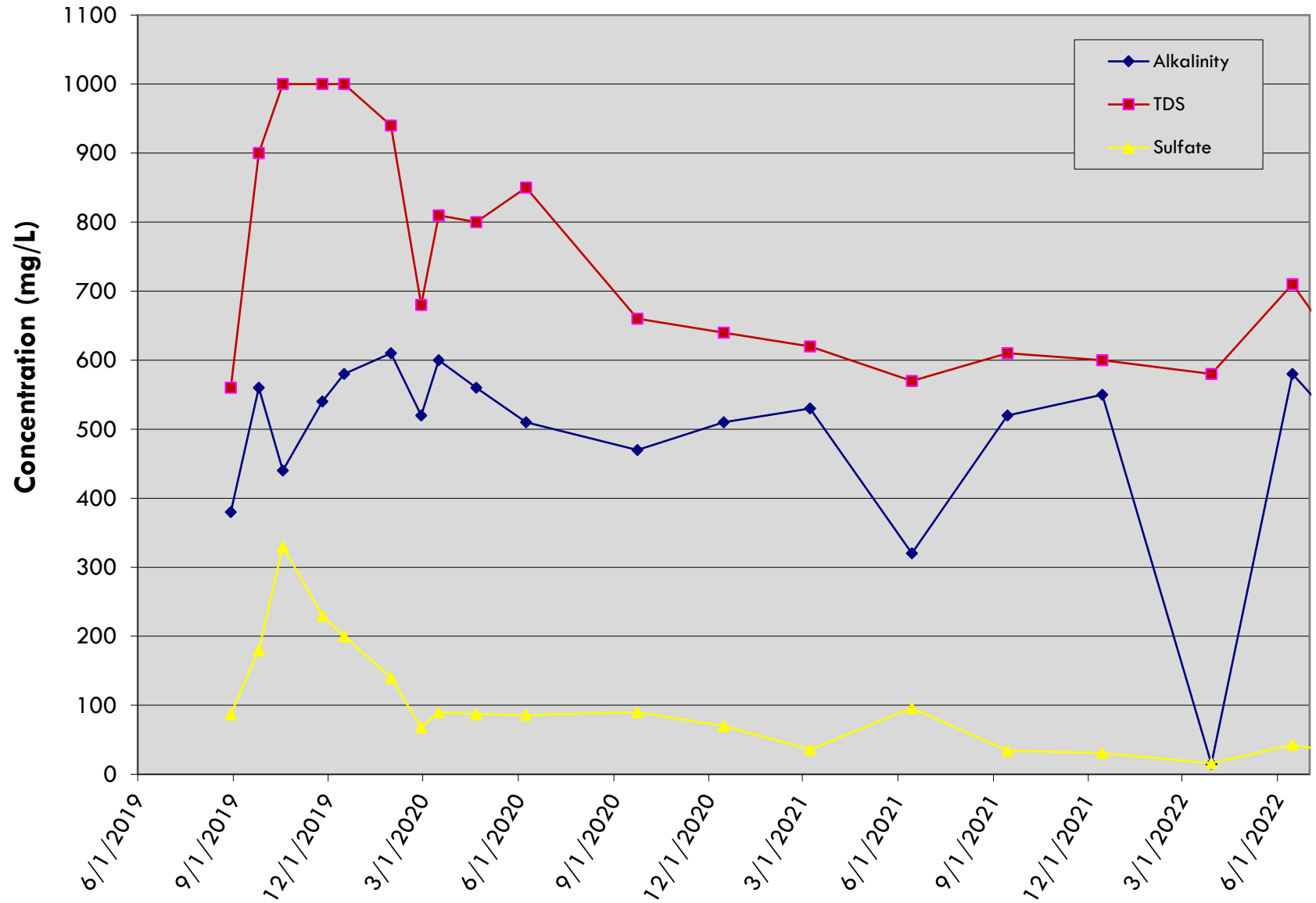
LDCS-7

LRI Landfill, Pierce County, Washington



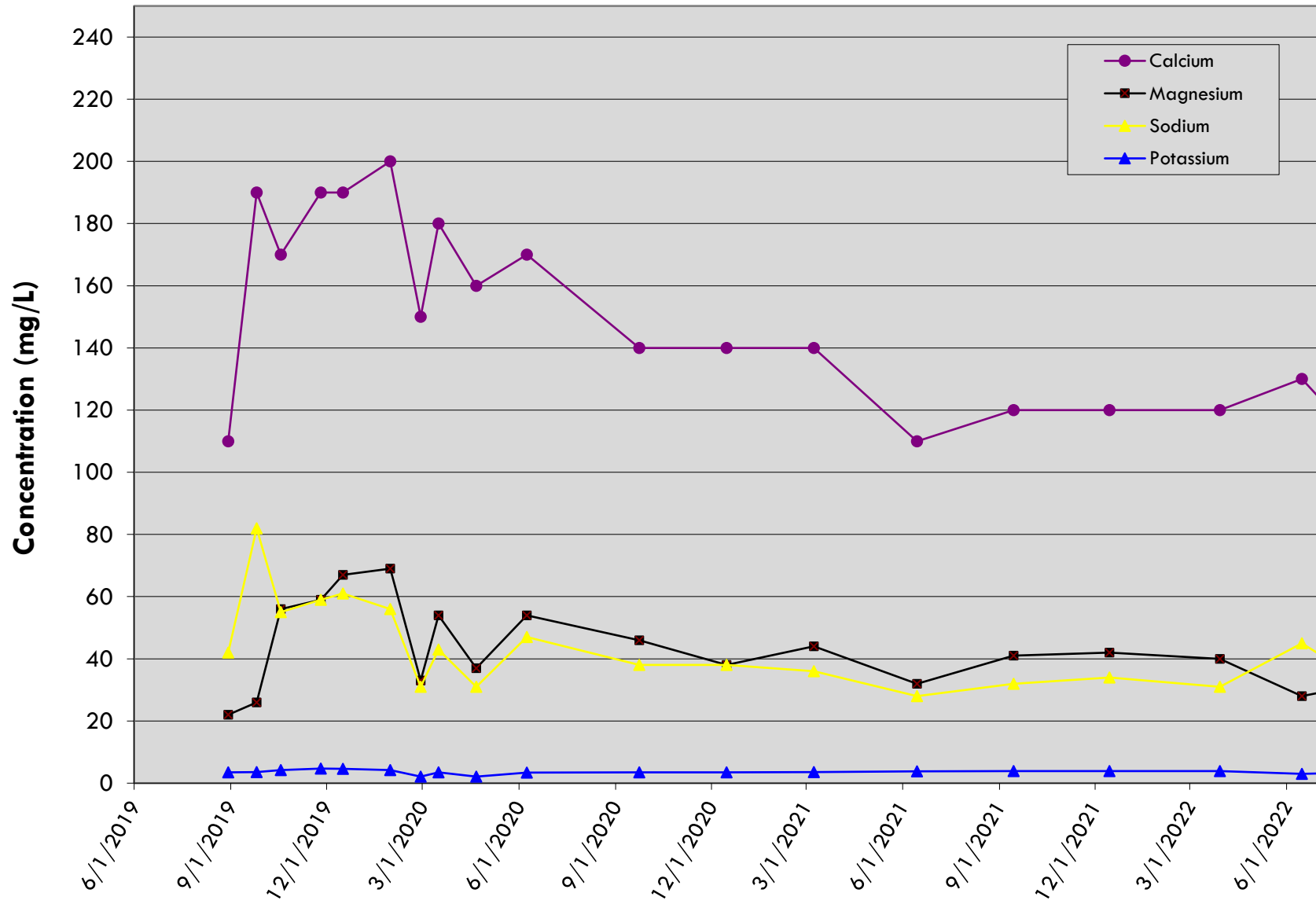
LDCS-7

LRI Landfill, Pierce County, Washington



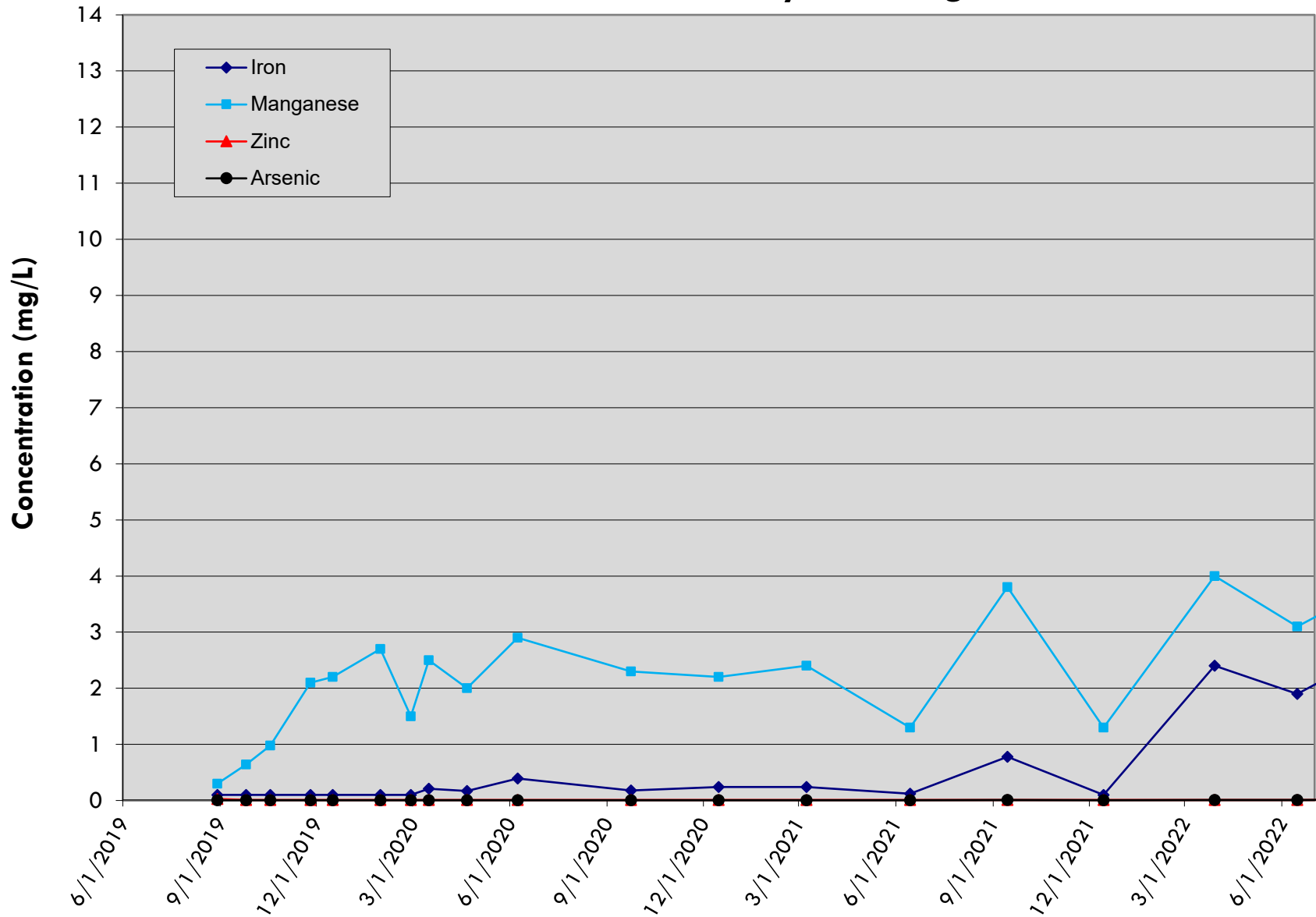
LDCS-7

LRI Landfill, Pierce County, Washington



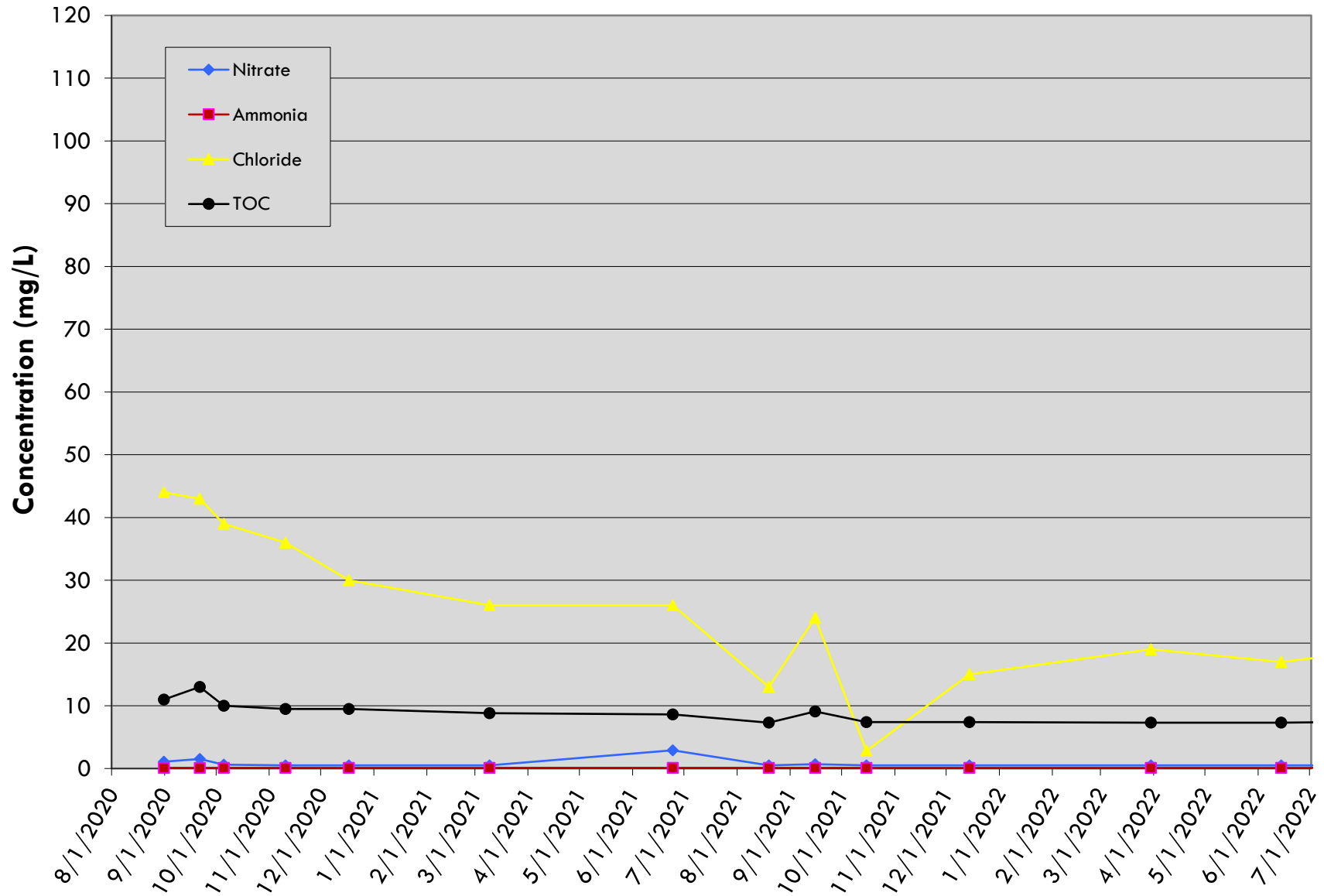
LDCS-7

LRI Landfill, Pierce County, Washington



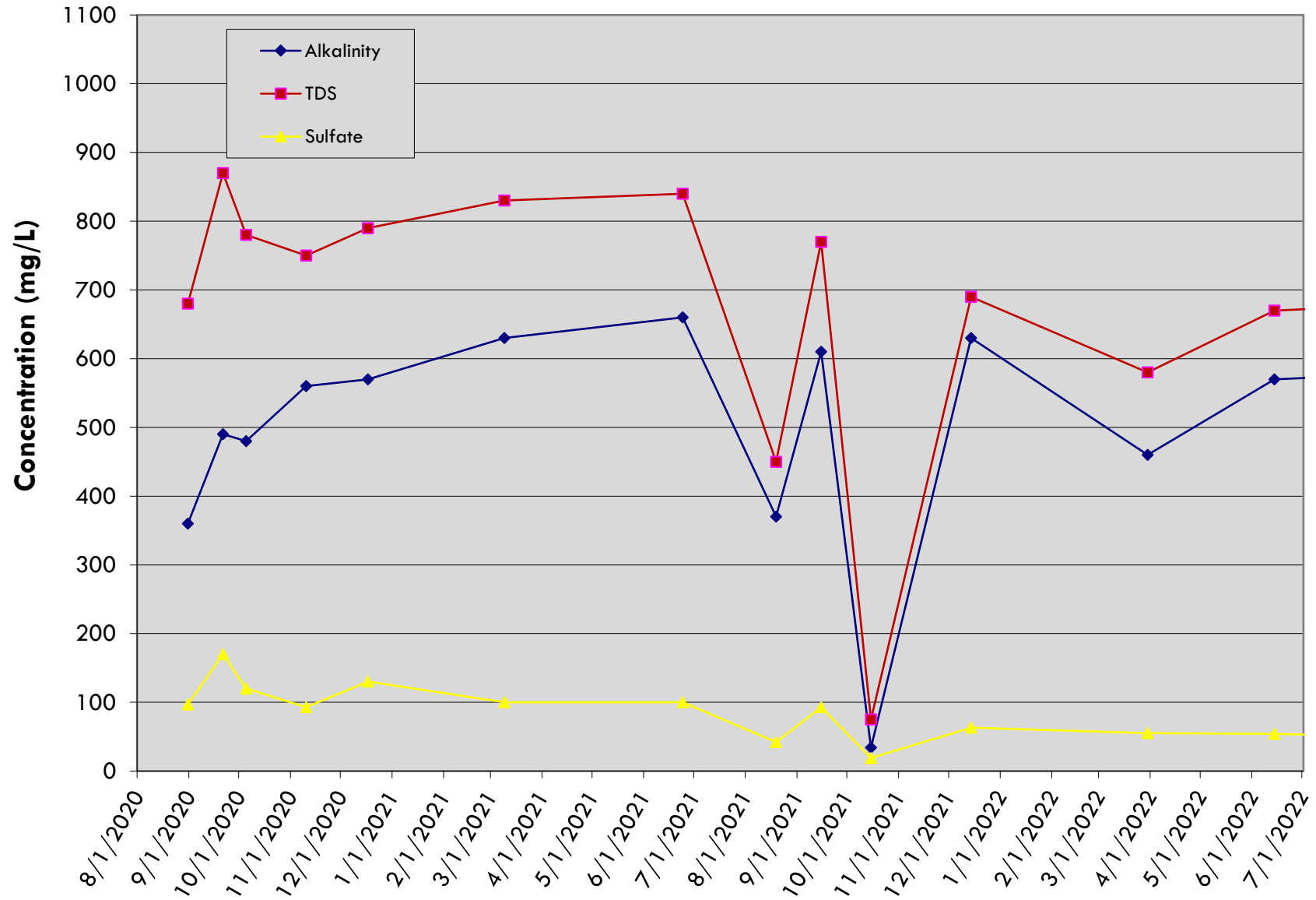
LDCS-8

LRI Landfill, Pierce County, Washington



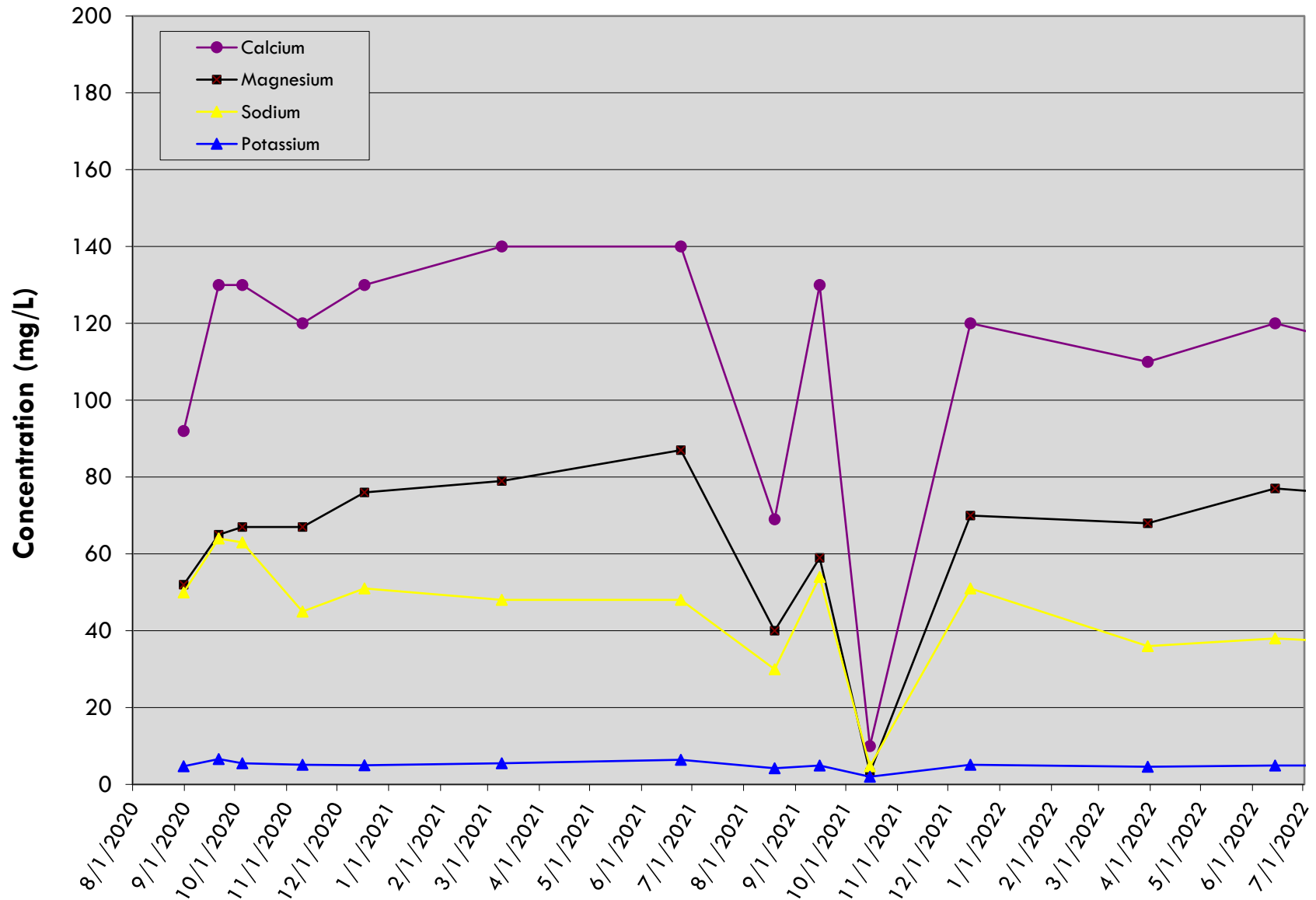
LDCS-8

LRI Landfill, Pierce County, Washington



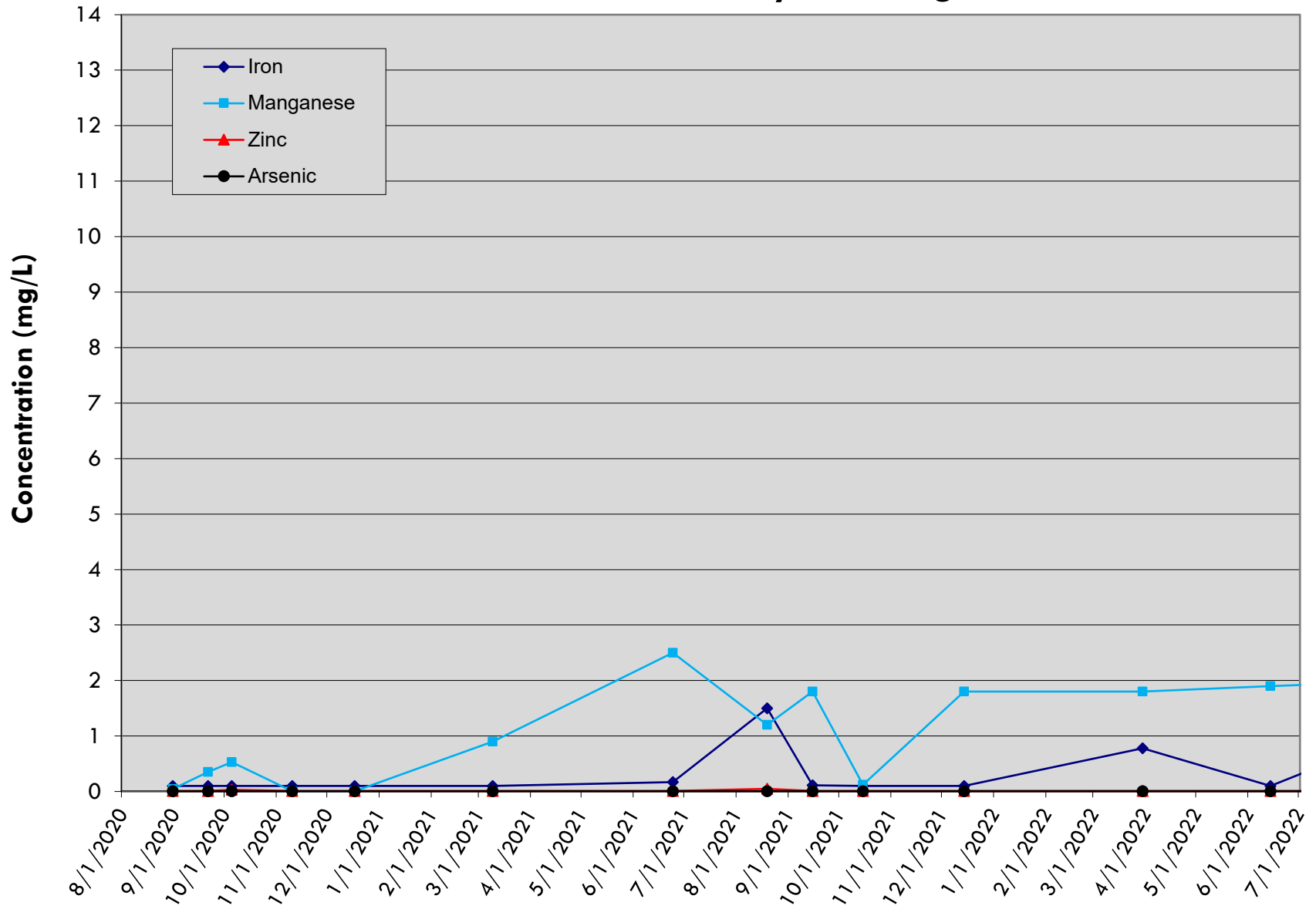
LDCS-8

LRI Landfill, Pierce County, Washington

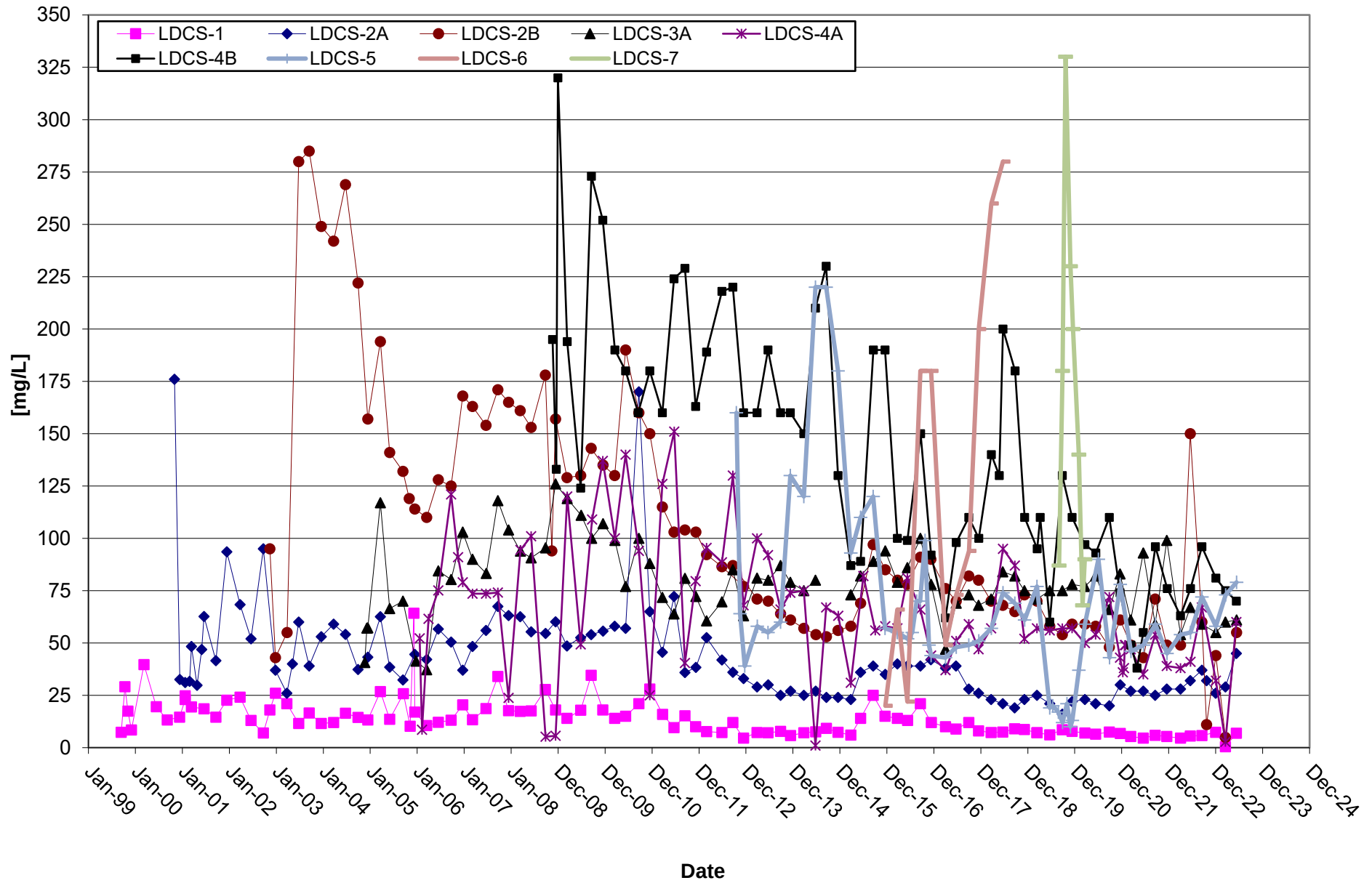


LDCS-8

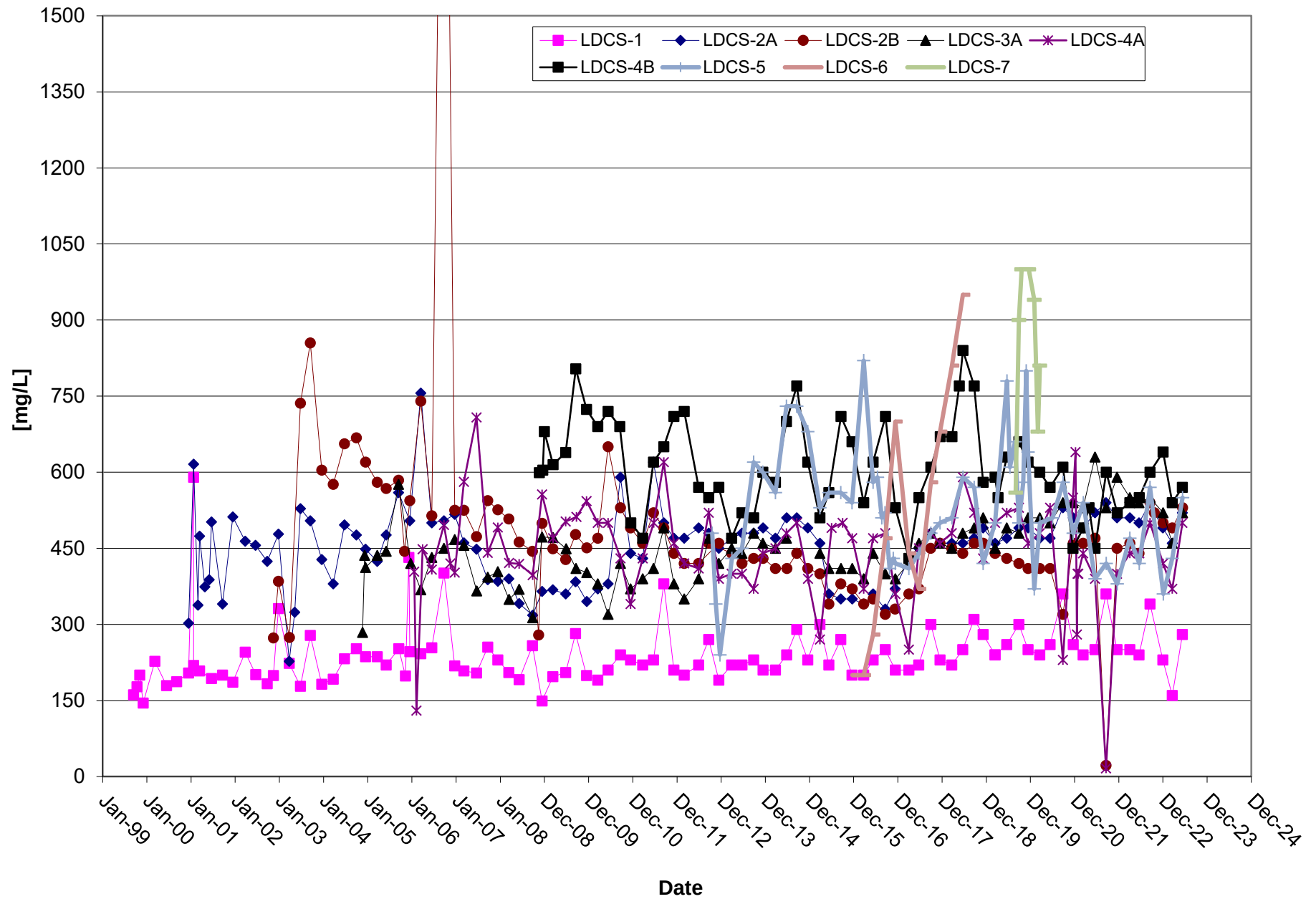
LRI Landfill, Pierce County, Washington



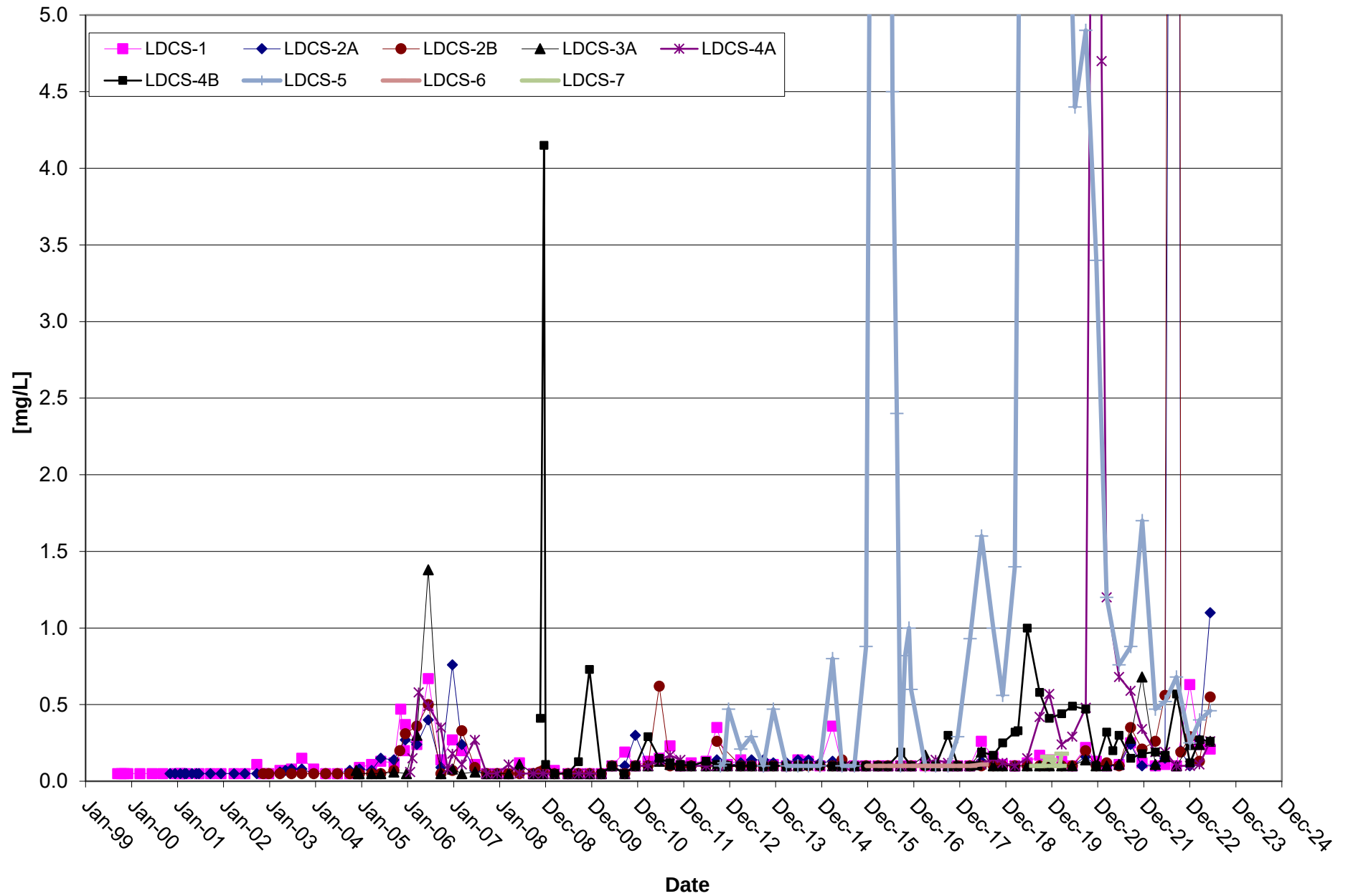
Sulfate (SO₄)



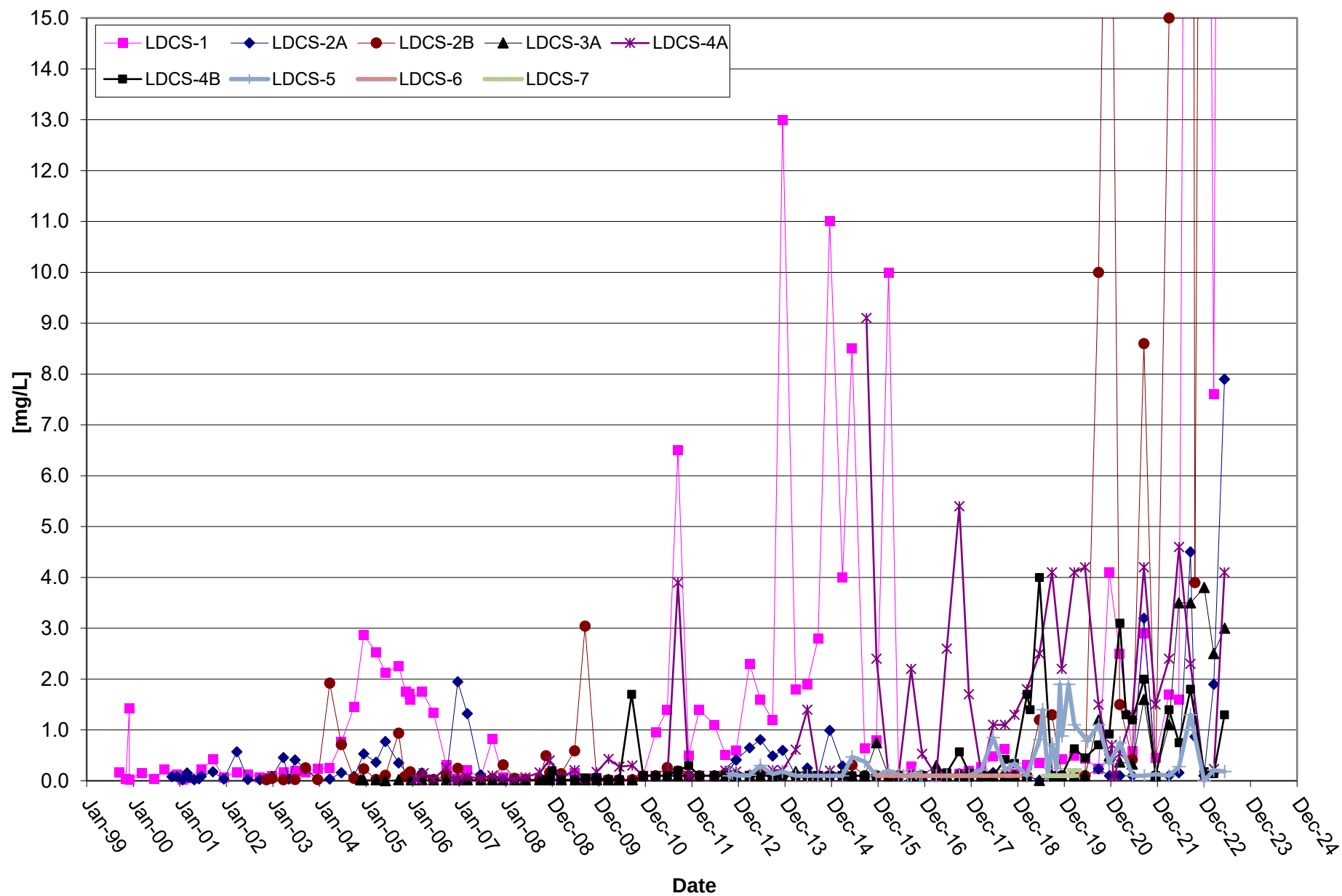
Total Dissolved Solids (TDS)



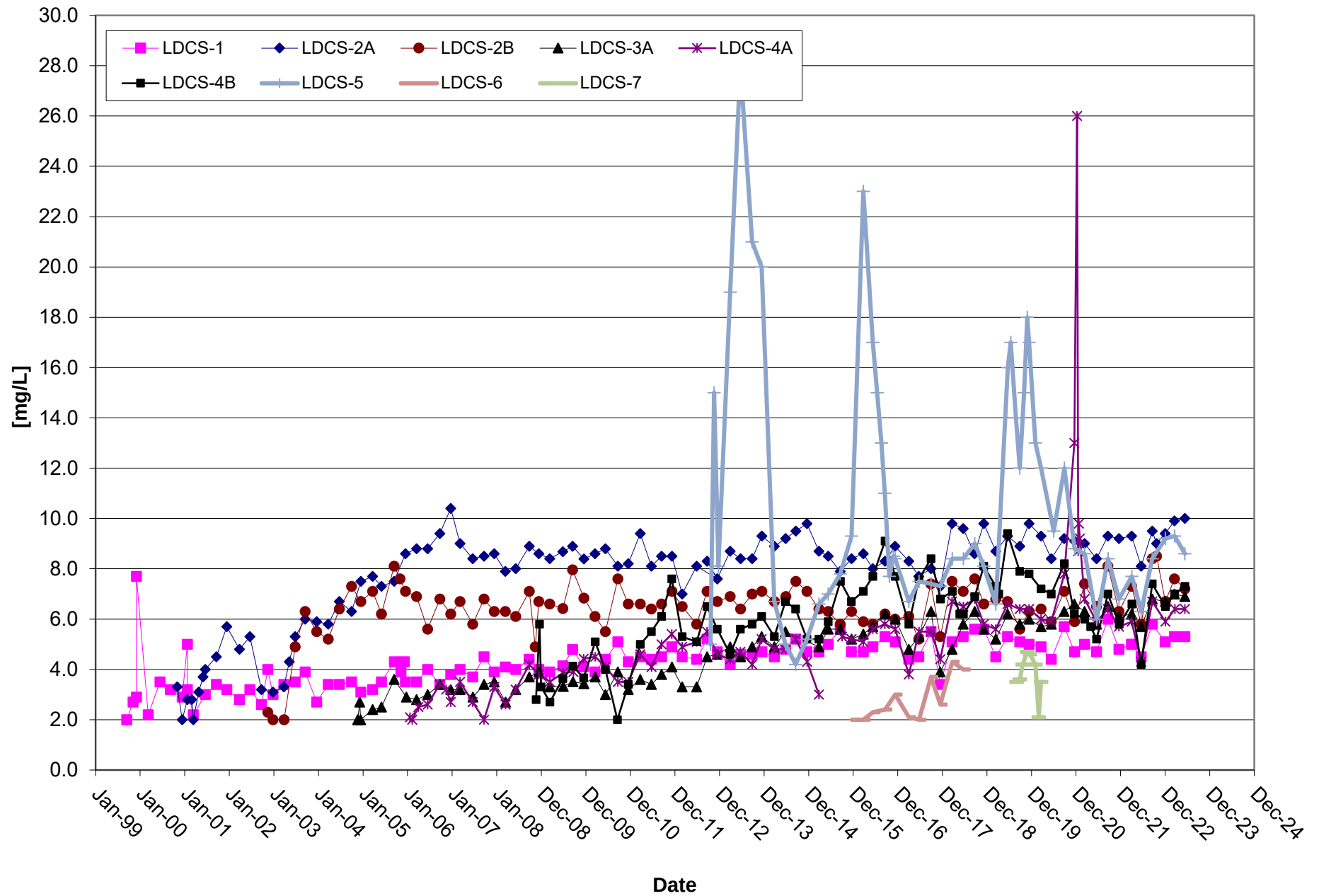
Ammonia



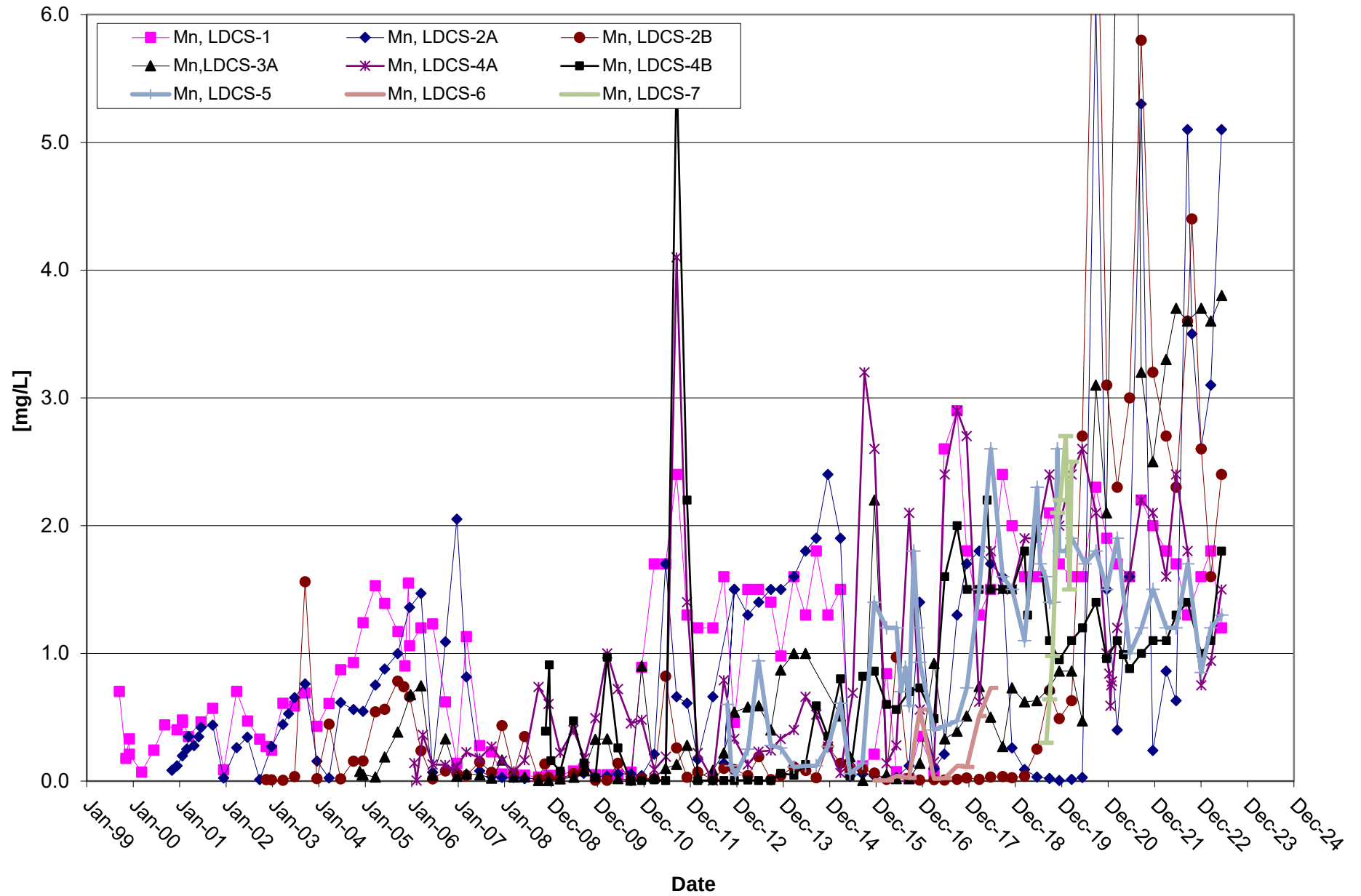
Iron



Potassium



Manganese





Attachment H

LDCS & Leachate Pumping Records and Conductivity Measurements

**Summary of LDCS Volumes Pumped and Conductivity Data
First Quarter 2023
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)	LDCS-8 Vol. (Gal)	LDCS-8 Cond. (µS/cm)*
4/1/2023	0.15	8,300	206	0	925	0	781	4,470	882	3,730	404	8,060	1,002	383	1,000	0	1,012	0	646	277	1000
4/2/2023	0.35	8,300	205	0	932	0	781	4,490	884	4,720	404	8,276	1,006	1,584	986	0	1,011	0	650	275	1000
4/3/2023	0.20	8,320	204	0	942	0	794	5,990	887	5,570	663	9,218	1,026	2,007	908	0	1,011	5,829	635	275	1000
4/4/2023	0.12	8,300	204	0	520	0	794	4,520	893	3,690	647	10,664	1,049	1,139	867	0	1,011	0	620	273	1000
4/5/2023	0.00	8,290	104	6,228	456	2,043	792	4,640	472	3,140	515	11,330	1,061	654	874	0	1,010	0	619	55	1000
4/6/2023	0.05	8,340	136	433	268	0	860	6,140	603	3,660	441	10,438	1,063	586	895	0	1,011	5,502	623	274	1000
4/7/2023	0.27	9,200	175	2,066	636	11,688	885	6,090	787	4,960	608	10,926	1,068	1,554	911	0	1,012	0	620	443	1000
4/8/2023	0.30	8,350	189	0	796	0	885	4,560	854	5,260	688	13,712	1,067	1,644	876	0	1,013	0	625	273	1000
4/9/2023	0.20	8,310	194	2,413	837	2,707	885	6,110	882	5,220	688	14,714	1,059	2,901	853	0	1,013	6,079	632	276	1000
4/10/2023	0.70	9,180	195	1,123	861	4,631	885	4,490	891	7,320	689	18,412	1,037	7,848	776	10	1,013	5,161	620	566	1000
4/11/2023	0.90	8,400	195	1,219	879	1,839	885	6,010	891	7,360	516	22,146	1,008	4,077	690	0	1,008	2,255	596	275	1000
4/12/2023	0.15	9,250	194	1,206	892	4,393	885	6,150	892	7,290	300	22,026	1,011	1,502	665	0	1,003	0	568	274	1000
4/13/2023	0.00	9,280	194	1,213	895	4,019	929	4,570	893	7,170	404	20,334	1,017	933	692	0	1,001	5,660	553	274	1000
4/14/2023	0.00	9,270	192	1,207	903	1,556	930	6,170	892	5,820	420	16,810	1,017	696	725	1	1,000	0	572	274	1000
4/15/2023	0.00	9,280	192	0	900	0	939	6,090	891	3,130	429	13,588	1,021	520	755	0	999	0	571	272	1000
4/16/2023	0.00	9,290	191	2,807	892	3,073	939	4,530	889	4,790	429	12,080	1,019	1,179	776	0	1,000	5,538	568	278	1000
4/17/2023	0.40	9,320	189	0	893	0	956	5,990	885	6,690	436	13,460	1,000	1,643	762	0	999	0	586	462	1000
4/18/2023	0.01	8,930	187	2,203	898	2,541	952	5,990	881	5,140	461	14,216	978	1,069	754	0	999	1,276	593	277	1000
4/19/2023	0.10	8,610	186	1,189	891	16,228	952	6,050	883	4,480	250	15,852	961	1,209	754	0	1,000	4,212	600	0	357.93
4/20/2023	0.00	8,390	187	1,325	873	6,484	963	4,480	886	3,190	606	15,414	951	723	756	0	1,000	0	609	278	616
4/21/2023	0.15	8,350	187	1,215	867	1,417	963	6,090	888	3,060	677	15,190	948	652	770	0	1,001	0	606	275	858.8
4/22/2023	0.01	9,080	186	0	866	0	963	6,270	887	3,110	453	14,798	945	584	784	0	1,000	0	605	277	948.08
4/23/2023	0.35	8,470	184	2,502	882	59,545	963	4,600	881	6,540	453	17,014	939	2,185	791	0	999	5,482	610	277	980.9
4/24/2023	0.45	9,270	183	1,540	894	6,095	963	6,140	877	5,790	602	19,312	927	2,112	760	0	999	5,585	618	275	394.29
4/25/2023	0.05	8,400	101	887	491	843	881	4,820	882	3,870	620	18,692	925	929	745	0	998	0	619	276	585.54
4/26/2023	0.00	8,410	117	1,105	573	3,575	881	6,290	885	3,690	645	17,224	926	652	759	0	998	0	612	0	849.49
4/27/2023	0.00	9,250	157	1,298	779	1,298	966	4,910	886	3,610	661	15,758	929	582	778	0	998	3,870	603	276	944.63
4/28/2023	0.00	8,490	171	1,222	863	2,595	963	6,400	885	3,540	576	14,724	929	452	797	0	999	1,656	605	277	979.63
4/29/2023	0.00	9,240	175	0	903	0	961	4,950	884	3,440	548	13,880	930	513	815	4	1,000	0	615	278	992.51
4/30/2023	0.00	9,260	175	0	919	0	958	6,220	882	3,260	0	13,038	931	450	831	0	998	0	627	316	997.24
5/1/2023	0.00	8,420	174	1,236	929	3,010	958	6,140	879	3,340	562	12,666	931	448	848	0	998	0	0	276	998.99
5/2/2023	0.00	9,250	172	1,295	942	2,213	964	4,790	877	3,330	507	12,174	934	384	870	0	1,000	0	0	276	999.63
5/3/2023	0.00	8,420	171	1,301	948	748	960	4,870	877	3,480	539	11,992	938	448	898	0	1,003	5,525	0	278	999.86
5/4/2023	0.01	9,150	169	1,200	943	3,235	955	6,130	877	3,670	554	11,688	942	384	921	0	1,002	0	0	275	999.95
5/5/2023	0.57	8,470	168	1,211	933	2,108	955	6,090	877	4,820	592	13,164	943	1,322	933	0	1,005	0	0	277	999.98
5/6/2023	0.04	8,380	165	0	901	0	949	4,680	865	5,760	620	16,856	937	1,713	877	0	1,003	0	0	7	979.37
5/7/2023	0.00	8,380	63	1,973	336	2,646	925	4,630	337	4,940	682	18,200	891	1,491	795	1	999	5,192	0	0	41.84
5/8/2023	0.00	9,280	128	0	687	0	948	6,310	687	4,920	558	19,000	861	1,140	794	0	998	0	0	276	511.18
5/9/2023	0.00	8,410	152	2,950	824	3,105	952	4,850	817	3,180	589	19,004	847	714	802	0	1,000	6,556	0	276	820.1
5/10/2023	0.00	9,200	160	1,314	876	6,411	948	6,330	864	2,860	533	17,804	845	514	817	0	998	217	0	278	933.84
5/11/2023	0.00	8,330	163	1,084	896	318	955	4,960	880	2,710	443	16,416	851	513	829	0	1,001	0	0	277	974.83
5/12/2023	0.00	8,330	164	1,180	901	2,668	942	5,000	887	2,550	443	15,072	860	511	839	0	999	3,716	0	181	991.04
5/13/2023	0.00	8,360	164	0	899	0	938	6,330	889	2,530	441	14,222	868	447	848	0	998	0	0	276	996.7
5/14/2023	0.00	8,390	165	2,426	898	360	938	4,950	887	2,530	441	13,720	882	447	865	0	998	1,754	0	275	998.79
5/15/2023	0.00	8,370	166	1,218	0	1,595	942	4,920	884	2,700	435	13,314	902	446	890	0	998	2,553	0	275	999.55
5/16/2023	0.00	8,410	167	1,207	253	2,684	942	6,380	883	2,780	427	12,930	911	447	907	0	996	2,899	0	275	352.18
5/17/2023	0.00	8,570	168	1,210	627	1,158	943	4,840	884	2,550	704	12,538	918	447	922	0	992	0	0	275	616.48
5/18/2023	0.00	8,840	157	1,195	756	1,709	943	4,920	826	2,610	731	12,204	919	383	934	2	999	1,334	0	275	780.95
5/19/2023	0.00	7,500	69	0	374	0	915	4,730	364	2,840	902	11,706	916	447	937	0	933	0	0	274	259.47
5/20/2023	0.00	8,310	131	0	609	0	915	1,570	598	3,400	902	11,210	919	448	934	0	933	0	0	275	212.89
5/21/2023	0.00	7,800	73	3,583	348	4,501	915	6,090	344	3,480	902	10,964	919	382	942	3	933	4,139	0	273	228.25
5/22/2023	0.00	7,790	118	1,177	632	2,895	942	4,610	632	3,920	536	10,594	920	447	949	0	1,001	5,401	0	274	634.39
5/23/2023	0.00	8,040	150	1,533	798	3,030	939	4,580	797	4,210	528	10,364	922	447	952	0	997	0	0	274	865.22
5/24/2023	0.00	7,590	161	1,180	871	2,134	942	6,230	859	4,450	465	10,122	928	385	955	1	997	0	0	274	950.53
5/25/2023	0.00	8,290	164	771	909	634	944	4,740	881	4,440	386	10,044	934	447	956	0	998	5,478	0	3,482	989.43
5/26/2023	0.00	7,490	166	1,206	930	6,359	932	4,830	889	4,640	267	9,660	942	384	951	0	999	0	0	3,300	1000
5/27/2023	0.00	7,440	167	0	942	0	933	4,770	894	4,480	387	9,412	948	447	945	0	997	0	0	3,047	1000
5/28/2023	0.00	7,440	167	0	937	0	933	4,690	898	4,620	384	9,518	950	385	944	0	997	0	0	3,232	1000
5/29/2023	0.00	6,620	167	3,470	926	5,513	933	4,680	899	4,610	445	9,440	952	449	947	0	994	5,384	0	3,025	1000
5/30/2023	0.00	7,430	166	1,194	923	2,940	929	6,150	899	4,640	440	9,224	954	384	953	0	988	0	0	3,300	

Summary of LDCS Volumes Pumped and Conductivity Data
First Quarter 2023
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)	LDCS-8 Vol. (Gal)	LDCS-8 Cond. (µS/cm)*
6/2/2023	0.00	6,580	166	1,058	781	2,540	921	4,690	901	4,330	430	8,668	961	386	979	0	993	3	0	3,016	0
6/3/2023	0.00	6,590	167	0	857	0	921	4,650	902	4,190	443	8,676	964	450	974	0	998	0	0	3,013	0
6/4/2023	0.00	6,540	167	2,049	884	3,385	921	3,070	904	4,060	443	8,322	966	450	969	0	998	0	0	3,012	0
6/5/2023	0.00	5,720	167	1,058	894	2,949	926	4,630	904	4,090	441	8,178	967	450	970	0	998	5,309	0	3,012	0
6/6/2023	0.00	6,540	172	1,074	903	801	925	6,190	904	4,070	362	8,344	969	450	972	0	996	0	0	3,281	0
6/7/2023	0.00	6,550	174	1,212	917	1,047	925	3,170	902	4,160	382	8,258	973	451	975	0	999	0	0	2,277	0
6/8/2023	0.00	5,720	176	883	930	1,575	925	4,710	902	4,150	397	7,952	975	452	973	0	1,005	5,156	0	3,634	0
6/9/2023	0.00	5,710	177	0	925	0	925	4,630	903	4,640	445	8,228	975	520	970	0	1,008	131	0	3,035	0
6/10/2023	0.32	5,710	177	0	914	0	925	4,520	904	3,890	445	8,962	975	791	966	0	1,008	0	0	2,757	0
6/11/2023	0.10	5,700	177	2,960	909	1,427	925	4,630	906	3,530	445	9,574	969	653	954	0	1,008	0	0	2,752	0
6/12/2023	0.00	5,650	176	982	914	2,615	925	4,700	909	3,280	459	9,834	956	518	946	0	971	5,404	0	3,010	0
6/13/2023	0.00	5,690	174	939	926	3,771	925	1,500	912	3,040	433	9,424	950	452	949	0	967	0	0	2,742	0
6/14/2023	0.00	5,680	173	1,043	935	1,177	935	6,540	922	2,930	414	9,216	950	450	955	0	978	1	0	2,530	0
6/15/2023	0.00	5,690	173	1,125	928	3,280	919	4,620	918	2,750	440	8,966	954	451	961	0	970	0	0	2,556	0
6/16/2023	0.00	4,870	173	763	915	880	919	3,210	918	2,930	595	8,528	961	385	968	0	972	5,189	0	2,735	0
6/17/2023	0.19	5,680	172	0	912	1,915	919	4,550	917	4,840	440	9,436	965	450	976	0	992	0	0	2,741	0
6/18/2023	0.00	5,680	170	0	920	6,275	919	4,510	913	3,850	440	8,828	967	450	982	0	992	0	0	3,014	0
6/19/2023	0.17	4,870	169	2,982	934	2,560	916	4,600	909	3,560	427	8,050	959	518	981	0	1,005	2,688	0	2,770	0
6/20/2023	0.15	5,620	169	1,043	942	2,769	926	3,240	910	2,810	524	8,496	949	586	973	0	992	2,727	0	2,748	0
6/21/2023	0.25	4,840	170	875	930	2,032	918	4,630	918	2,440	456	9,020	935	584	958	0	992	1	0	2,748	0
6/22/2023	0.00	5,000	169	781	919	1,981	952	4,660	922	2,420	418	8,258	924	517	951	0	987	0	0	2,734	0
6/23/2023	0.00	5,210	167	972	922	0	911	3,130	921	2,450	404	7,394	922	451	956	0	983	4,864	0	2,731	0
6/24/2023	0.00	4,830	167	0	928	3,464	911	4,650	922	2,410	498	6,916	924	451	966	0	993	462	0	2,735	0
6/25/2023	0.00	4,830	167	1,748	927	4,908	911	3,110	925	2,410	498	6,488	931	385	973	0	993	0	0	2,730	0
6/26/2023	0.00	4,800	166	1,076	611	1,146	911	4,670	927	2,380	443	6,378	938	385	982	0	1,002	0	0	2,738	0
6/27/2023	0.00	4,810	166	842	545	2,418	926	3,100	927	2,540	443	6,174	945	385	992	0	1,019	5,257	0	3,015	0
6/28/2023	0.00	4,810	165	1,072	800	0	917	4,750	926	2,670	442	5,798	958	384	997	0	1,035	0	0	2,738	0
6/29/2023	0.00	4,810	165	0	894	0	917	3,170	929	3,270	413	5,950	974	320	999	0	1,033	0	0	2,737	0
6/30/2023	0.00	4,680	165	0	922	0	917	4,670	932	3,490	413	6,790	1,004	320	1,000	0	1,033	0	0	2,459	0

All conductivity probes were recalibrated on 5/11/22 by site staff
 -- Readings not available

**Summary of Leachate Volume and Depth Data
Second Quarter 2023
LRI Landfill, Pierce County, Washington**

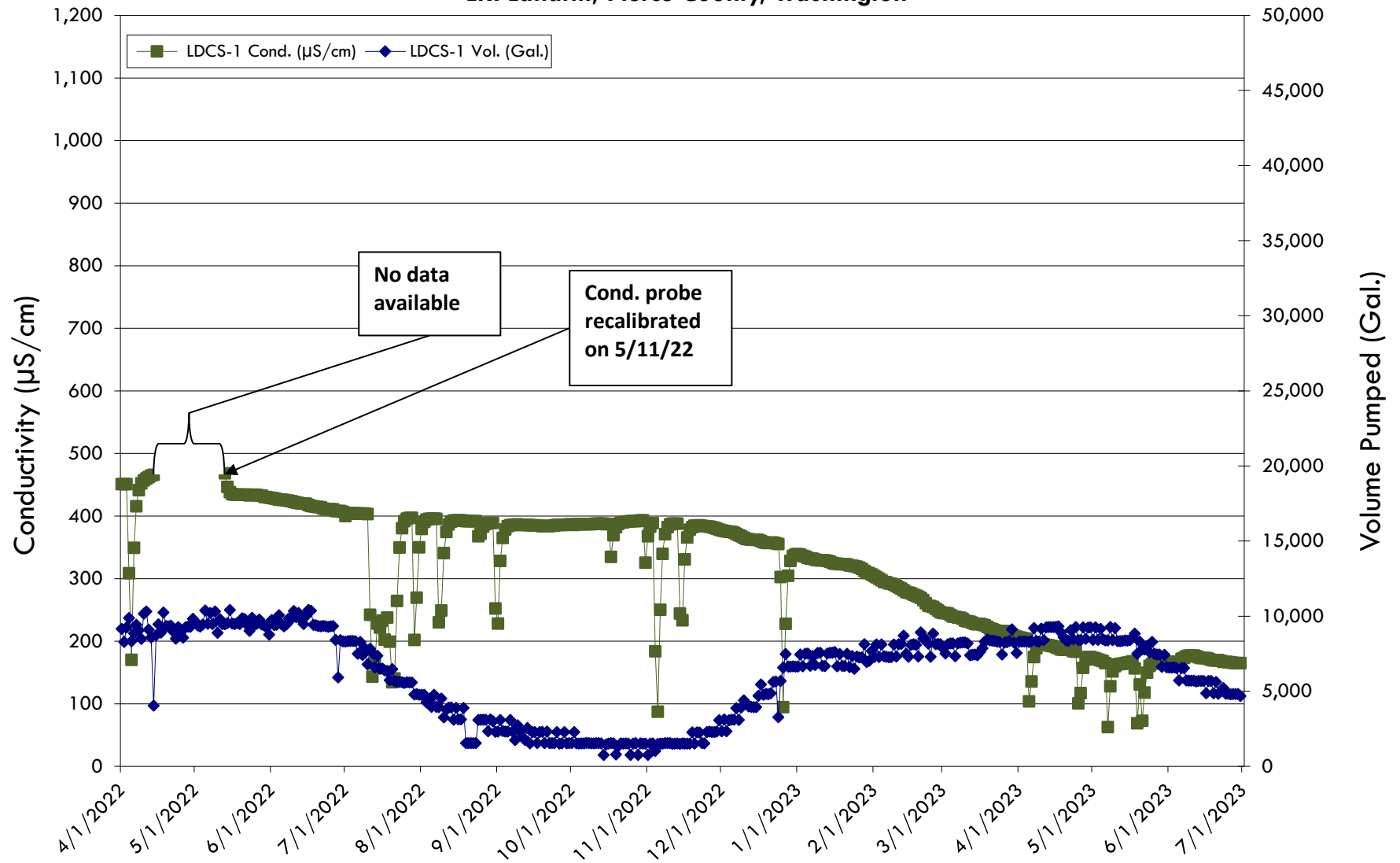
Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 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.)	Cell 8A Leachate Volume (GPD)	Cell 8A Leachate Level (in.)
4/1/2023	1,961	10.8	0	10.9	5,395	9.4	12,897	13.1	13,009	7.8	5,741	10.3	3,801	11.0	64,700	11.9	14,887	10.7	101	10.5
4/2/2023	2,214	10.7	8,098	7.6	5,336	9.4	12,737	14.4	17,928	8.9	6,000	10.4	3,917	11.0	42,340	12.1	14,877	10.7	7,271	10.1
4/3/2023	2,922	10.6	0	7.5	5,211	9.4	11,685	12.9	16,621	8.5	10,439	10.2	3,852	11.0	42,340	13.1	14,877	10.7	5,886	10.3
4/4/2023	1,393	10.9	3,087	7.4	5,005	9.9	11,460	10.5	5,825	8.9	6,093	10.2	3,663	11.0	32,868	11.7	10,264	10.9	3	10.0
4/5/2023	3,238	10.7	0	7.3	3,519	26.0	3,627	12.8	14,272	7.7	6,537	10.5	3,661	11.1	35,954	12.9	8,936	12.7	5,517	10.5
4/6/2023	4,425	10.6	2,757	7.3	6,369	27.5	16,641	13.1	21,482	6.6	9,500	10.4	3,968	11.0	35,954	11.1	4,146	12.0	6,545	10.2
4/7/2023	1,672	11.0	0	7.8	5,605	9.4	13,497	13.5	8,064	9.5	6,045	10.2	4,219	10.9	36,452	12.4	15,926	10.8	153	10.0
4/8/2023	3,029	10.8	0	9.0	5,253	9.5	12,942	12.4	14,539	8.4	8,805	10.4	3,911	11.0	36,452	12.6	14,381	10.9	5,919	10.5
4/9/2023	1,597	11.0	0	10.0	5,034	9.4	12,253	12.7	7,327	9.0	8,429	10.0	3,952	11.0	38,839	11.5	18,303	10.4	2	10.1
4/10/2023	4,027	10.6	6,661	7.9	5,054	9.5	12,231	13.0	15,738	6.8	6,925	10.4	4,120	10.9	38,839	12.8	18,303	10.0	26	10.7
4/11/2023	1,364	10.9	0	7.4	5,139	20.6	12,818	12.1	10,470	10.2	8,291	10.4	4,321	11.5	21,146	15.6	23,169	12.0	2	13.7
4/12/2023	3,470	10.7	0	8.5	4,984	15.0	13,285	13.7	15,505	8.7	6,191	10.5	3,925	11.3	36,812	13.7	20,958	11.2	2	10.5
4/13/2023	1,778	11.0	0	9.9	4,821	9.5	12,165	15.1	6,030	9.3	9,989	9.9	3,886	10.9	54,292	11.5	13,507	10.9	0	10.8
4/14/2023	1,887	11.4	0	10.7	4,909	9.4	12,166	14.4	4,044	9.2	6,630	10.4	3,799	10.9	38,328	12.3	10,867	11.0	0	10.7
4/15/2023	1,649	11.3	8,045	10.6	4,995	9.4	12,922	15.2	14,859	8.0	6,468	10.5	3,915	11.0	28,060	12.7	10,099	11.0	0	10.7
4/16/2023	1,772	11.3	0	6.9	5,181	9.4	13,126	14.7	11,434	9.4	8,292	10.4	3,908	11.0	47,430	11.6	14,250	10.7	3,033	10.3
4/17/2023	5,767	10.6	0	8.3	5,490	9.4	13,404	14.5	20,814	7.9	8,607	10.0	4,139	10.9	47,430	12.7	14,250	10.9	0	10.4
4/18/2023	1,602	11.1	0	9.0	5,213	9.4	14,849	10.5	28,347	7.6	5,866	10.5	3,964	11.0	31,237	11.7	9,922	10.8	0	10.1
4/19/2023	1,569	10.9	0	10.0	5,011	9.4	13,234	8.9	18,441	8.4	11,003	10.1	3,799	11.0	31,237	13.1	9,922	10.9	0	9.5
4/20/2023	1,838	10.9	0	10.9	5,009	9.4	11,564	8.8	25,155	10.4	6,156	10.1	3,635	11.0	31,730	12.1	11,285	11.0	0	9.8
4/21/2023	1,486	10.9	8,261	9.4	4,883	9.4	11,147	8.7	0	21.6	7,657	10.5	3,586	11.1	31,908	12.3	9,238	10.9	0	9.7
4/22/2023	3,472	10.9	3	7.5	5,068	9.4	10,388	13.0	0	22.4	15,002	9.9	3,761	11.0	34,630	12.1	10,239	11.0	0	9.4
4/23/2023	1,980	11.2	0	8.5	5,230	9.4	11,845	16.2	0	21.0	12,162	10.1	4,053	10.9	41,830	12.2	13,624	10.7	0	9.4
4/24/2023	1,984	11.1	0	9.4	4,933	13.0	12,172	12.2	0	20.3	9,809	10.4	3,853	11.2	41,830	14.2	13,624	10.9	0	10.8
4/25/2023	2,413	11.4	7,535	9.3	4,736	10.9	9,426	11.0	30,276	15.3	12,697	10.0	3,719	11.3	49,458	11.2	16,505	10.9	0	9.8
4/26/2023	1,715	11.4	0	6.5	4,900	9.4	9,359	13.1	40,362	6.8	5,247	10.1	3,639	11.0	32,208	12.3	6,784	10.9	0	9.8
4/27/2023	3,445	11.2	0	7.5	4,910	9.4	10,240	13.5	12,311	9.1	7,372	10.2	3,780	11.0	26,534	12.7	10,872	10.9	0	9.8
4/28/2023	2,059	11.0	0	8.8	5,006	9.4	10,841	14.7	21,227	8.2	7,094	10.4	3,898	11.0	38,254	12.2	11,781	11.0	0	9.7
4/29/2023	1,800	11.5	0	9.7	4,985	9.4	11,724	14.2	15,664	8.8	7,825	10.4	3,861	11.0	36,578	12.2	12,059	10.9	0	9.6
4/30/2023	3,533	11.0	0	10.6	5,191	9.4	10,533	15.4	14,531	8.9	5,933	10.5	3,920	10.9	0	12.5	0	10.8	0	9.5
5/1/2023	1,730	11.2	8,174	9.6	5,343	9.4	10,995	13.7	8,895	8.1	10,903	10.1	0	10.9	0	11.3	0	10.9	0	9.6
5/2/2023	3,410	11.1	0	7.6	4,830	9.4	11,162	13.7	9,779	9.2	9,203	10.0	8,488	10.8	35,051	12.0	11,603	10.9	9,787	9.8
5/3/2023	4,018	10.9	0	8.7	4,938	9.5	11,288	13.6	11,705	8.1	6,707	10.1	7,788	10.8	37,402	12.3	11,072	10.9	12,152	9.9
5/4/2023	1,728	11.2	0	9.4	5,307	9.4	11,692	10.8	14,904	8.7	5,263	10.5	8,608	10.9	34,821	12.2	12,058	10.7	20,767	9.8
5/5/2023	3,618	11.0	0	10.1	5,239	9.4	11,912	10.2	9,613	9.2	11,665	10.1	7,356	10.9	34,918	11.6	12,335	10.6	17,152	9.4
5/6/2023	1,795	10.9	1,299	11.4	4,985	9.4	11,122	10.2	11,516	8.4	6,693	10.5	7,708	10.9	33,506	12.5	18,258	10.7	36,431	9.6
5/7/2023	3,075	11.0	8,144	7.0	4,363	9.5	4,199	12.0	12,948	9.1	7,541	10.4	8,902	10.9	37,078	12.1	14,597	10.7	23,090	9.5
5/8/2023	3,187	10.8	0	7.0	4,856	9.5	5,461	9.5	8,149	8.6	10,328	10.2	8,902	10.9	37,078	12.0	14,597	10.9	46,180	8.6
5/9/2023	1,864	11.0	0	8.0	4,978	9.5	4,516	10.4	11,465	8.6	6,476	10.2	0	11.0	51,962	12.6	11,243	10.9	15,186	9.0
5/10/2023	3,084	11.0	0	9.2	4,661	9.5	4,492	12.4	6,575	8.8	7,402	10.4	0	11.0	51,962	12.1	11,243	10.9	15,186	9.5
5/11/2023	1,693	10.8	0	10.2	4,806	9.4	4,476	12.6	13,446	9.3	7,127	10.7	0	11.0	51,962	13.2	13,210	11.0	15,186	8.2
5/12/2023	1,576	11.2	0	11.0	4,696	9.5	4,358	12.8	6,539	9.0	7,125	10.4	3,115	11.0	27,850	12.0	9,976	10.8	11,107	8.7
5/13/2023	2,796	11.0	8,620	8.7	4,710	9.5	4,307	13.7	14,504	8.8	8,930	10.3	3,623	11.0	34,026	12.0	12,022	10.9	11,155	9.2
5/14/2023	3,254	10.9	0	7.0	4,779	9.5	4,398	13.9	6,745	8.8	6,692	10.5	3,759	10.9	33,262	11.8	11,193	10.9	6,588	14.0
5/15/2023	3,251	11.0	0	0.0	4,775	9.5	4,605	12.3	6,839	9.0	10,720	10.3	3,759	10.9	33,262	12.1	11,193	10.9	6,588	20.7
5/16/2023	2,952	10.7	1	9.6	4,851	9.5	4,500	10.9	12,654	9.3	6,984	10.1	3,886	11.0	32,294	12.6	10,825	11.2	4,770	16.8
5/17/2023	3,373	10.7	0	10.6	4,968	9.5	4,508	13.4	8,795	8.8	6,446	10.5	3,853	10.9	32,382	12.3	11,382	10.7	42,750	9.8
5/18/2023	1,625	11.1	6,895	9.4	4,799	9.5	4,672	14.0	10,742	9.2	10,198	10.3	3,810	10.8	38,716	12.5	11,718	10.6	13,733	9.9
5/19/2023	2,929	11.0	0	8.0	4,492	9.5	4,564	9.5	8,996	8.7	5,918	10.3	3,951	11.0	38,716	12.3	11,090	10.9	17,265	9.4
5/20/2023	1,642	11.2	0	30.0	4,357	9.5	184	61.7	6,851	9.0	5,576	10.6	3,699	10.9	32,601	12.0	10,901	11.8	10,880	9.0
5/21/2023	2,976	10.8	0	14.9	4,625	9.5	1,248	24.5	13,838	9.2	8,677	10.2	3,699	10.9	32,601	13.0	10,901	11.9	10,880	9.9
5/22/2023	1,704	10.9	0	10.7	4,817	9.5	16,373	8.5	7,182	9.0	5,553	10.4	3,699	11.0	32,601	12.1	10,901	10.7	10,880	9.6
5/23/2023	3,211	10.8	0	11.8	4,969	9.5	8,318	12.0	7,157	8.6	7,170	10.5	3,601	11.0	31,834	12.5	11,405	10.8	14,368	9.8
5/24/2023	3,309	10.6	0	12.6	4,918	9.5	9,358	13.9	7,420	8.7	8,626	10.0	4,553	10.9	49,016	11.5	12,564	10.7	13,308	9.8
5/25/2023	3,249	10.6	0	13.6	4,987	9.4	10,699	12.5	7,731	8.6	6,475	10.5	3,714	10.9	29,571	0.0	8,901	10.9	13,703	9.2
5/26/2023	1,536	11.0	0	14.5	4,917	9.5	9,379	14.3	6,842	9.0	11,035	10.1	2,574	10.9	30,837	0.0	9,146	10.8	11,599	8.9
5/27/2023	1,703	11.3	0	15.0	5,071	9.4	6,651	14.1	6,506	9.3	6,091	10.2	3,952	10.9	39,386	0.0	12,146	10.6	11,599	9.2
5/28/2023	3,156	10.9	0	15.7	5,265	9.4	5,666	13.8	6,563	9.4	5,951	10.6	3,741	10.9	33,558	0.0	10,136	10.8	14,247	9.3
5/29/2023	3,286	10.7	0	16.7	5,194	9.5														

Summary of Leachate Volume and Depth Data
Second Quarter 2023
LRI Landfill, Pierce County, Washington

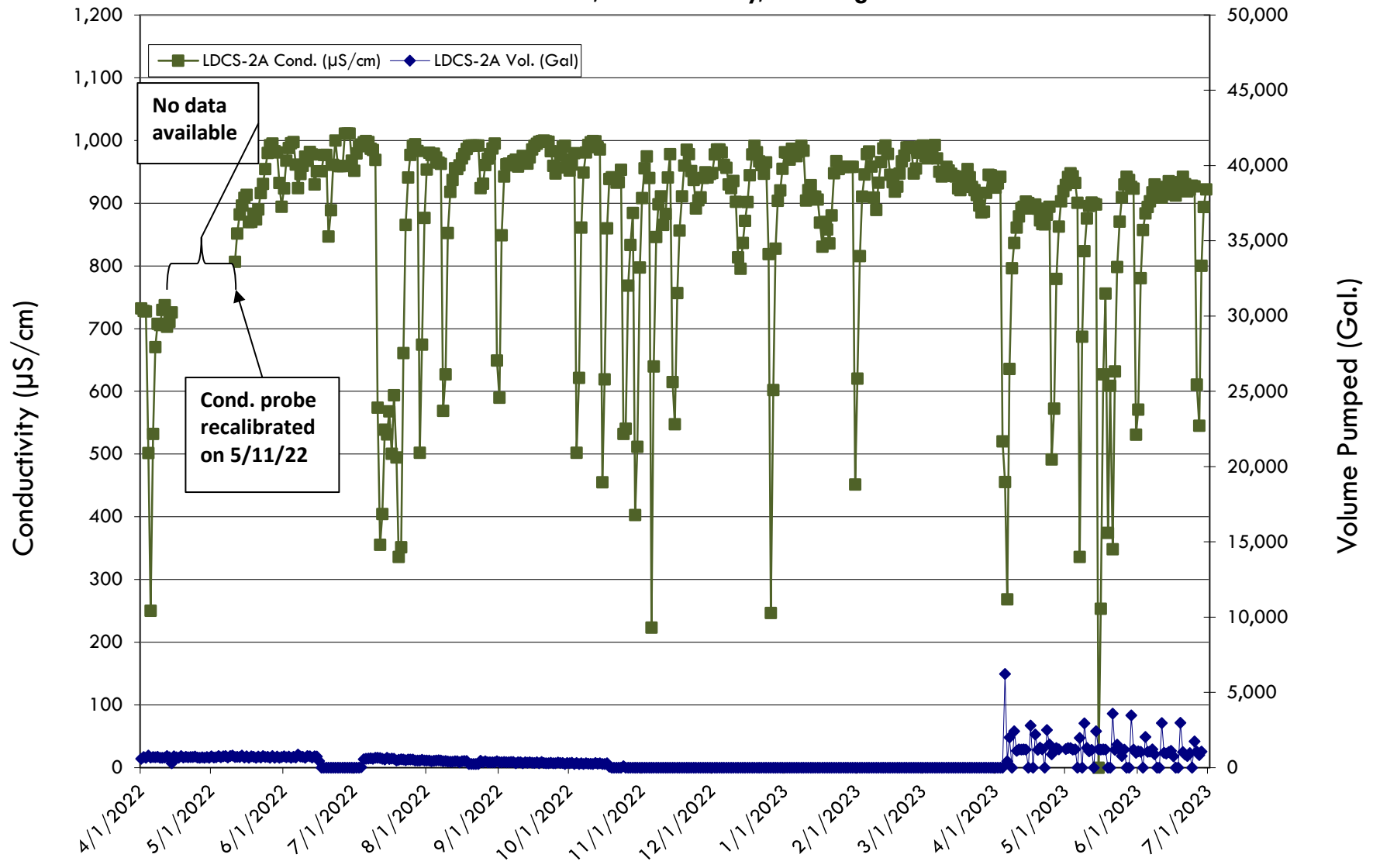
Date	Cell 1 Leachate Volume (GPD)	Cell 1 Leachate Level (in.)	Cell 2A Leachate Volume (GPD)	Cell 2A Leachate Level (in.)	Cell 2B Leachate Volume (GPD)	Cell 2B Leachate Level (in.)	Cell 3A Leachate Volume (GPD)	Cell 3A Leachate Level (in.)	Cell 4A Leachate Volume (GPD)	Cell 4A Leachate Level (in.)	Cell 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.)	Cell 8A Leachate Volume (GPD)	Cell 8A Leachate Level (in.)
6/3/2023	1,729	10.9	0	9.7	4,920	9.5	7,847	13.6	6,613	9.0	6,580	10.5	3,584	10.9	16,544	0.0	10,571	10.7	7,282	8.9
6/4/2023	3,364	10.7		10.6	4,975	9.5	6,869	13.8	6,568	9.1	9,945	10.2	3,549	10.9	16,544	0.0	9,017	10.9	7,282	9.0
6/5/2023	2,949	10.7	8,019	8.6	5,049	9.5	8,870	13.8	8,145	9.7	5,794	10.1	3,549	10.9	16,544	0.0	9,017	10.8	7,282	9.1
6/6/2023	3,353	10.6	0	7.6	5,152	9.4	8,307	12.4	6,861	8.8	6,593	10.5	3,725	11.0	34,837	0.0	10,053	10.7	16,833	9.2
6/7/2023	1,648	10.9	0	8.5	5,011	9.5	7,118	14.0	6,664	9.3	10,637	10.1	3,841	10.9	38,979	0.0	8,690	10.9	16,040	9.3
6/8/2023	1,778	11.2	0	9.5	5,101	9.5	6,664	12.9	6,581	9.5	5,853	10.3	4,460	10.9	41,541	0.0	10,918	10.8	10,650	9.0
6/9/2023	1,759	11.3	22	10.4	5,221	9.5	6,583	13.0	20,663	8.6	5,372	10.5	3,497	10.9	29,893	0.0	9,228	10.7	14,062	9.5
6/10/2023	3,508	10.7	7,998	10.2	5,217	9.4	7,656	13.3	14,323	8.2	10,292	10.1	3,533	10.9	30,974	0.0	10,400	10.8	13,924	9.9
6/11/2023	1,528	10.9	0	7.2	5,071	9.5	10,762	14.4	6,673	9.0	5,602	10.4	3,533	10.9	30,974	0.0	10,400	10.8	13,924	9.6
6/12/2023	3,110	10.9	0	8.5	4,914	9.5	8,602	13.6	6,890	9.1	6,658	10.5	3,533	10.9	30,974	0.0	10,400	10.9	13,924	9.8
6/13/2023	2,204	11.3	0	9.4	4,719	27.4	6,658	10.7	10,283	10.5	5,631	10.5	3,634	11.5	34,253	0.0	9,955	11.3	13,924	10.1
6/14/2023	1,537	10.9	23	10.4	5,362	9.3	12,529	9.3	16,214	8.0	10,354	10.0	3,973	10.9	30,535	0.0	9,936	11.0	14,764	8.8
6/15/2023	1,839	11.1	4,718	10.5	4,888	9.5	9,444	10.6	7,221	9.1	5,971	10.4	3,352	10.9	41,055	0.0	7,690	10.9	13,940	9.9
6/16/2023	1,699	11.4	0	9.7	4,676	9.9	9,825	11.8	7,597	8.4	8,475	10.3	4,057	9.8	27,147	0.0	9,935	11.1	11,158	9.3
6/17/2023	3,674	10.9	0	10.2	5,160	9.5	10,197	14.3	13,681	8.8	5,656	10.2	3,697	10.8	32,185	0.0	6,949	10.8	11,158	9.7
6/18/2023	1,773	11.0	0	11.0	8,532	9.3	11,231	13.9	13,125	8.8	5,506	10.5	3,992	10.7	32,816	0.0	11,809	10.7	17,518	9.8
6/19/2023	3,302	10.9	0	12.0	7,650	9.4	10,732	13.5	6,571	9.0	10,399	10.2	3,992	10.8	32,816	0.0	11,809	10.7	17,518	9.4
6/20/2023	1,581	11.0	0	12.6	5,213	23.0	10,677	9.7	5,673	8.2	5,696	10.3	3,992	11.5	19,151	0.0	9,018	11.3	19,581	9.9
6/21/2023	3,371	10.9	11,487	9.7	4,729	9.3	10,145	10.9	7,379	9.0	6,118	10.5	4,845	10.8	41,413	0.0	12,945	10.9	17,792	9.9
6/22/2023	3,301	10.7	0	7.5	4,816	9.4	10,053	13.8	6,922	9.2	10,340	10.2	3,473	10.8	29,822	0.0	8,538	10.8	6,724	9.9
6/23/2023	1,883	10.9	0	8.5	4,963	9.3	11,051	12.4	7,120	9.2	5,793	10.1	3,597	10.8	29,822	0.0	8,106	10.9	13,441	9.7
6/24/2023	1,760	11.0	0	9.5	4,600	9.4	10,638	11.4	30,334	8.4	6,126	10.5	3,764	10.9	42,309	0.0	10,640	10.9	14,732	9.5
6/25/2023	1,867	11.4	0	10.6	4,826	9.4	10,577	12.6	7,035	9.2	11,011	10.1	3,637	10.8	25,840	0.0	7,242	10.9	11,047	9.9
6/26/2023	4,213	10.9	2,782	11.0	4,442	21.9	7,280	13.0	6,695	8.7	6,624	10.4	3,637	10.8	25,840	11.9	7,242	11.5	11,047	8.9
6/27/2023	1,644	11.0	0	10.6	5,081	9.4	6,633	12.8	7,236	9.2	10,894	10.1	4,089	10.8	25,840	11.7	9,279	10.9	11,266	9.2
6/28/2023	1,839	11.3	0	11.6	4,971	9.4	5,297	12.0	7,476	8.9	6,274	10.4	3,362	10.8	25,659	12.1	7,813	10.9	9,940	9.3
6/29/2023	1,904	11.5	0	12.6	4,786	9.4	5,835	12.4	12,745	8.7	10,658	10.1	4,638	10.8	42,000	12.9	10,259	11.0	9,940	9.3
6/30/2023	3,586	11.1	0	13.5	4,739	9.4	6,788	12.7	7,283	9.1	6,149	10.3	0	10.8	0	12.9	0	10.9	0	9.1

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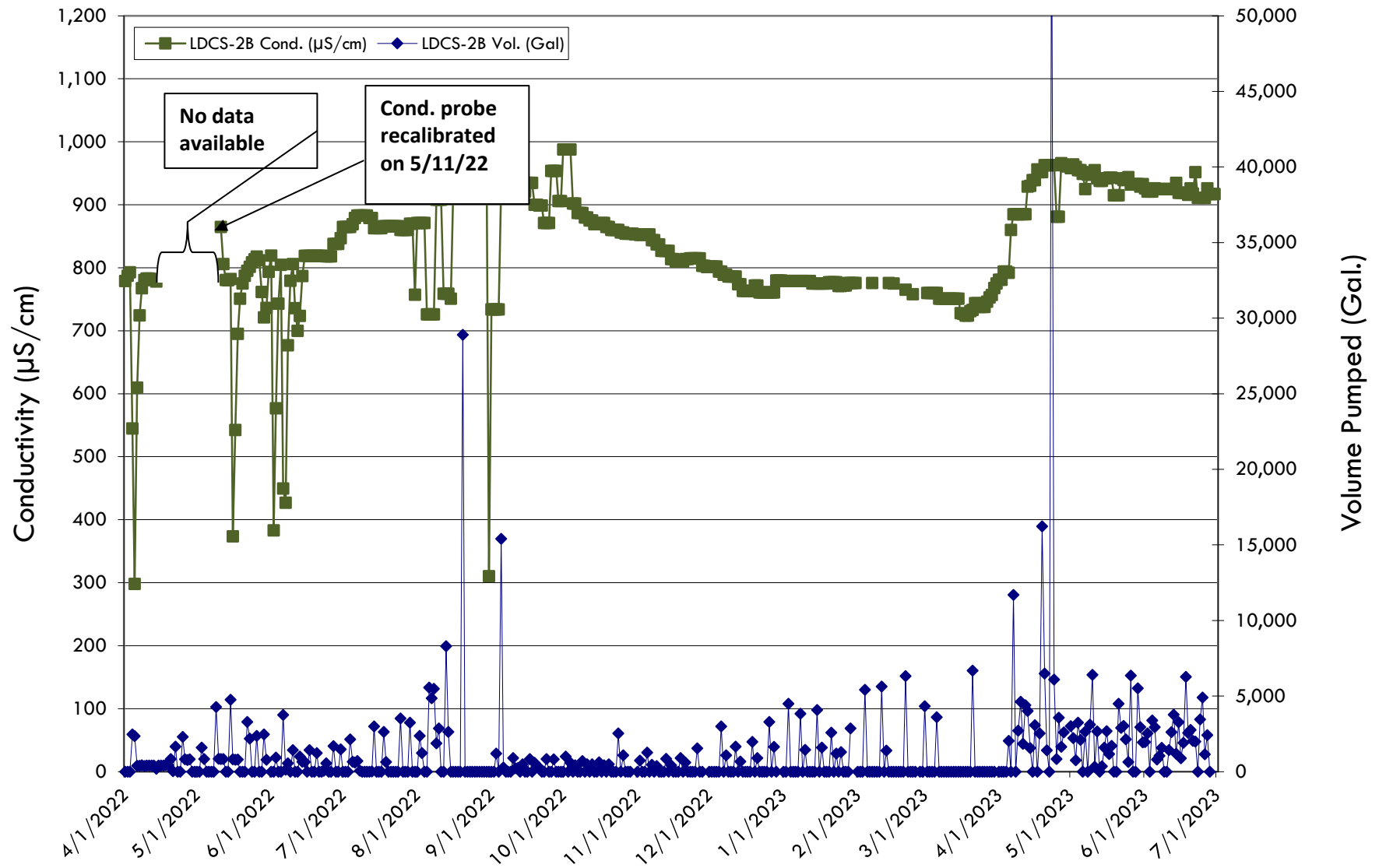
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



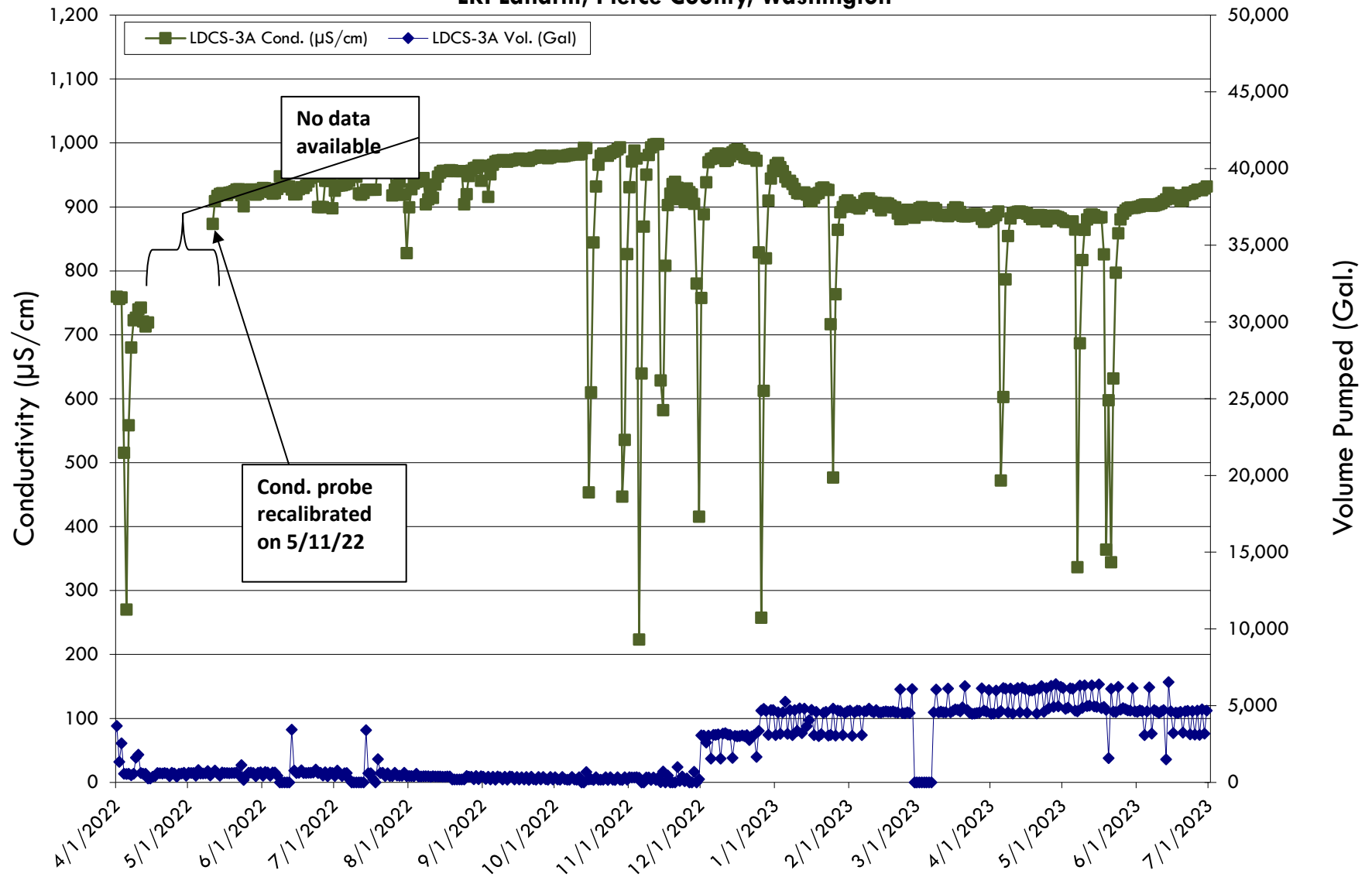
LDCS-2A (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



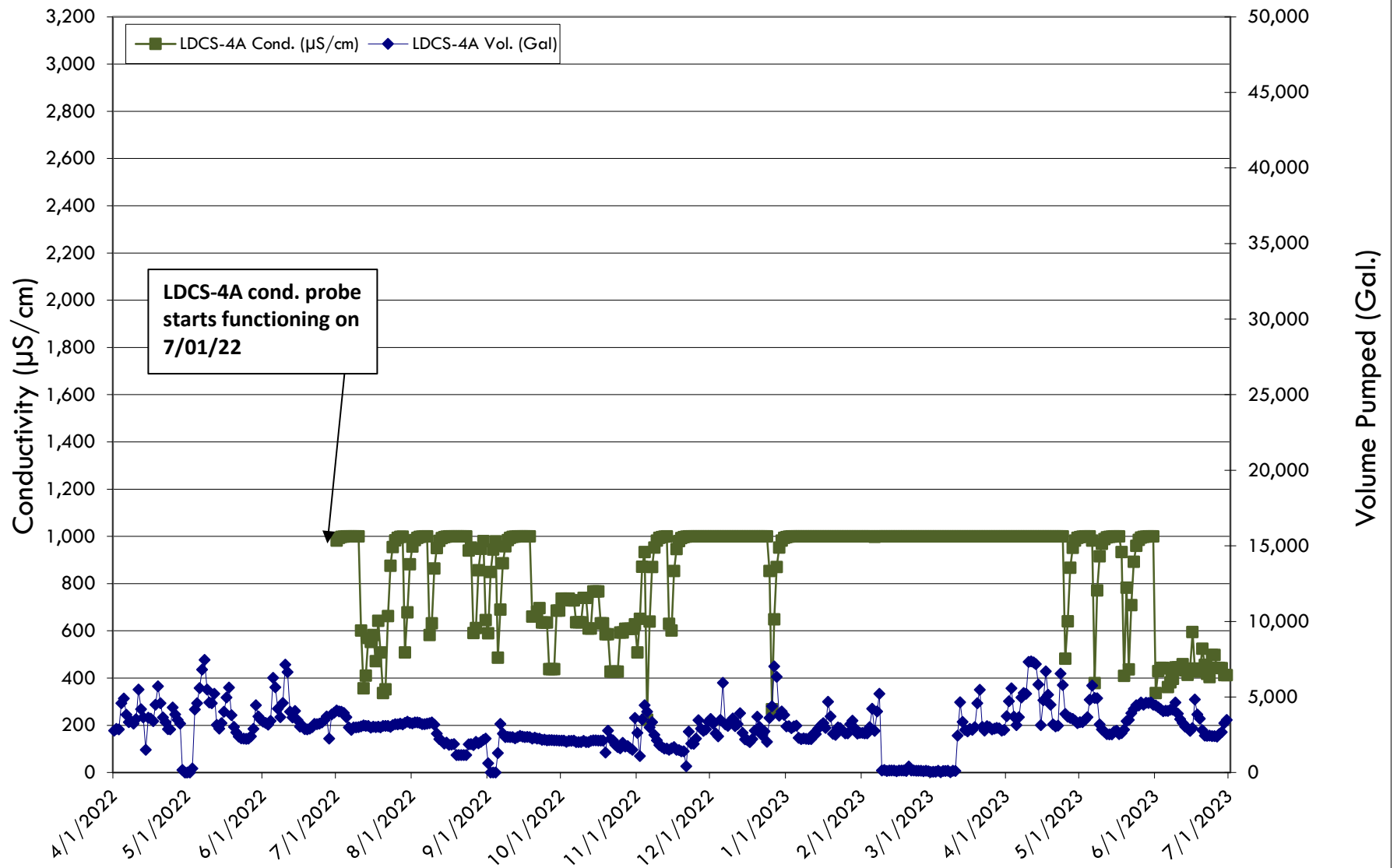
LDCS-2B (Daily Totals)
Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



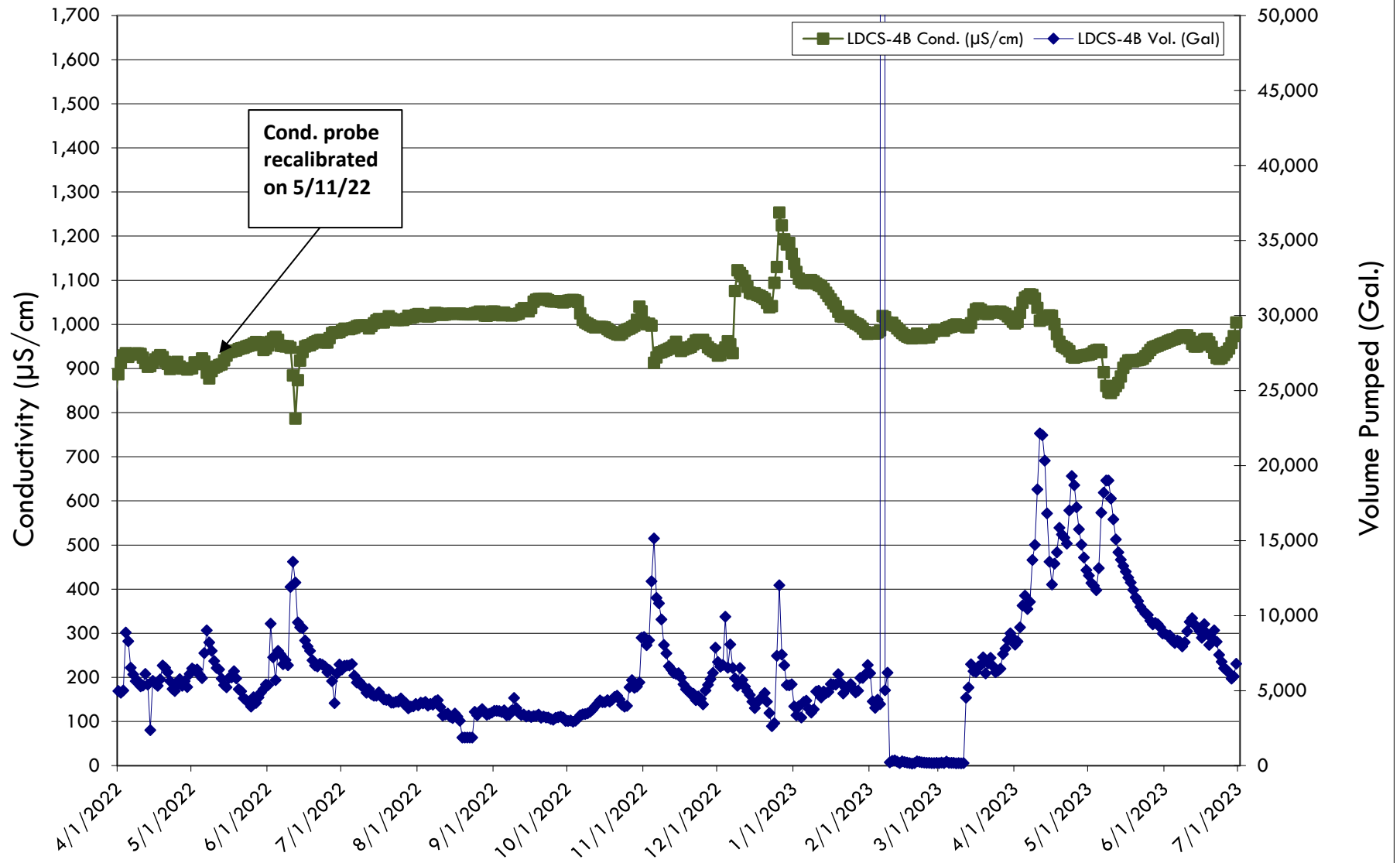
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



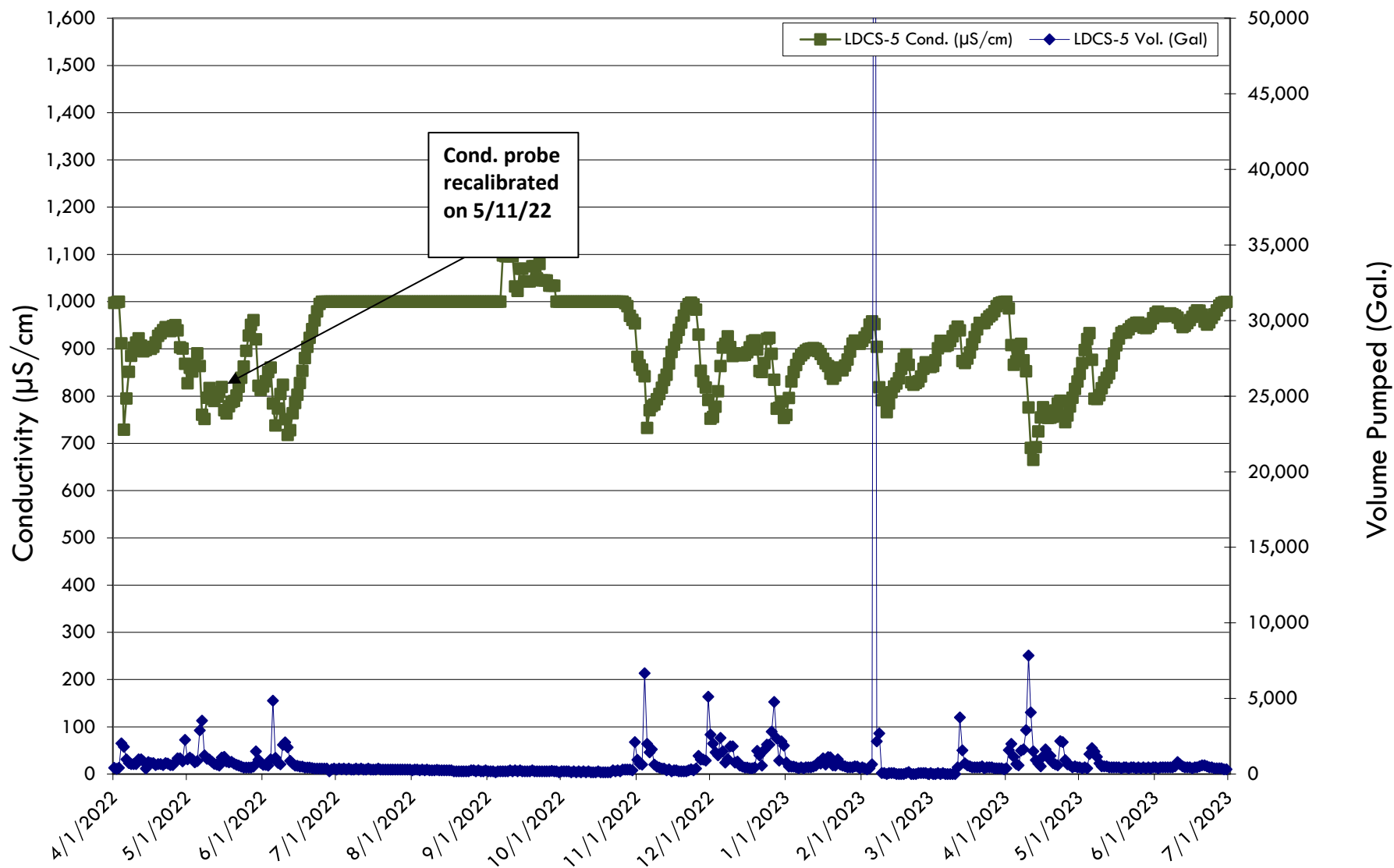
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



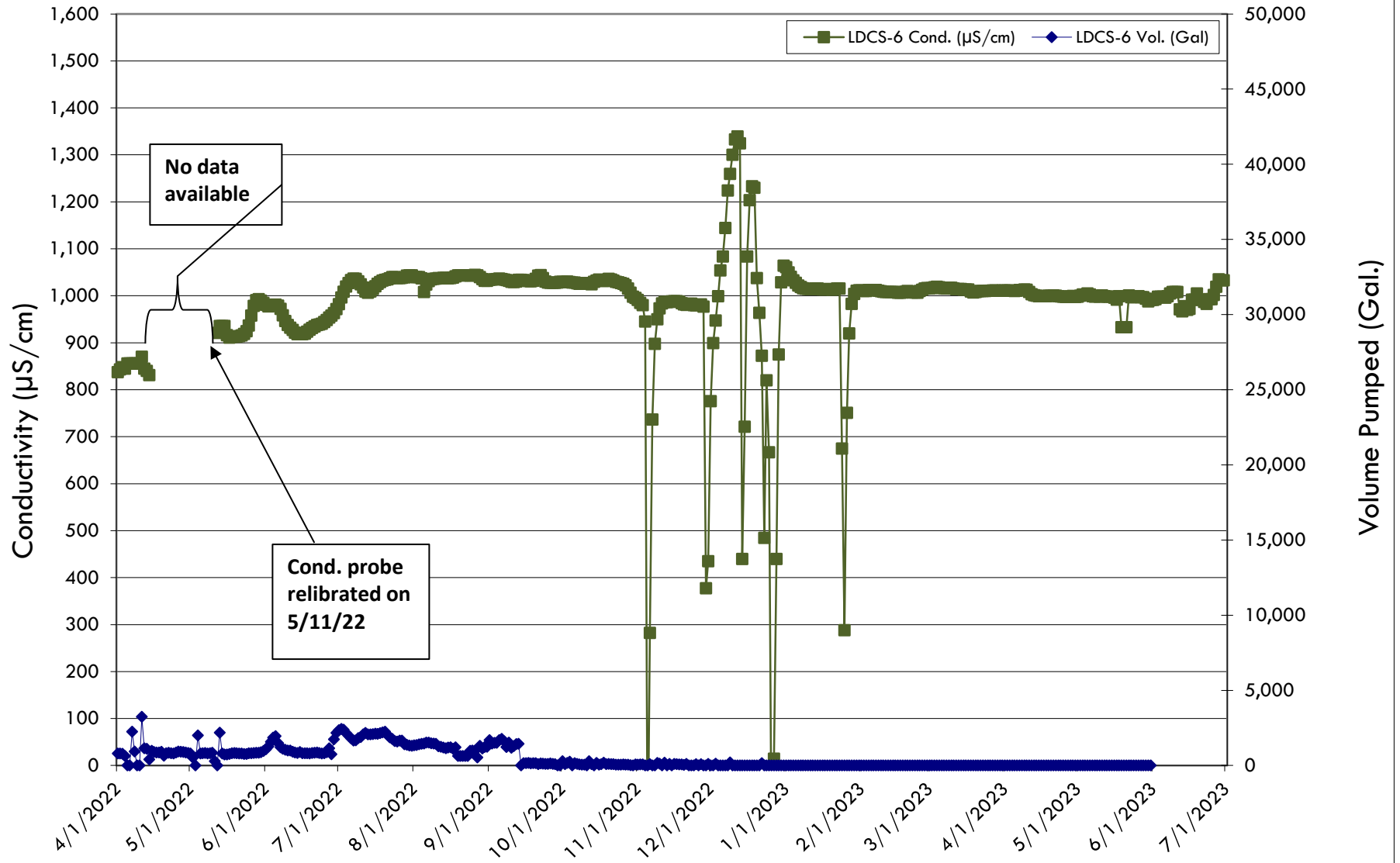
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



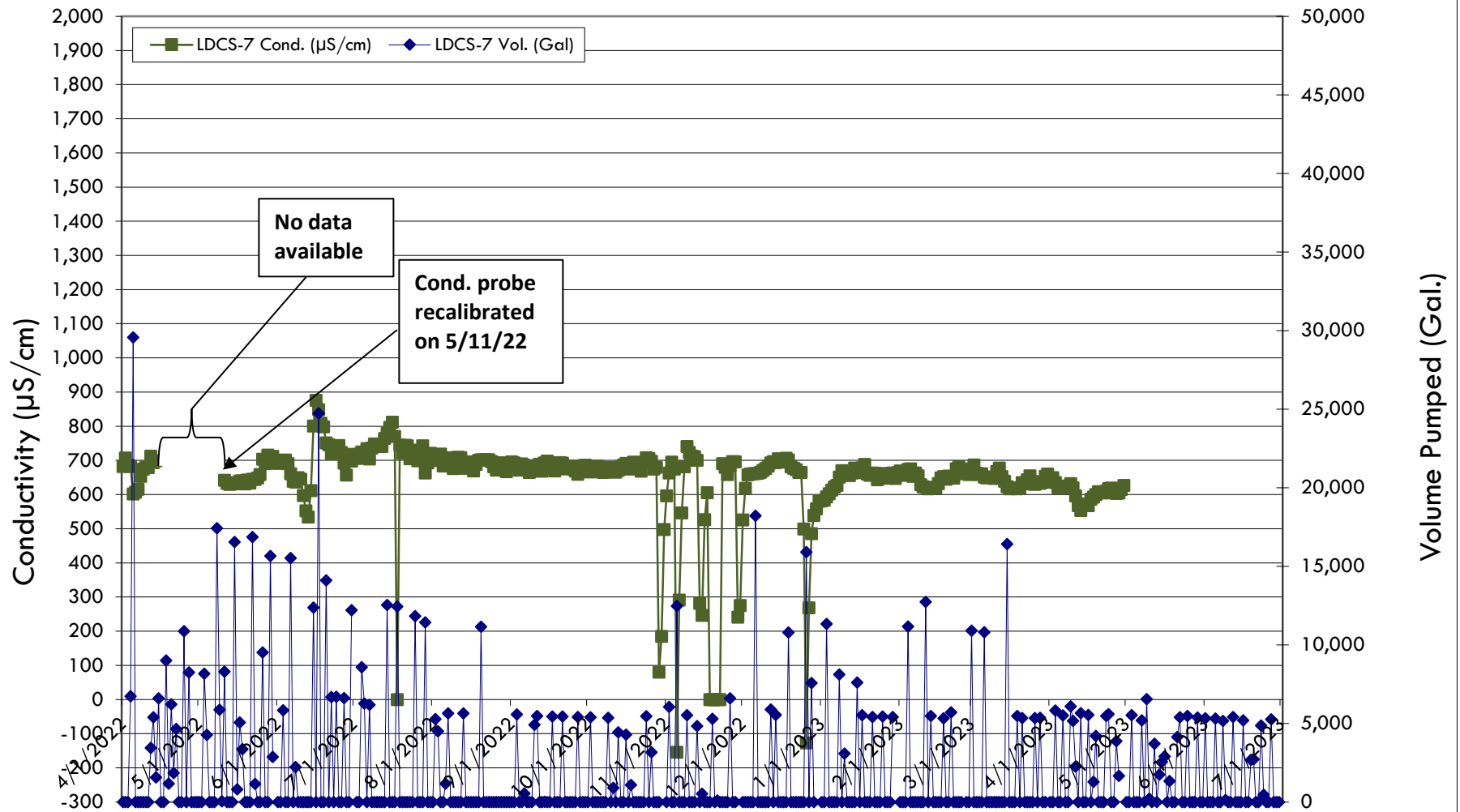
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



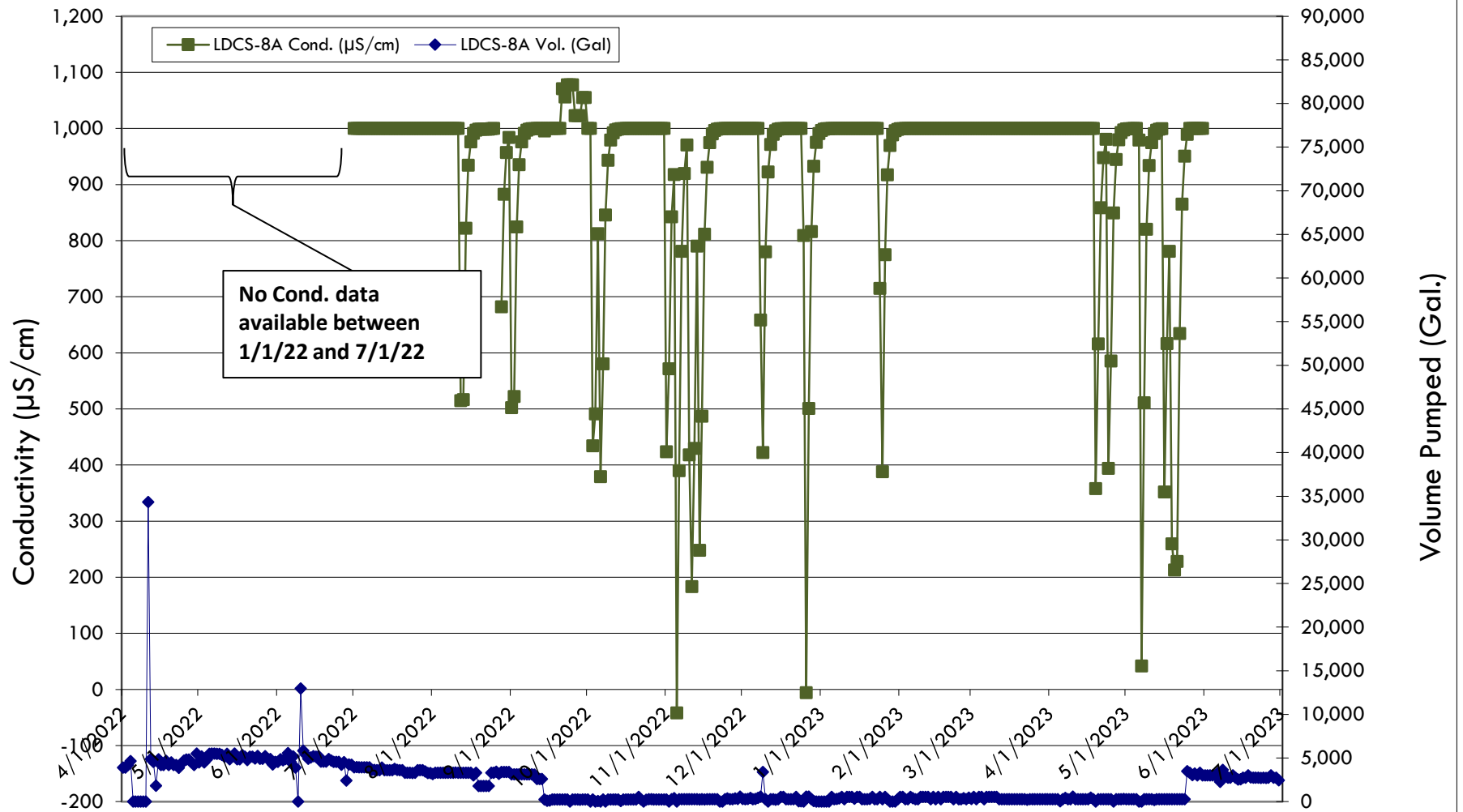
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



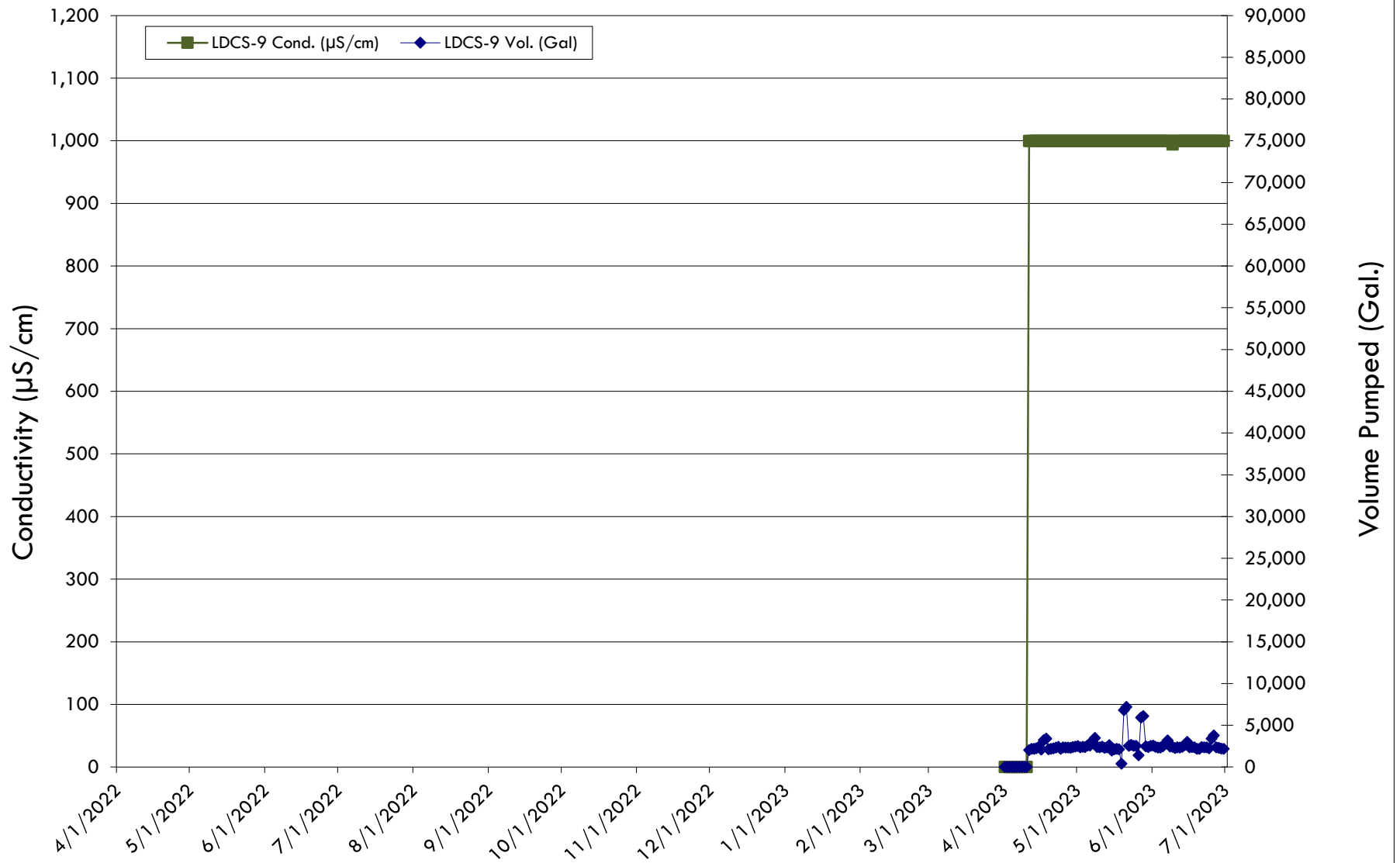
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



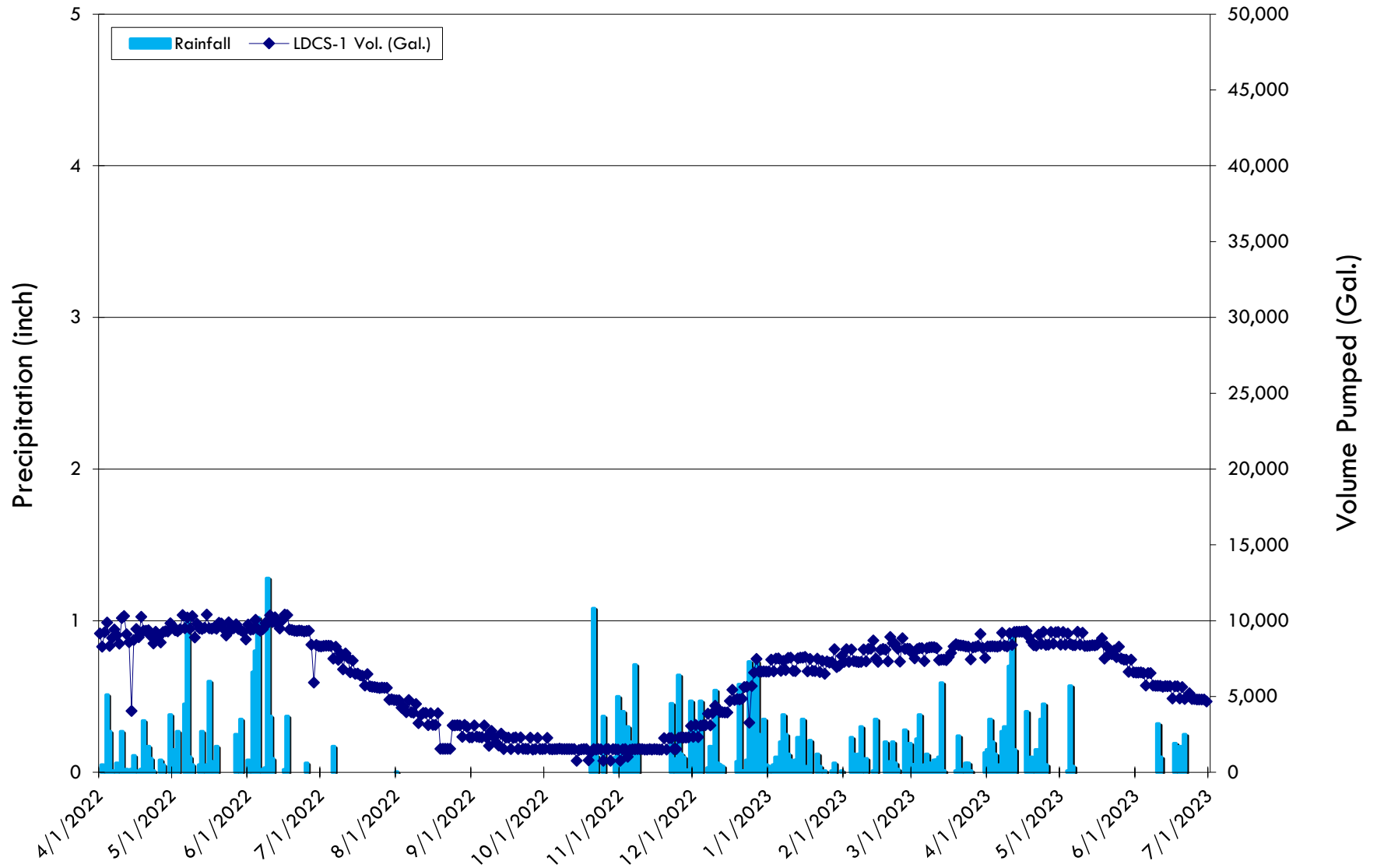
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



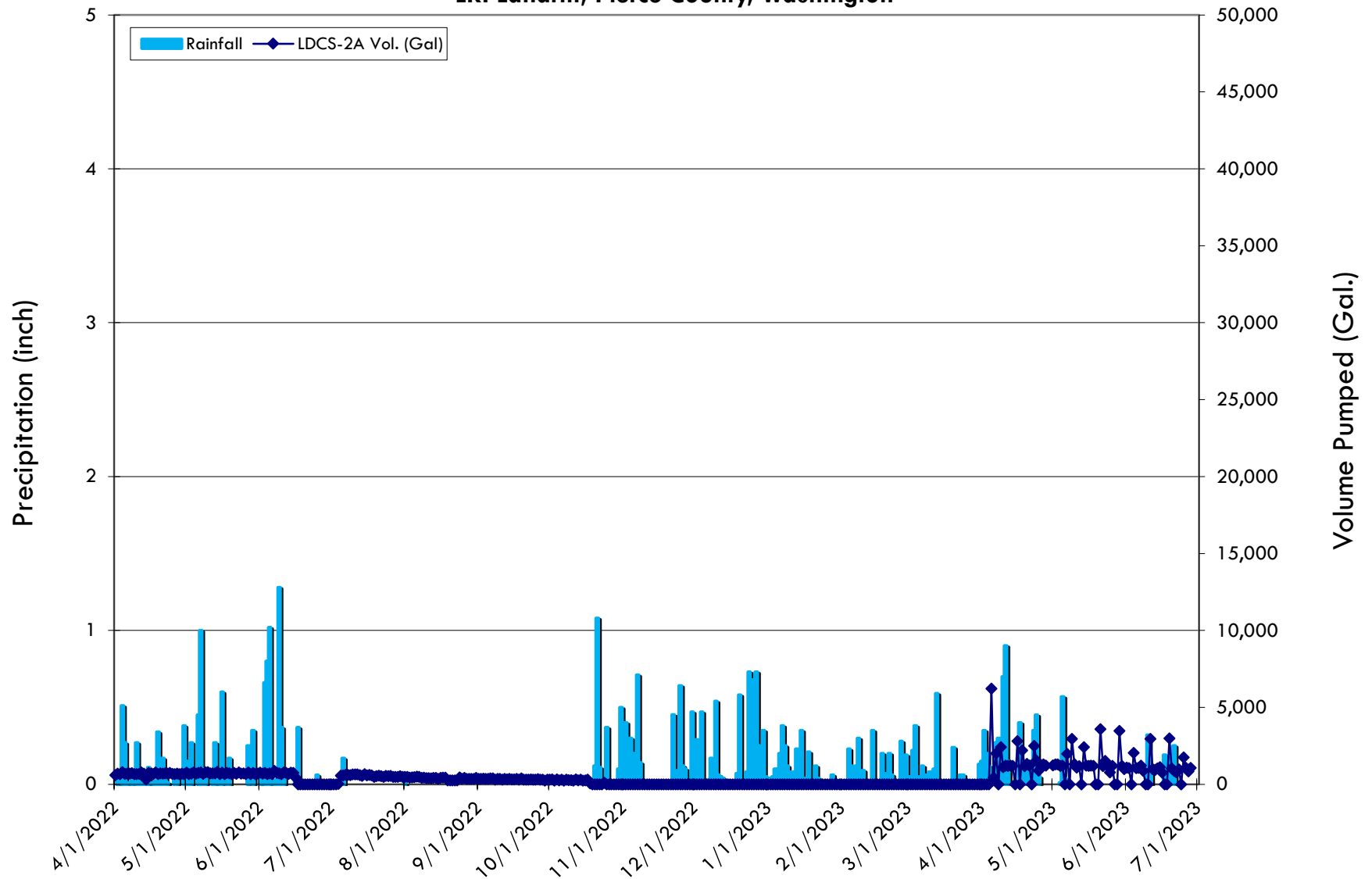
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Conductivity vs Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



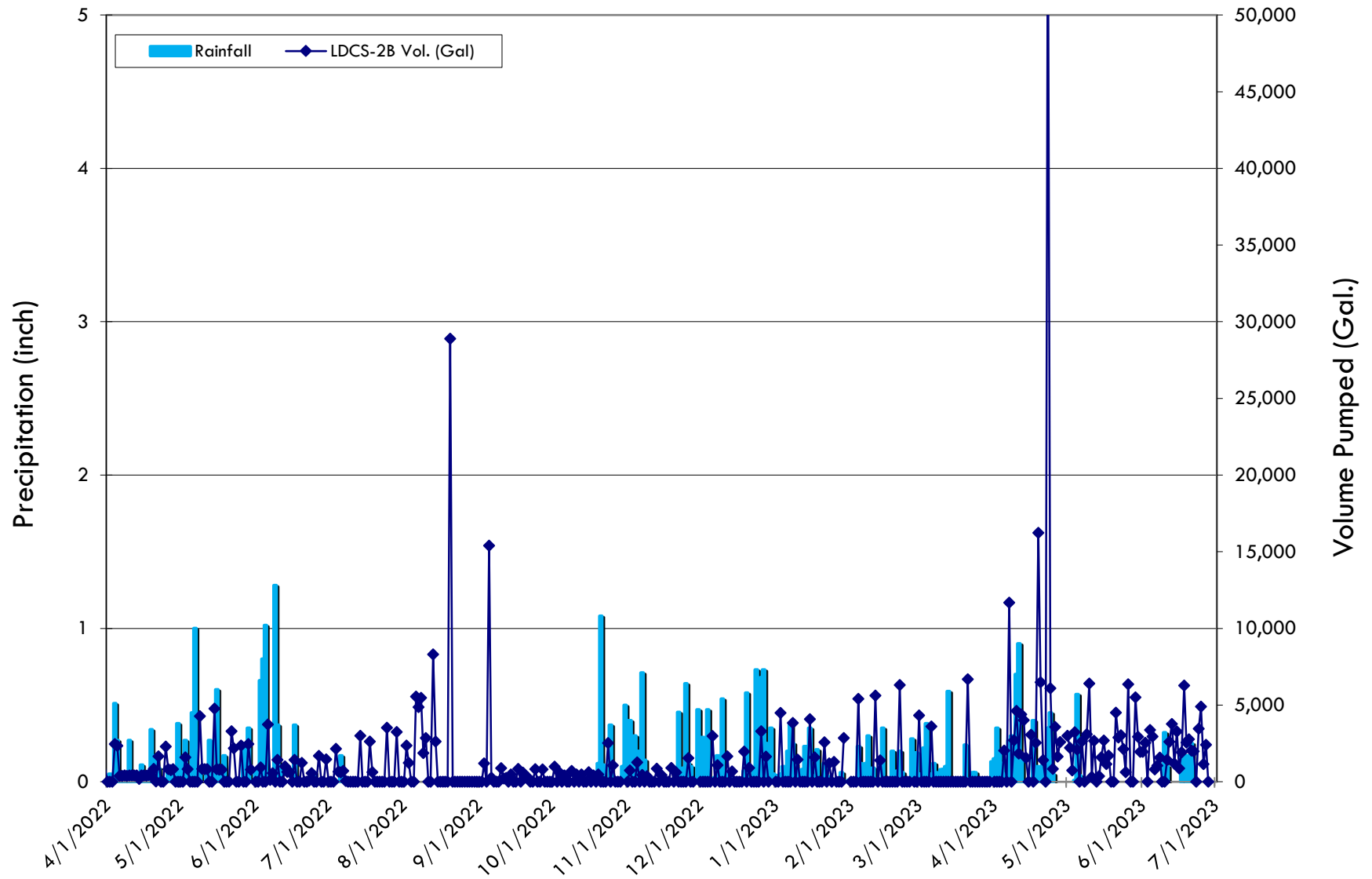
LDCS-1 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



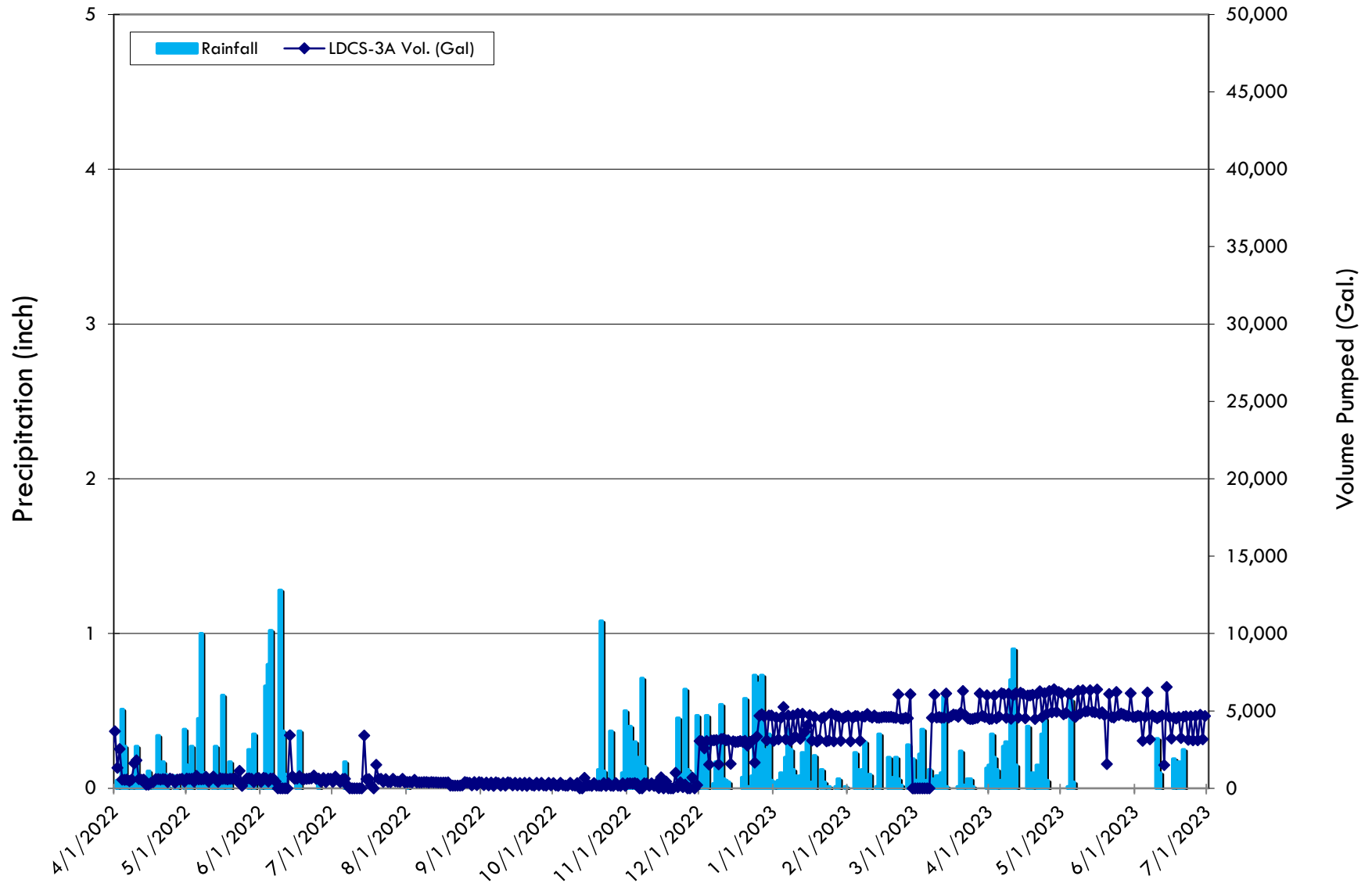
LDCS-2A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



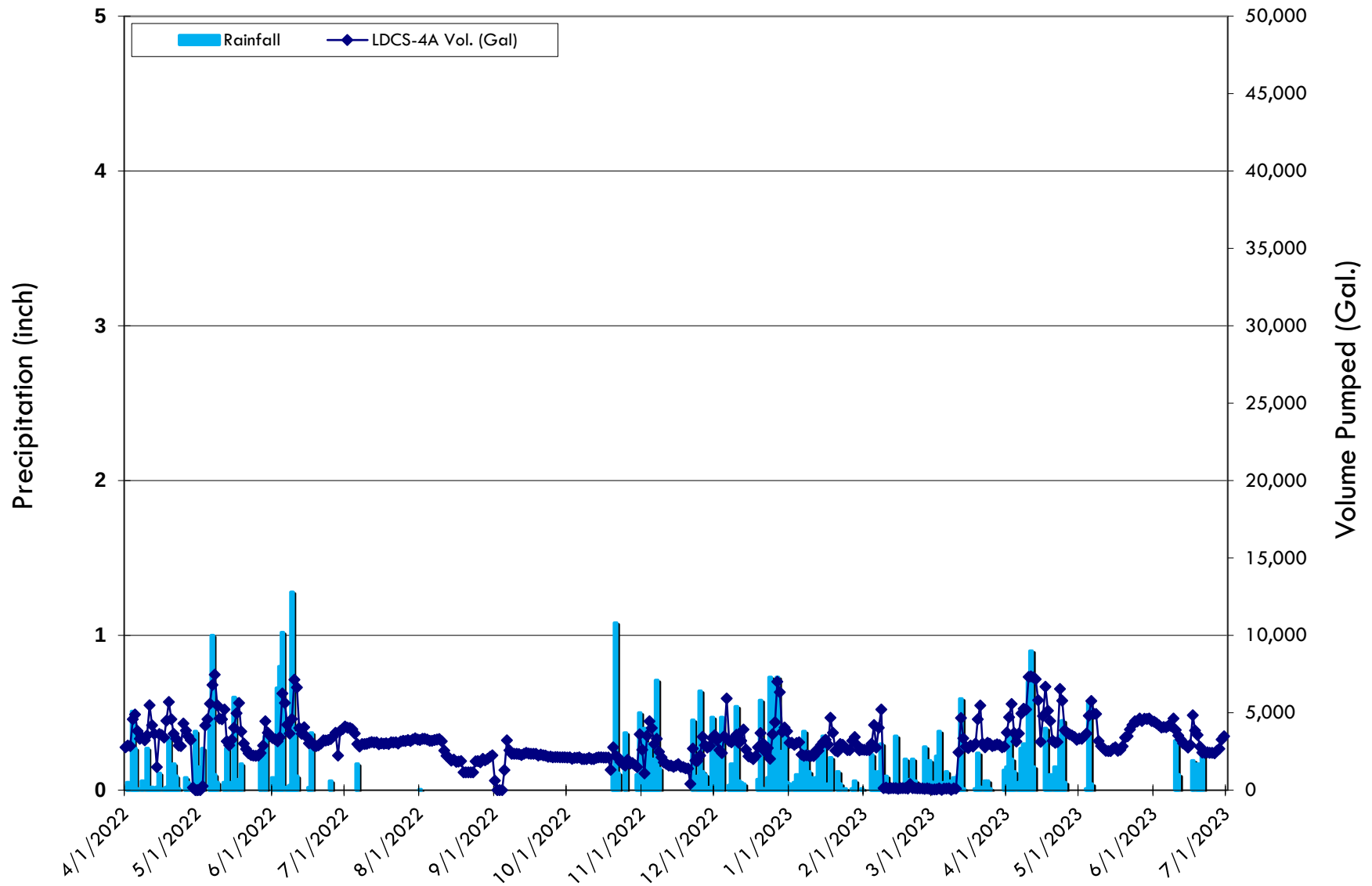
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Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



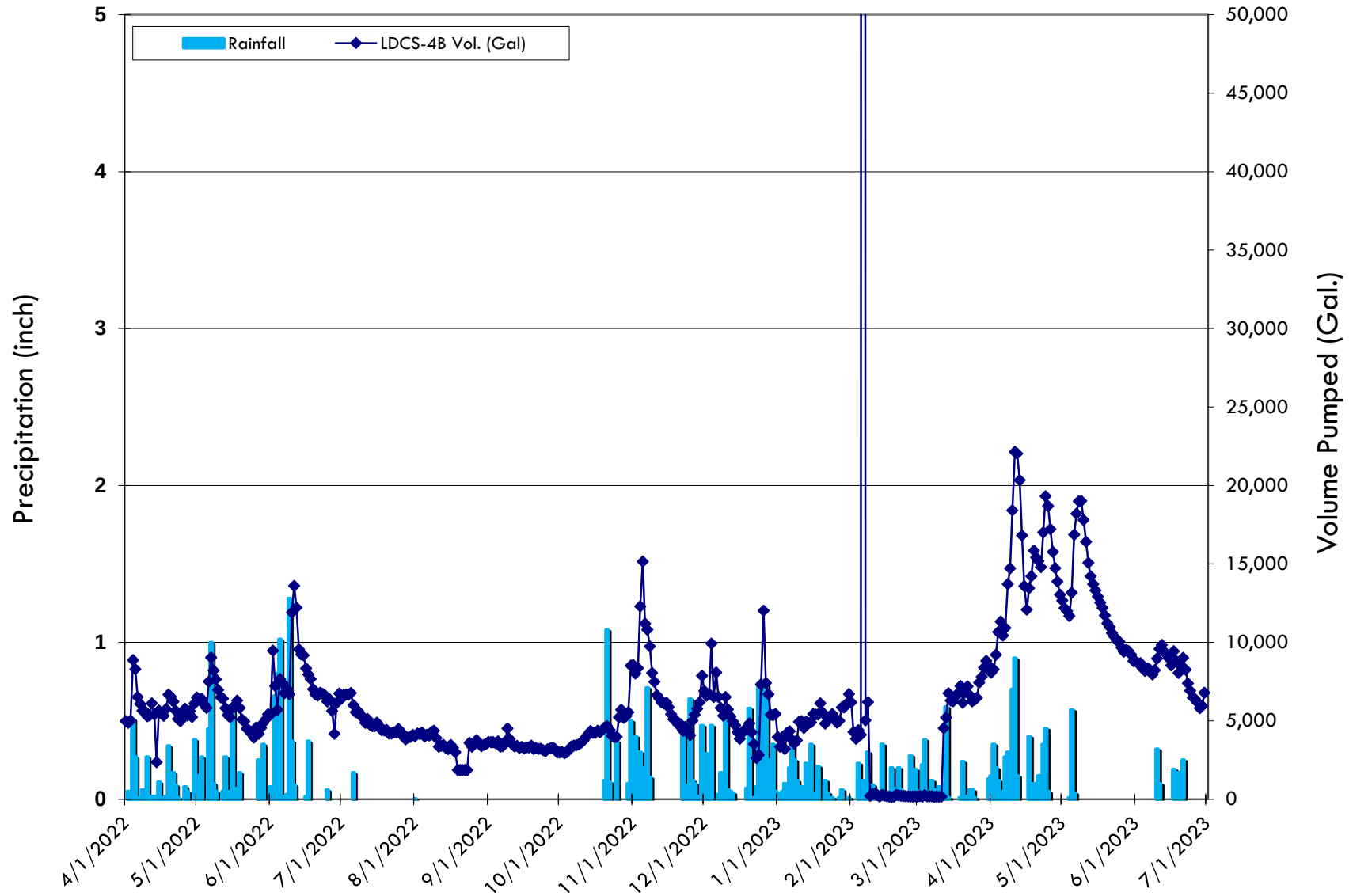
LDCS-3A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



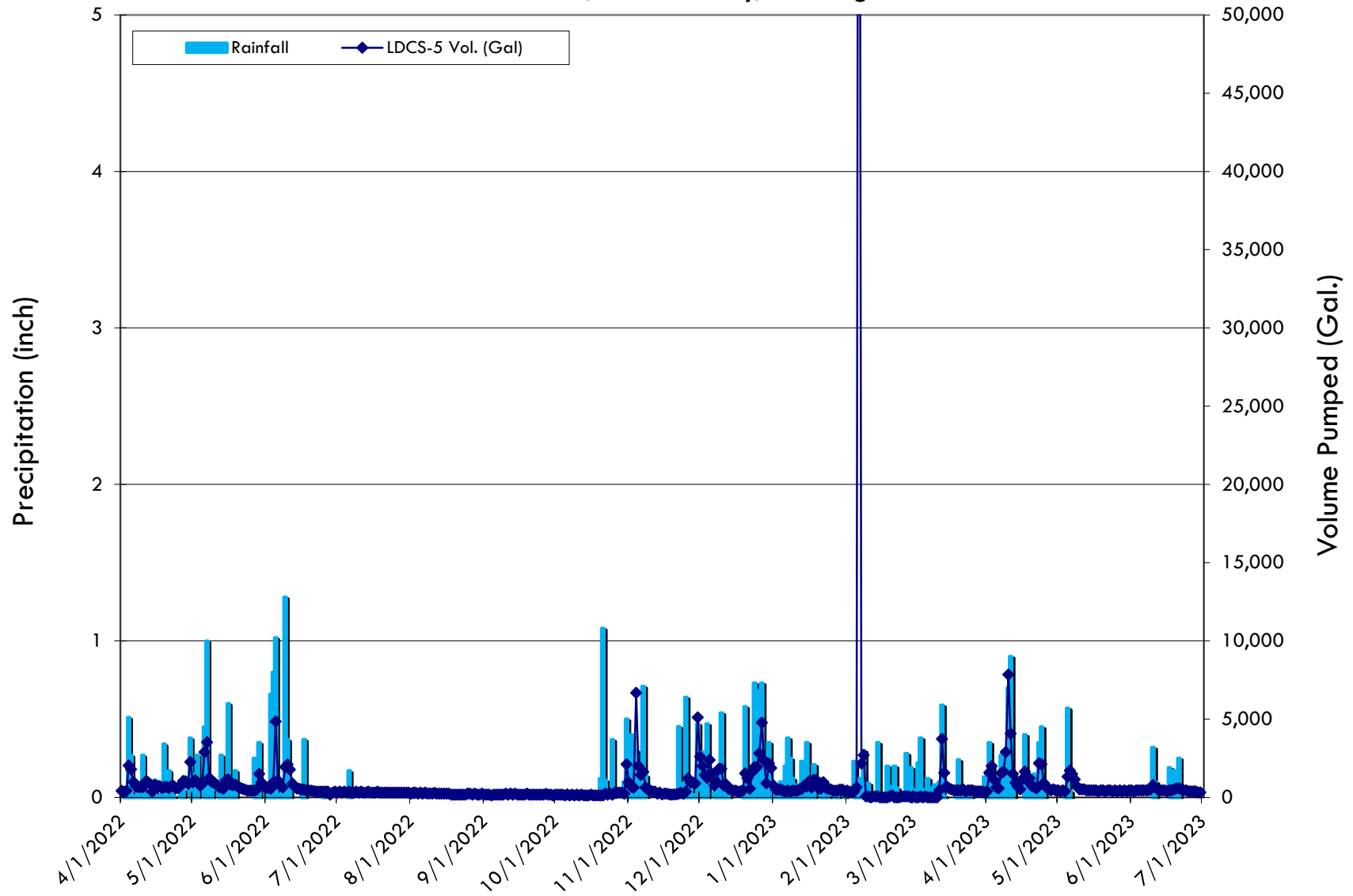
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Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



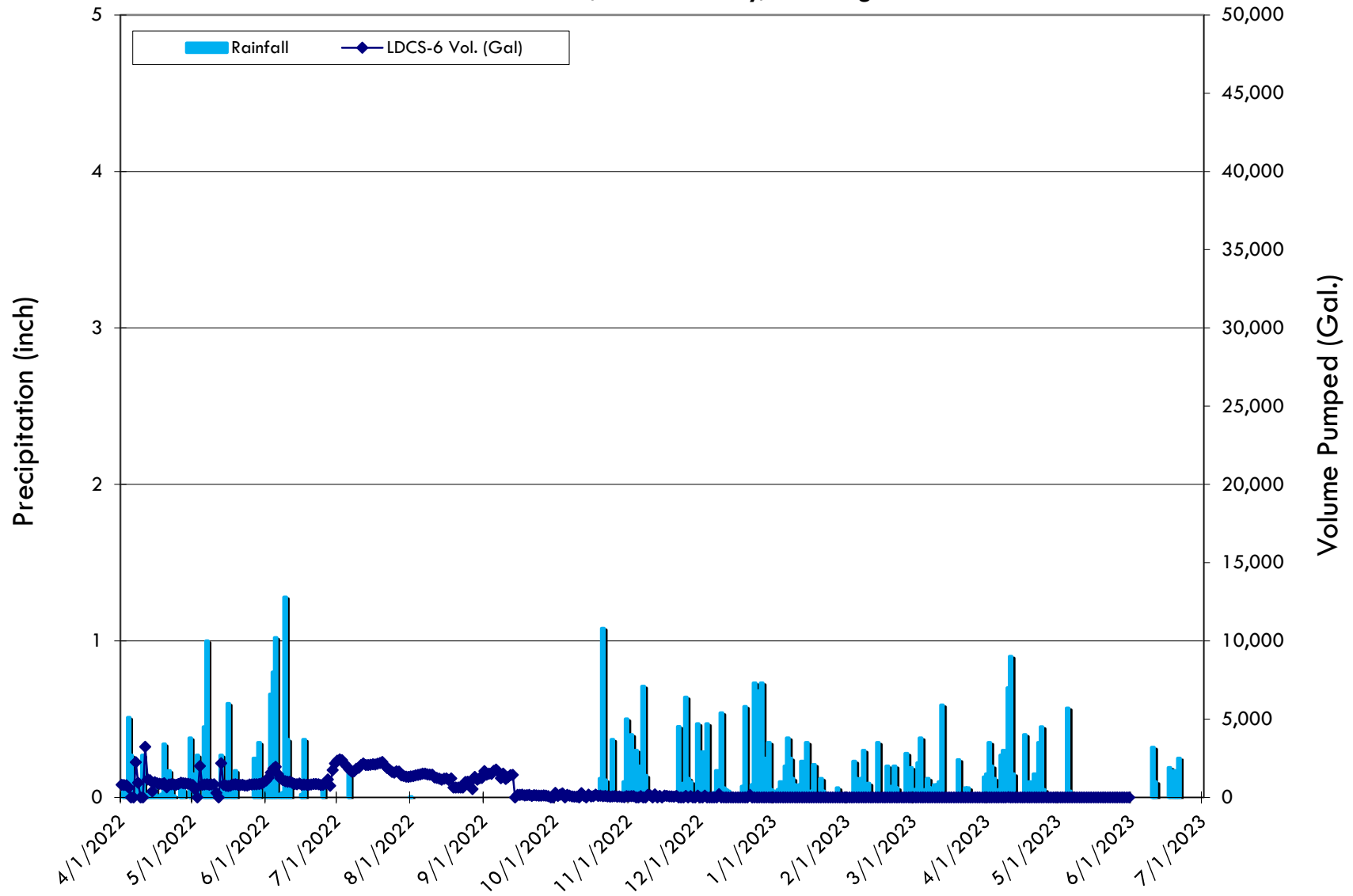
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Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



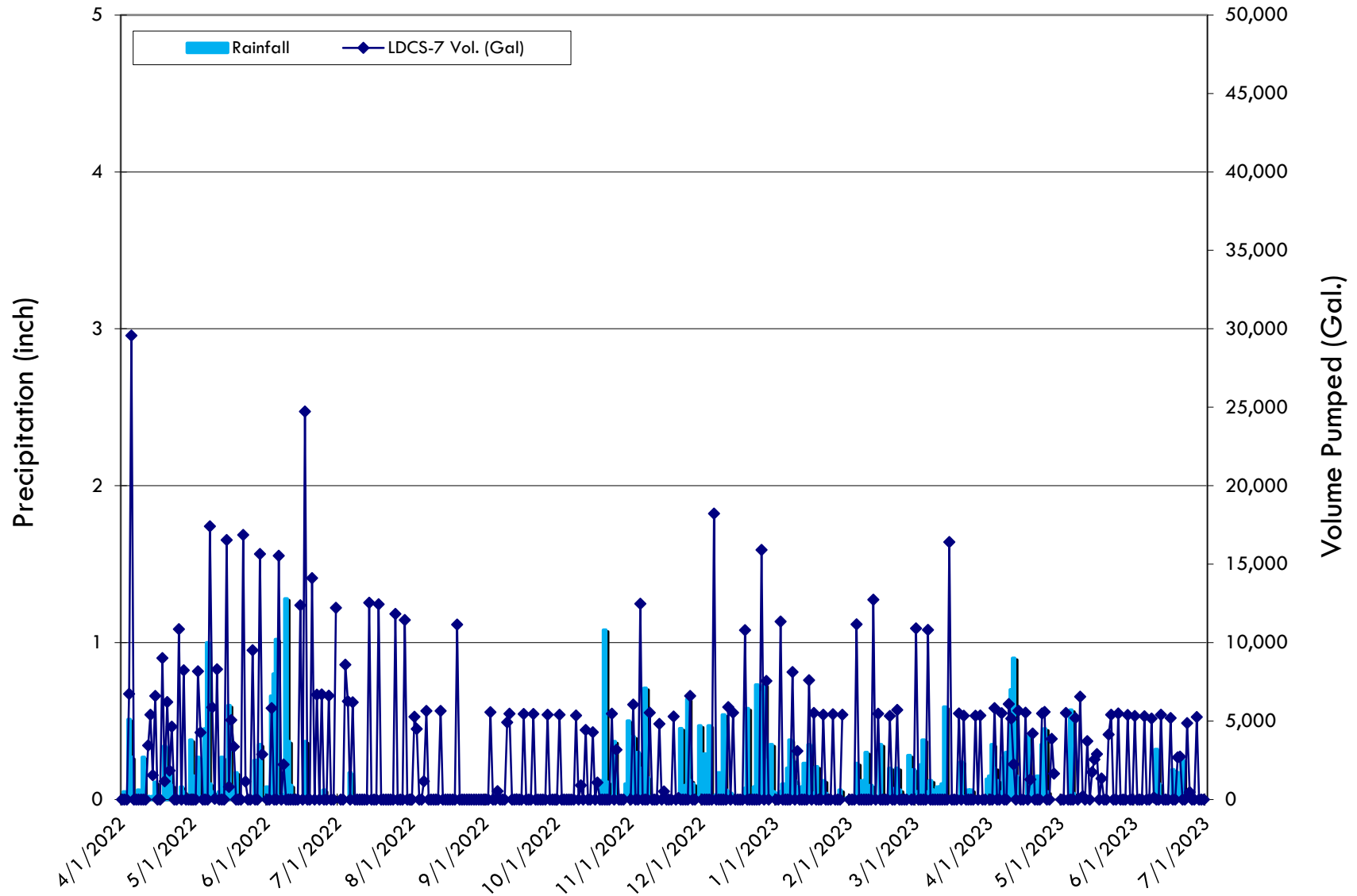
LDCS-5 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



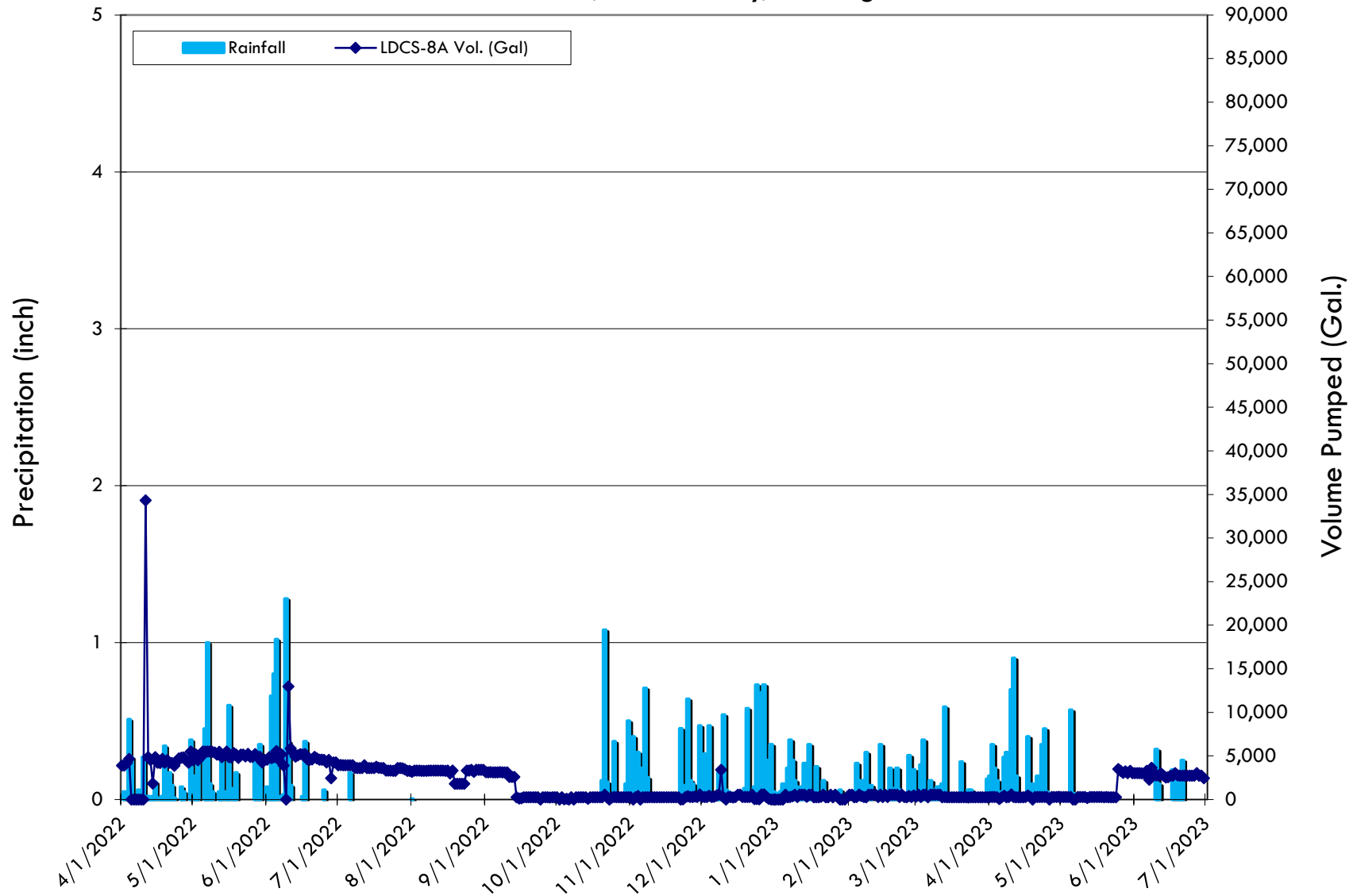
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Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



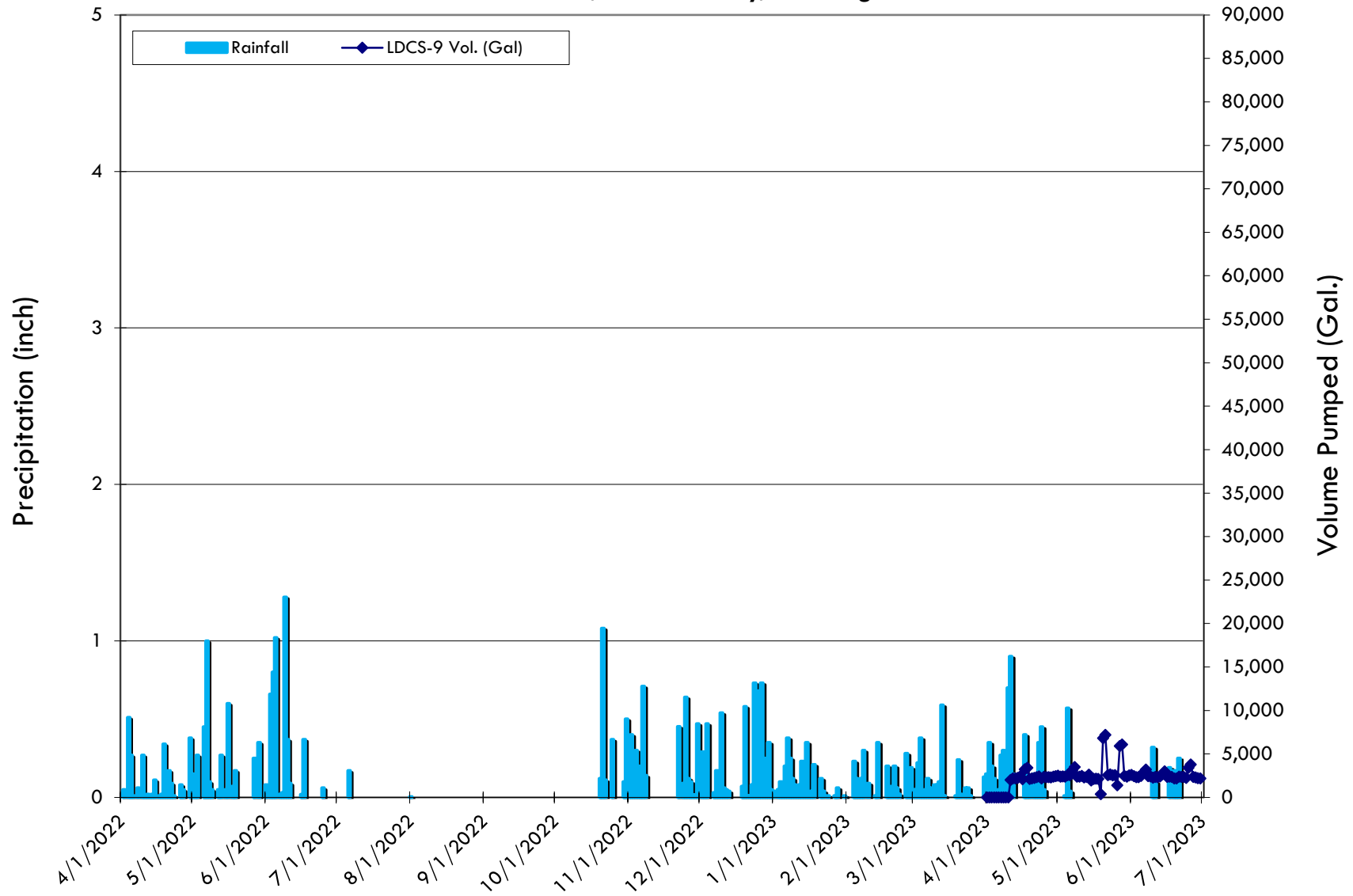
LDCS-7 (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



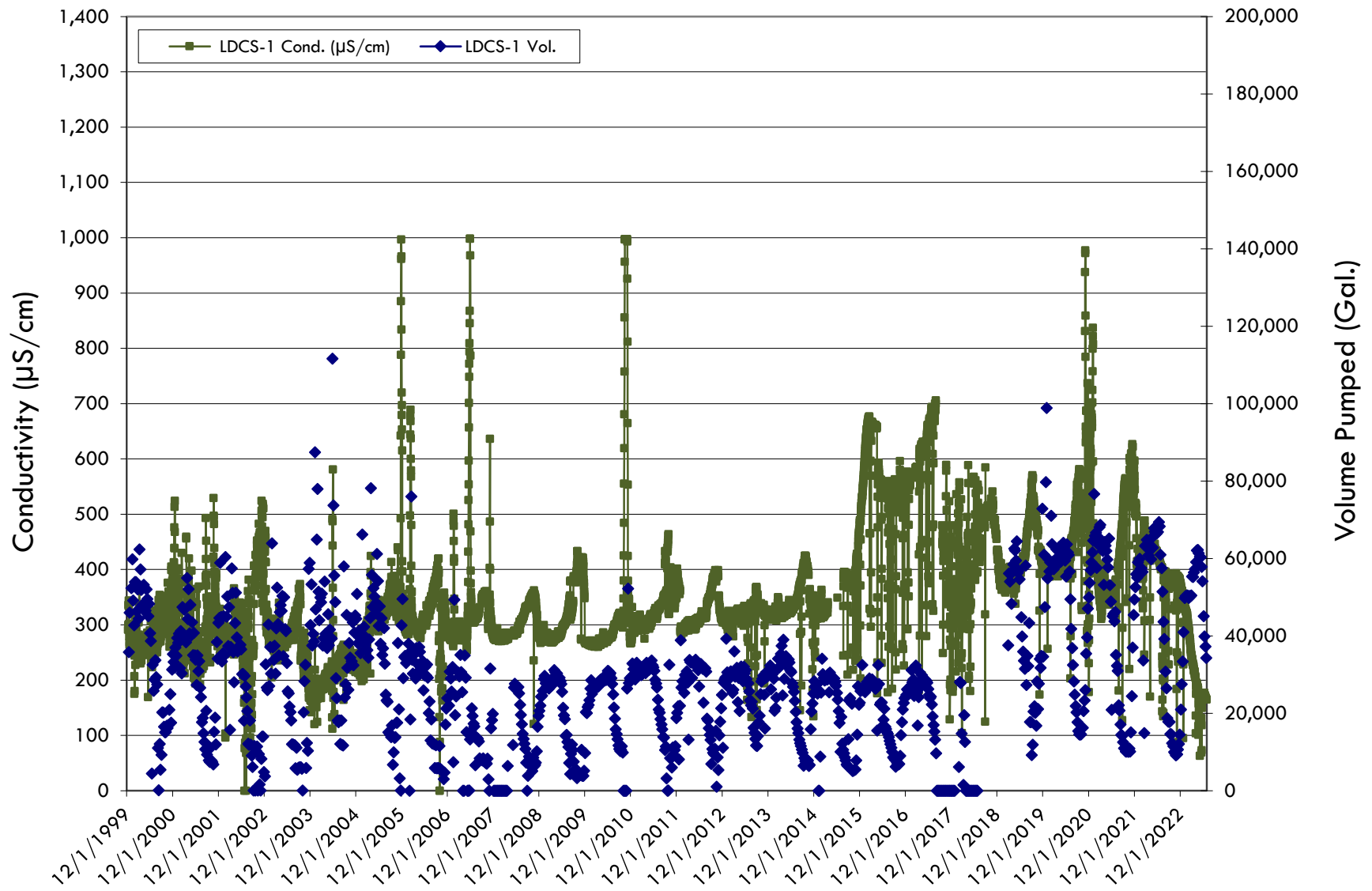
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Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



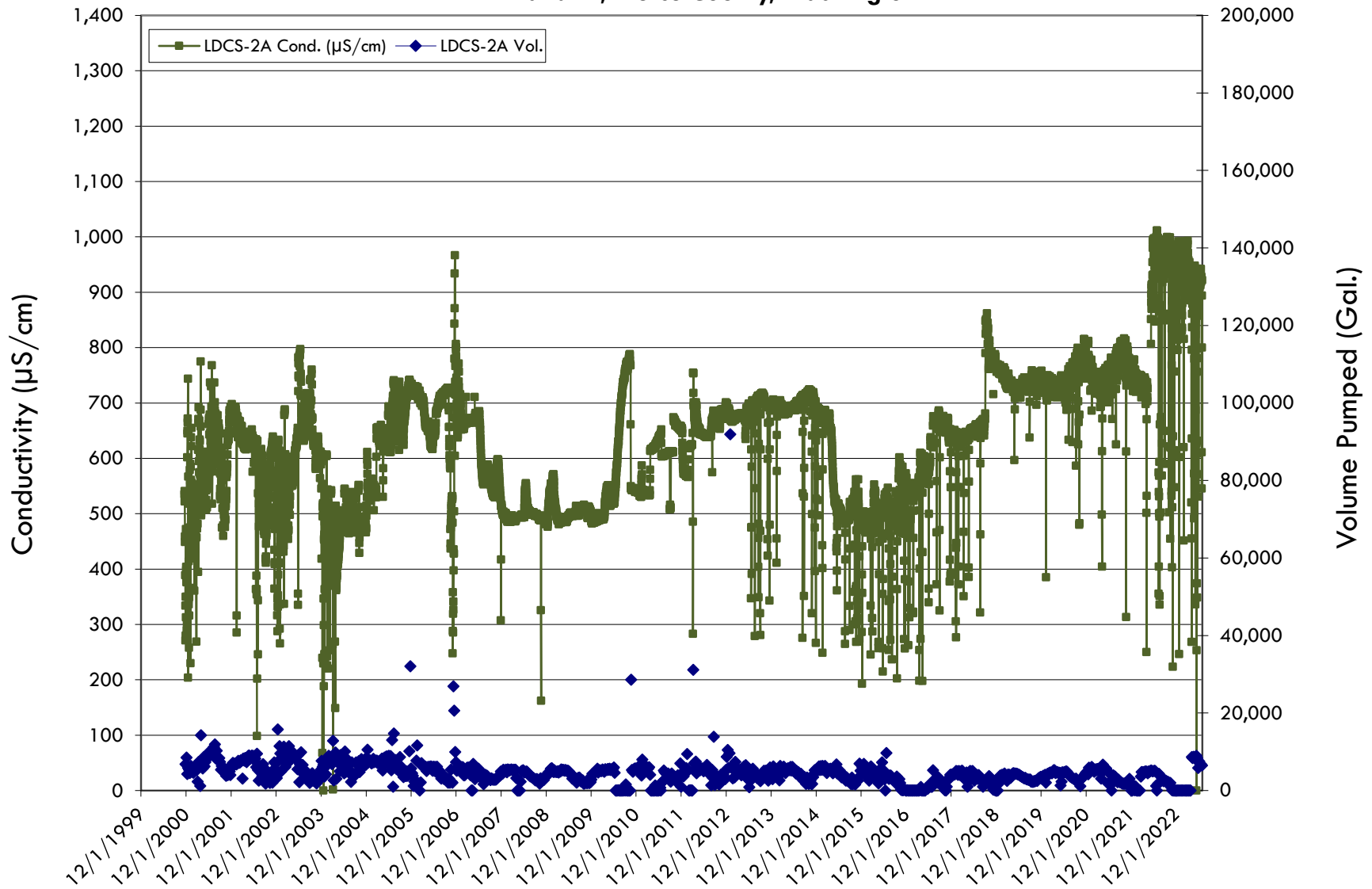
LDCS-8A (Daily Totals)
Volume Pumped vs Precipitation
Second Quarter 2023
LRI Landfill, Pierce County, Washington



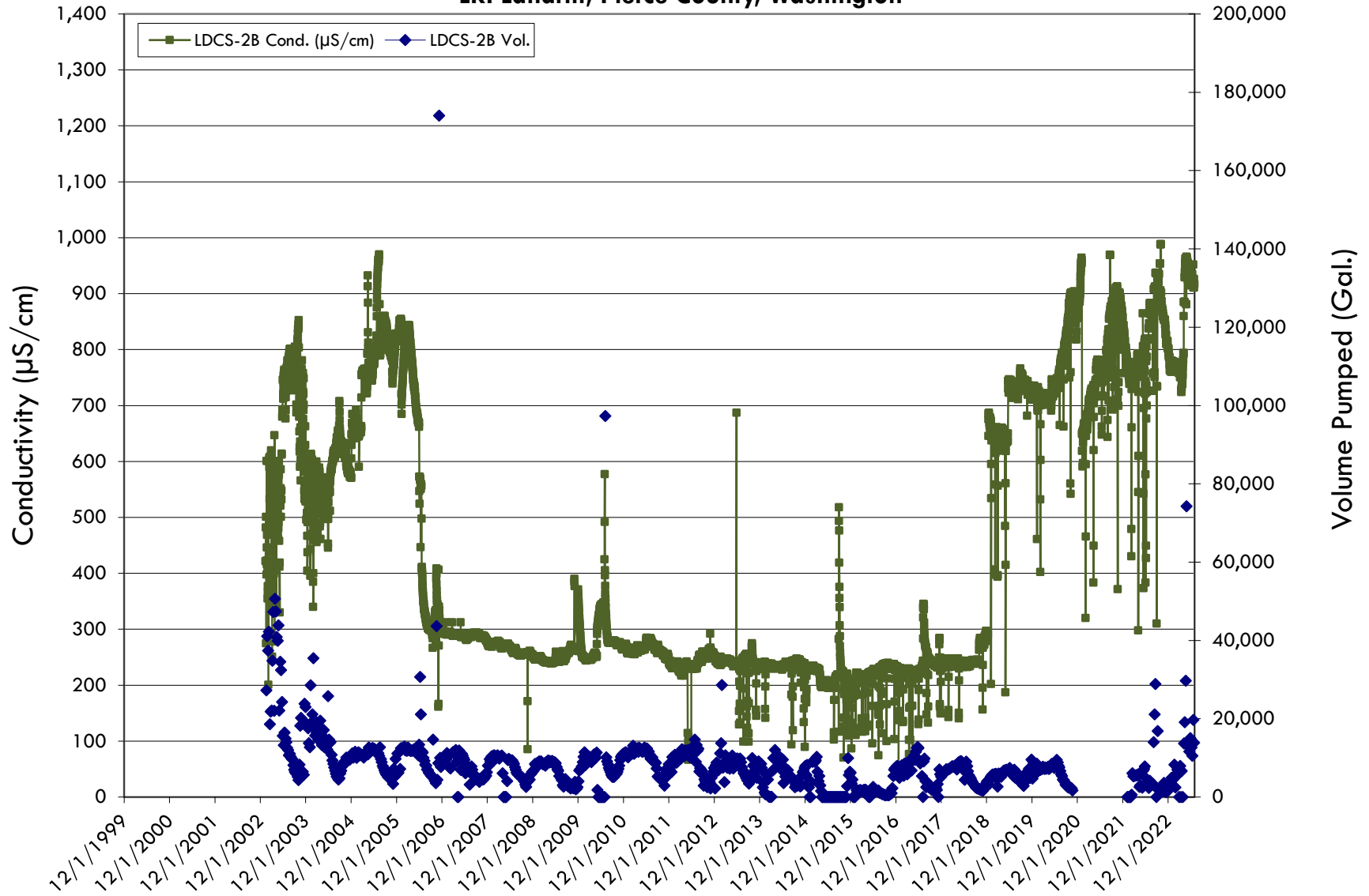
LDCS-1
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



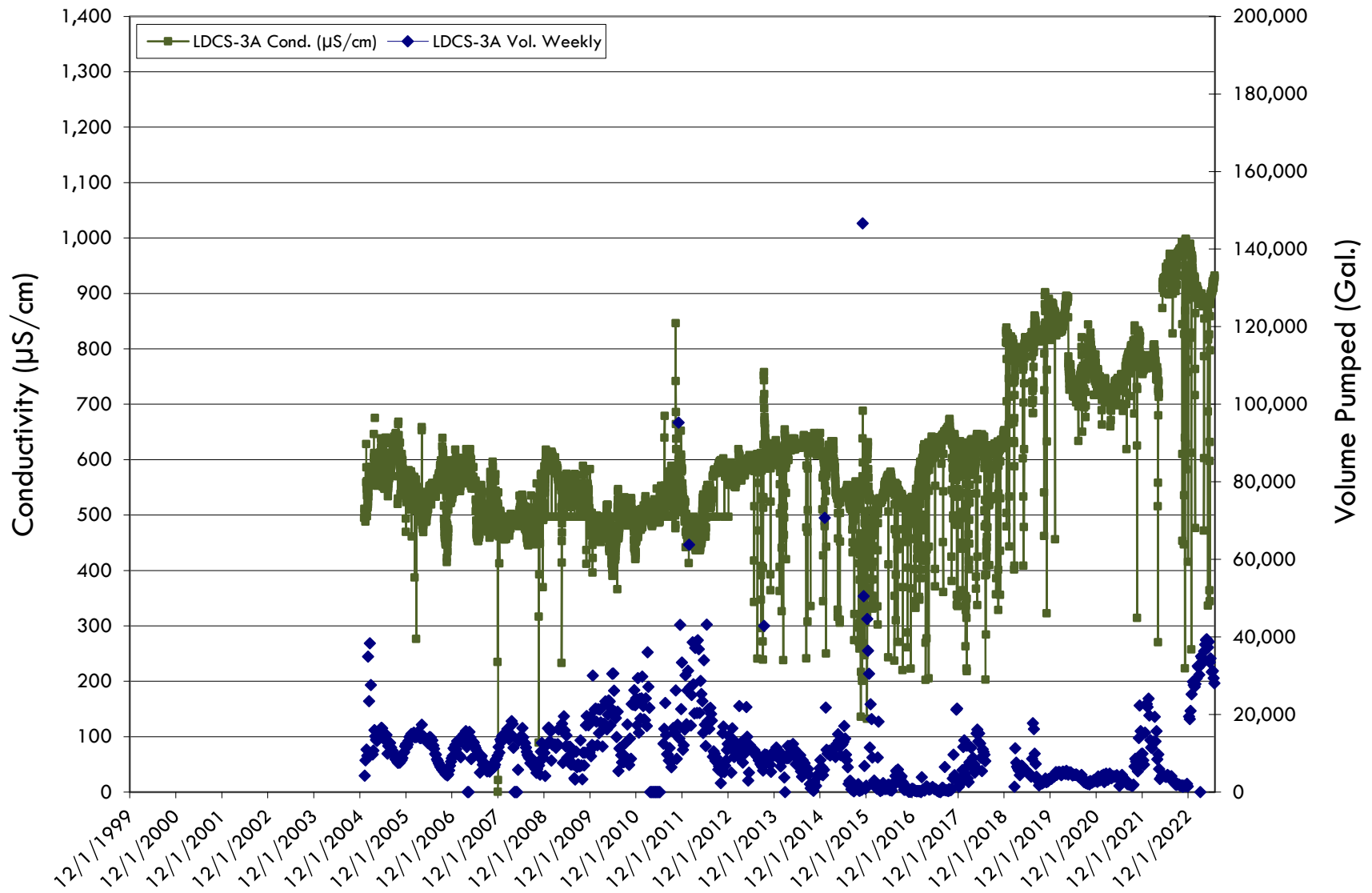
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



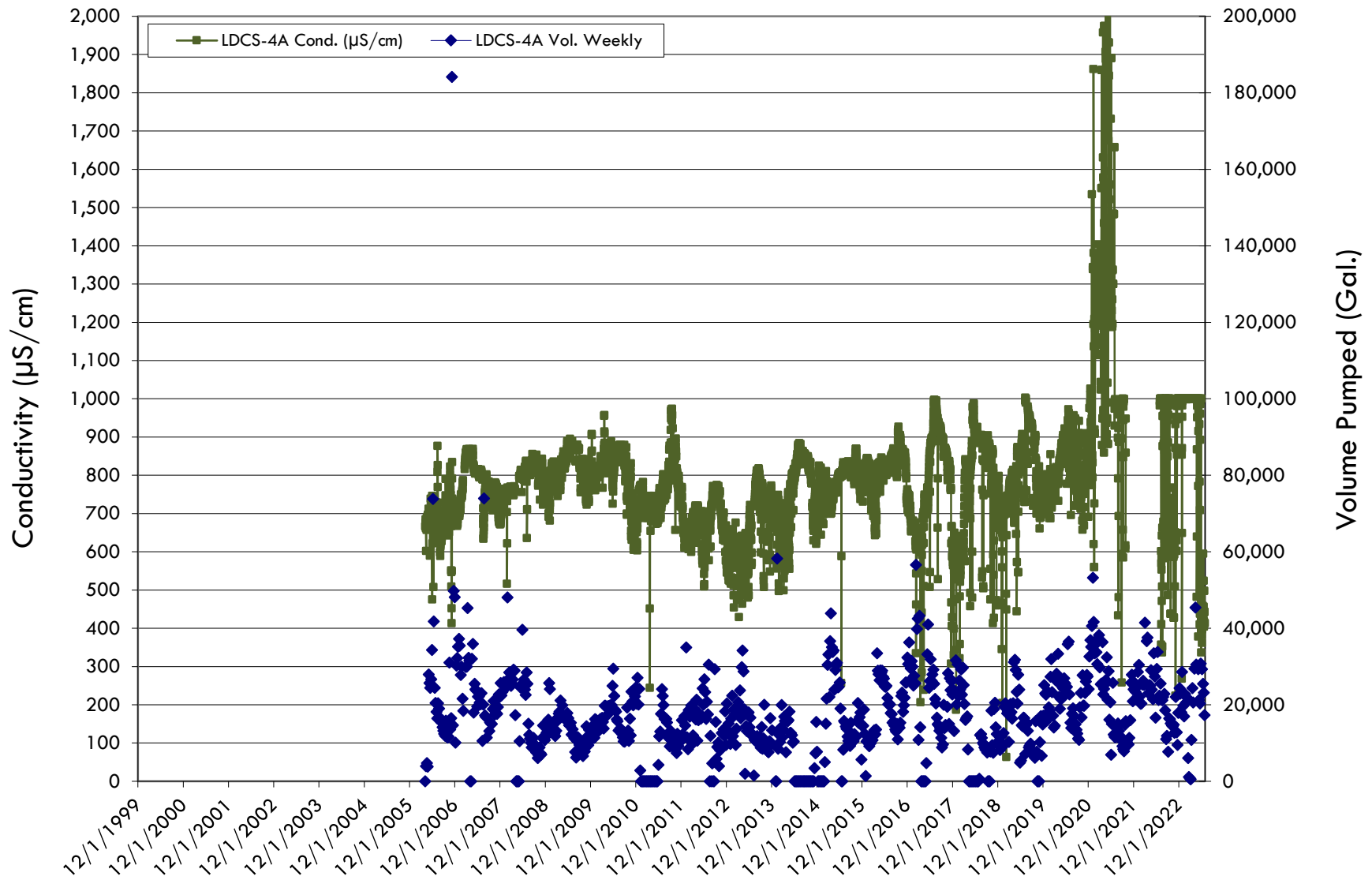
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



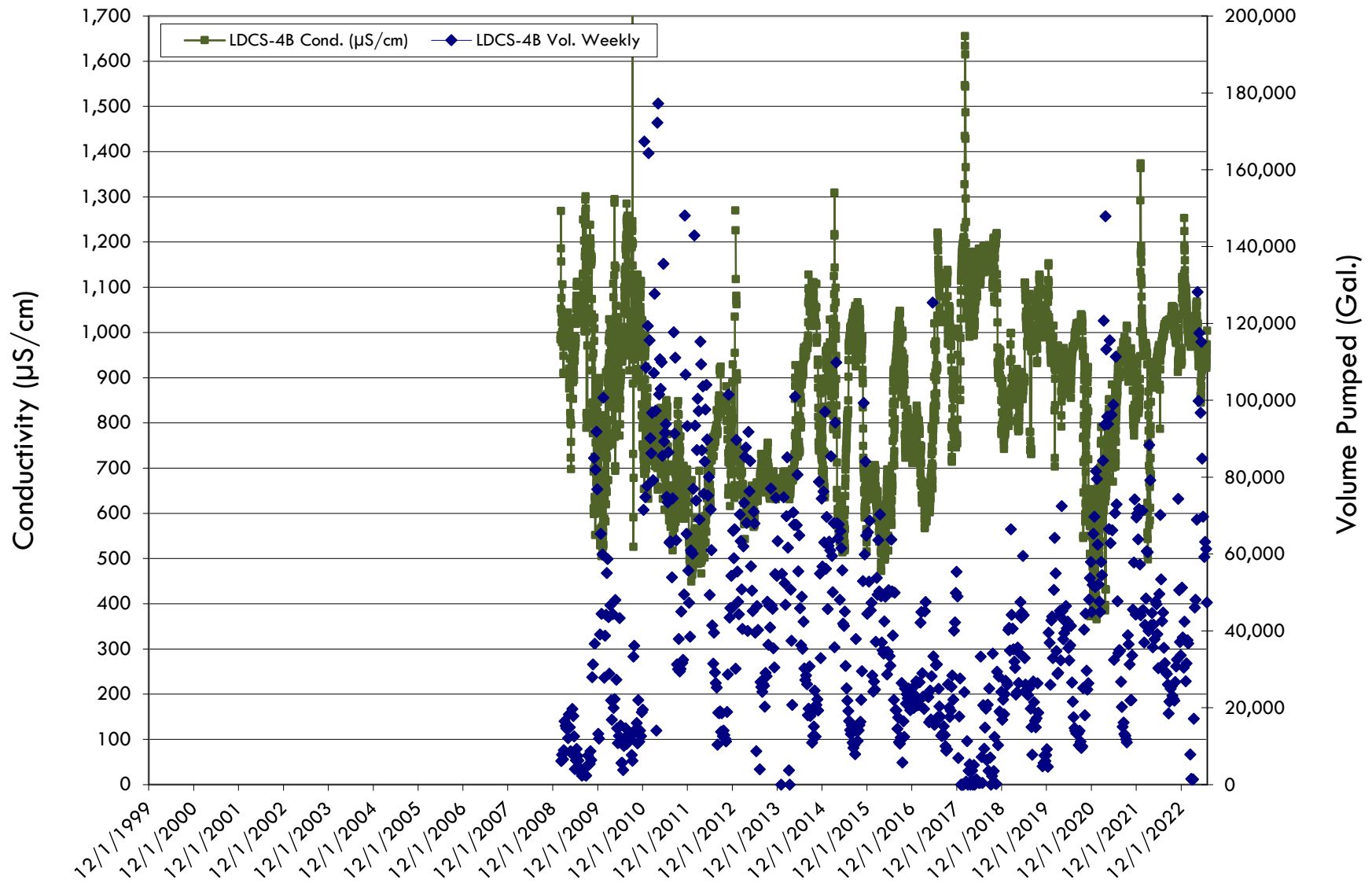
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



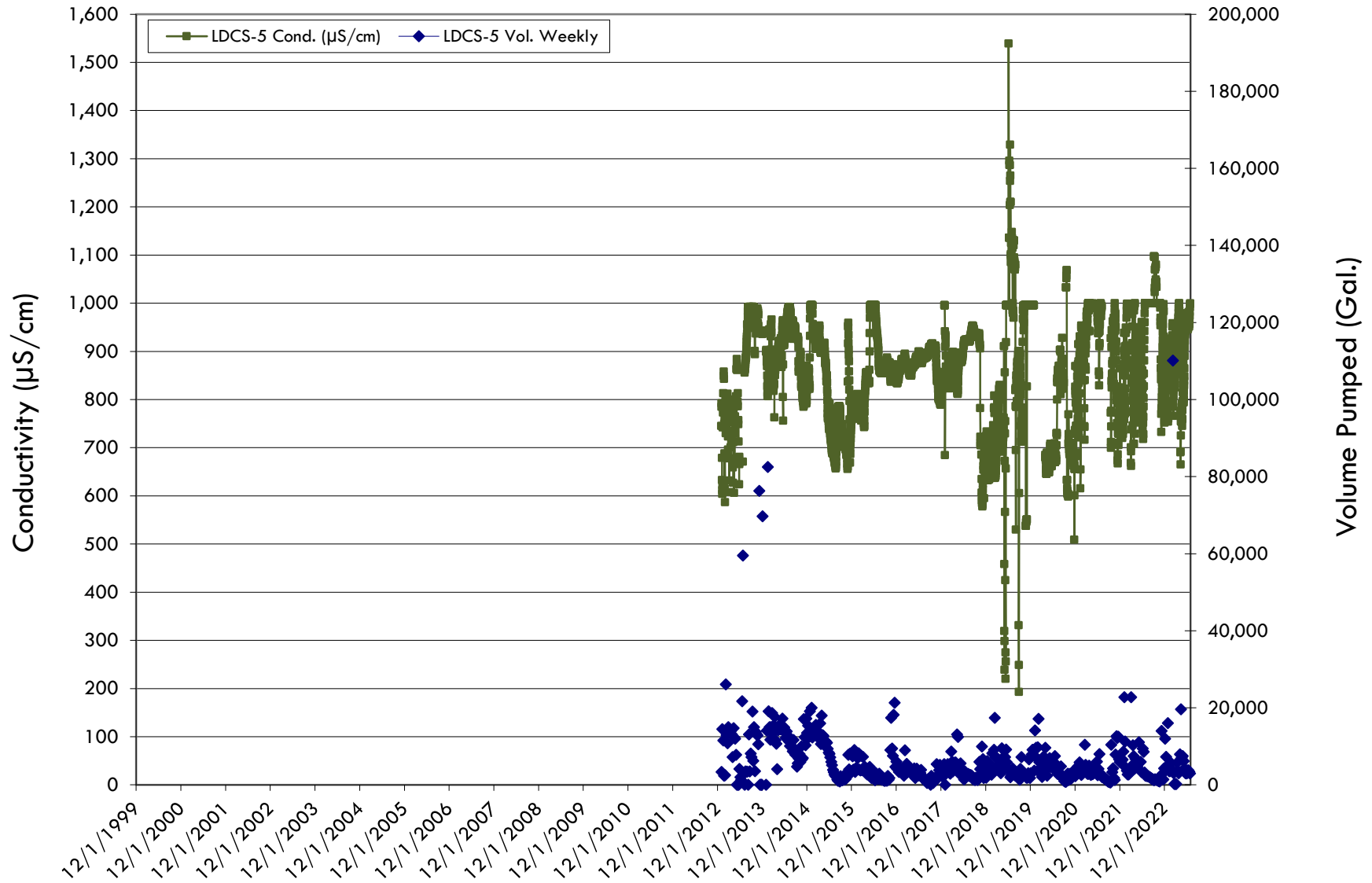
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



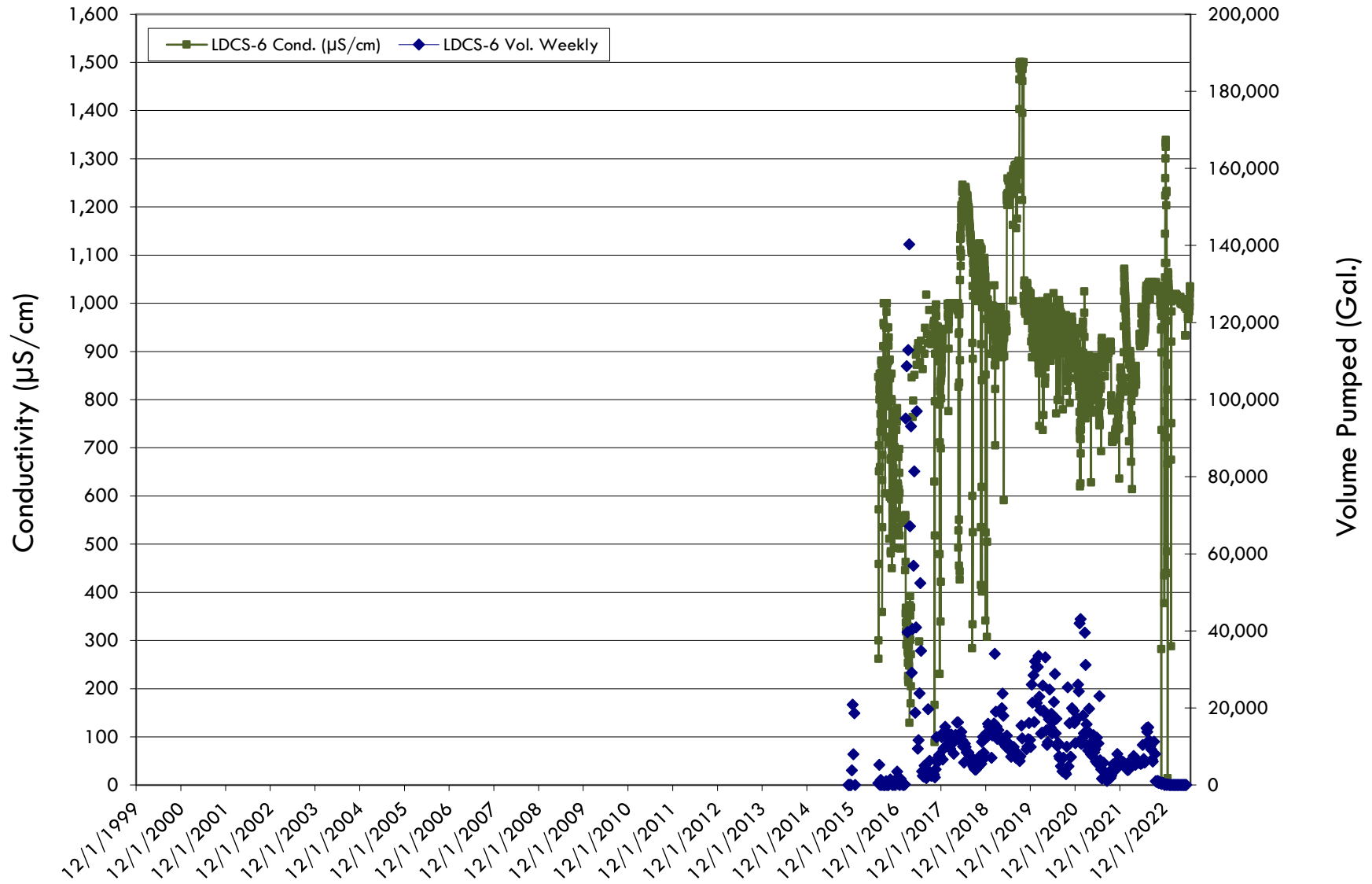
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



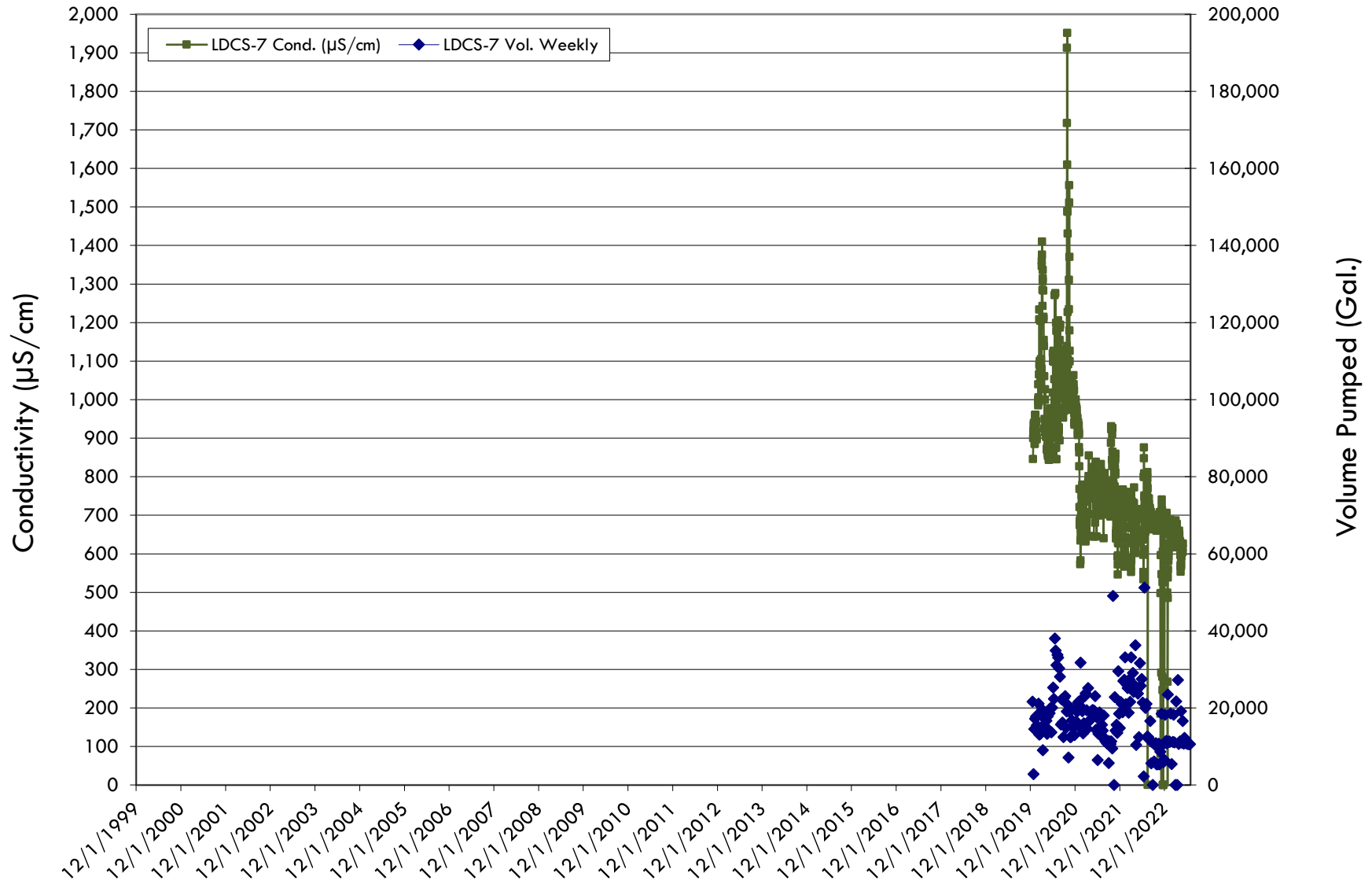
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



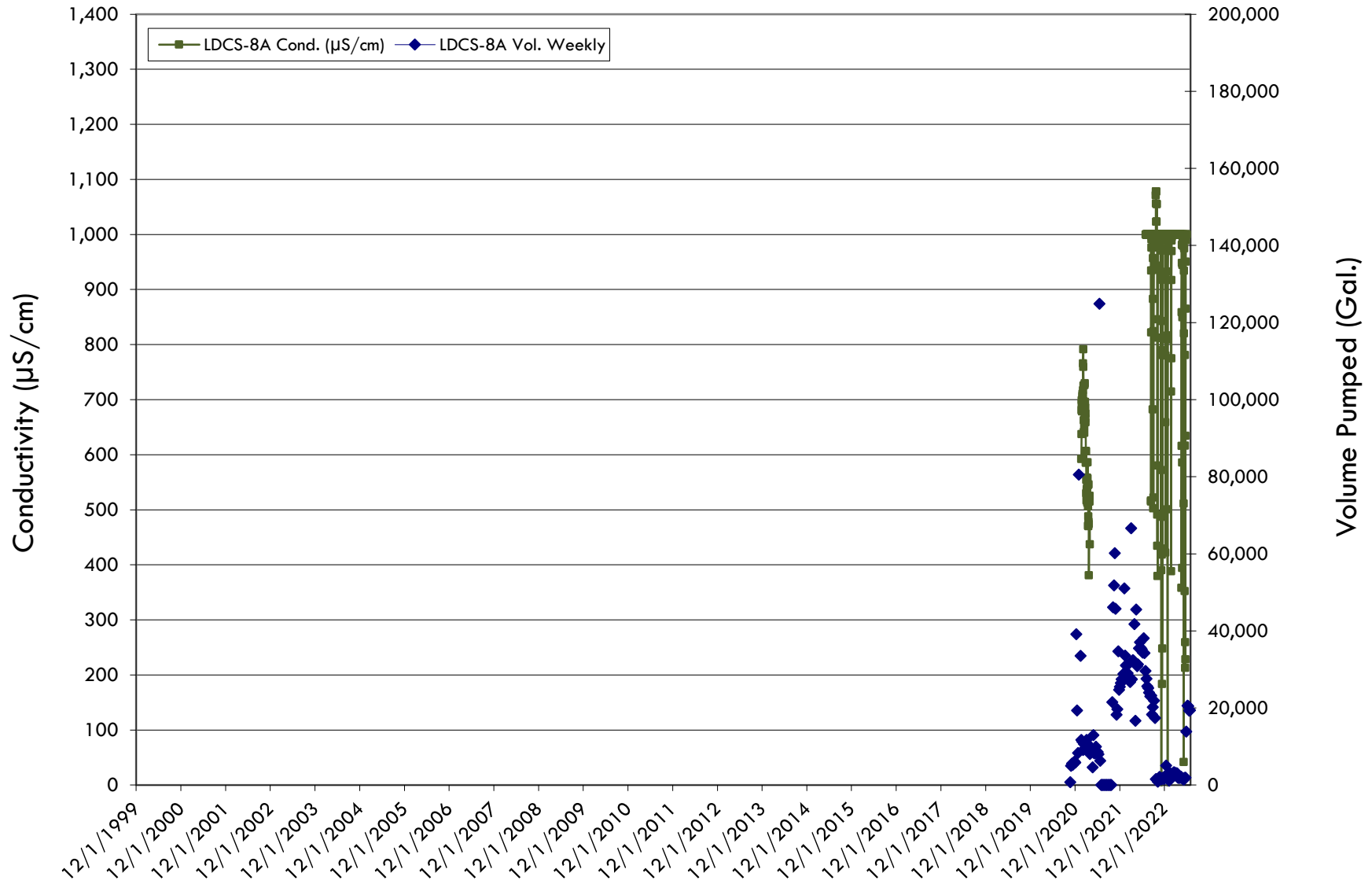
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Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



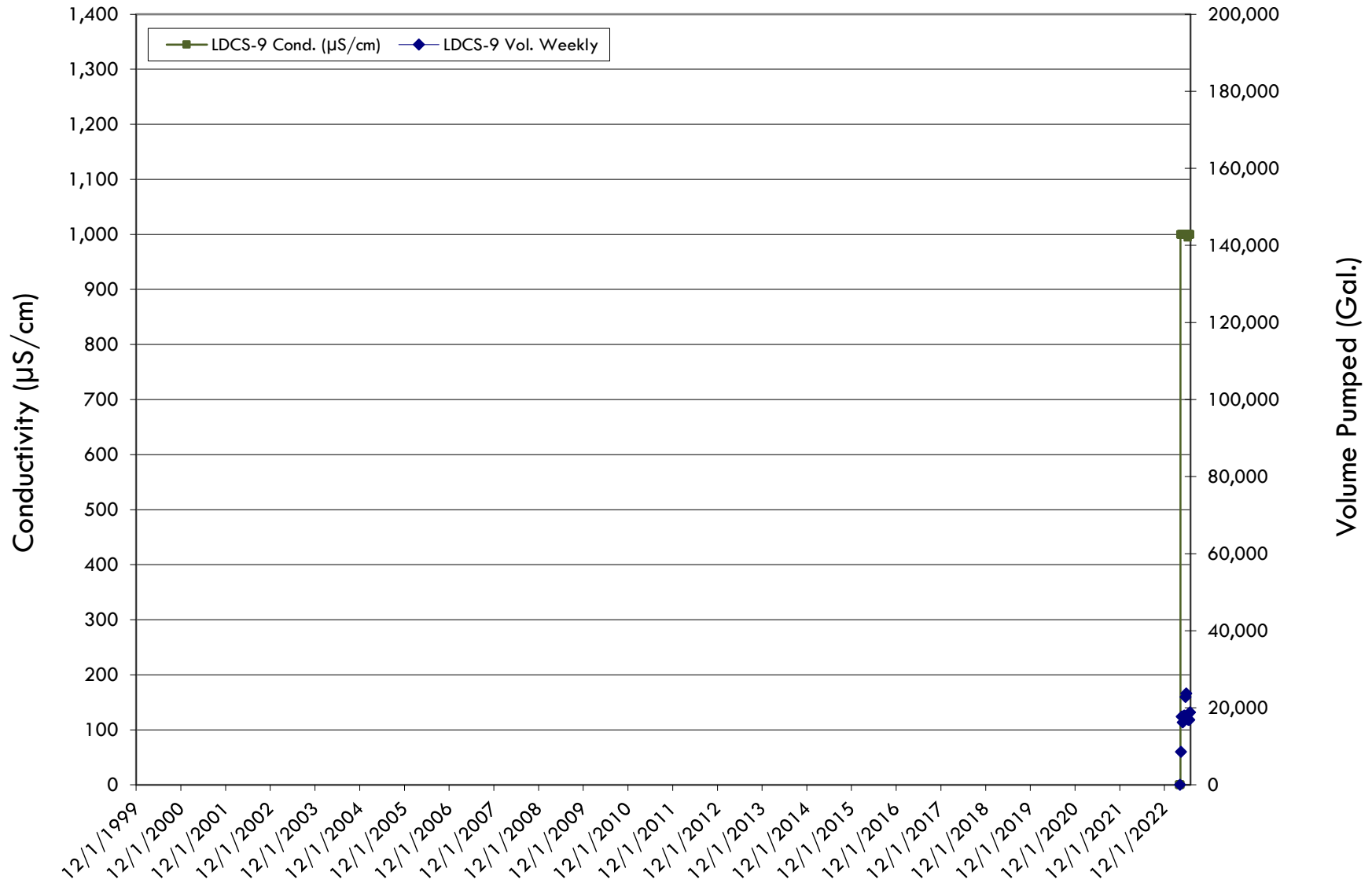
LDCS-7
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



LDCS-8A
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



LDCS-9
Daily Conductivity vs Weekly Volume Pumped
Second Quarter 2023
LRI Landfill, Pierce County, Washington



Attachment I

Surface Water Monitoring Data



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: NEWB 2

Monitoring Period: 04/01/2023 - 04/30/2023

Outfall: 001 - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C8-1	C8-1	C8-2	C8-2	C9-1	C9-1
2-M	4/3/23	13.4	M				
2-T	4/4/23			8	M	13	M
2-Sa	4/8/23	15.7	M				
3-M	4/10/23	12.8	M				
3-T	4/11/23	12.5	M	14	M	11	M
3-W	4/12/23	12.5	M				
4-M	4/17/23	8.9	M				
4-T	4/18/23	10.9	M	4	M	6	M
5-Su	4/23/23	14.2	M				
5-T	4/25/23			9	M	7	M
Minimum			M		M		M
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		15.7	M	14	M	13	M
		BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: M - Monitoring Is Conditional/Not Req This MP

BMPs

Monitoring Point	Week	BMP
C8-1		Check Dams
C8-1		Construction Stormwater Chemical Treatment
C8-1		Other
C8-1		Silt Fence
C8-1		Temporary Sediment Pond
C8-2		Check Dams
C8-2		Other
C8-2		Temporary Sediment Pond
C9-1		Check Dams
C9-1		Other
C9-1		Temporary Sediment Pond

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

5/15/2023 11:07:27 AM

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: NEWB 2

Monitoring Period: 05/01/2023 - 05/31/2023

Outfall: 001 - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C8-1	C8-1	C8-2	C8-2	C9-1	C9-1
1-W	5/3/23	C	C	C	C	C	C
1-Sa	5/6/23	13.1	M				
2-Su	5/7/23	14.2	M				
2-M	5/8/23	9.9	M				
2-Th	5/11/23	C	C	C	C	C	C
3-Th	5/18/23	C	C	C	C	C	C
4-T	5/23/23	C	C	C	C	C	C
5-T	5/30/23	C	C	C	C	C	C
Minimum			C		C		C
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum		14.2	C	C	C	C	C
		BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)	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 was performed using Chitosan Enhanced Sand Filtration (CESF) prior to discharge to C8-1. The averaged turbidity value is reported for each day that a discharge occurred.

BMPs

Monitoring Point	Week	BMP
C8-1		Check Dams
C8-1		Construction Stormwater Chemical Treatment
C8-1		Other
C8-1		Silt Fence
C8-1		Temporary Sediment Pond
C8-2		Check Dams
C8-2		Other
C8-2		Silt Fence
C9-1		Check Dams
C9-1		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

6/14/2023 9:12:22 AM

Signature

Date



Permit Number: WAR002603

Permittee: LRI 304th Street Landfill

Facility County: Pierce

Receiving Waterbody: NEWB 2

Monitoring Period: 06/01/2023 - 06/30/2023

Outfall: 001 - South Creek

Version: 1

Week	Monitoring Point	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab	Turbidity (NTU) Measured NTU Weekly Grab	pH Standard Units Weekly Grab
		C8-1	C8-1	C8-2	C8-2	C9-1	C9-1
1-Th	6/1/23	C	C	C	C	C	C
2-Su	6/4/23	C	C	C	C	C	C
3-Su	6/11/23	C	C	C	C	C	C
4-Su	6/18/23	C	C	C	C	C	C
5-Su	6/25/23	C	C	C	C	C	C
Minimum							
			BM: >= 6.5 (RO)		BM: >= 6.5 (RO)		BM: >= 6.5 (RO)
Maximum							
		BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)	BM: <= 25 (RO)	BM: <= 8.5 (RO)

Reporting Codes Used: C - No Discharge

Overall DMR Notes/Comment

Reporting Code: C - No Discharge

BMPs

Monitoring Point	Week	BMP
C8-1		Check Dams
C8-1		Construction Stormwater Chemical Treatment
C8-1		Other
C8-1		Silt Fence
C8-1		Temporary Sediment Pond
C8-2		Check Dams
C8-2		Other
C8-2		Silt Fence
C9-1		Check Dams
C9-1		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

7/14/2023 4:44:38 PM

Date



Permit Number: WAR002557

Permittee: Pierce County Recycling - 304th Street L

Facility County: Pierce

Receiving Waterbody:

Monitoring Period: 04/01/2023 - 06/30/2023

Outfall: SWPO - Discharge from SW pond

Version: 1

						</						

Reporting Codes Used: B - Below Detection Limit/No Detection, J - Estimated Value/Below Quantitation Limit

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

8/8/2023 11:41:40 AM

Date



			</	

Attachment J

Landfill Gas Monitoring Data

LRI Landfill

04223001.04

April-23

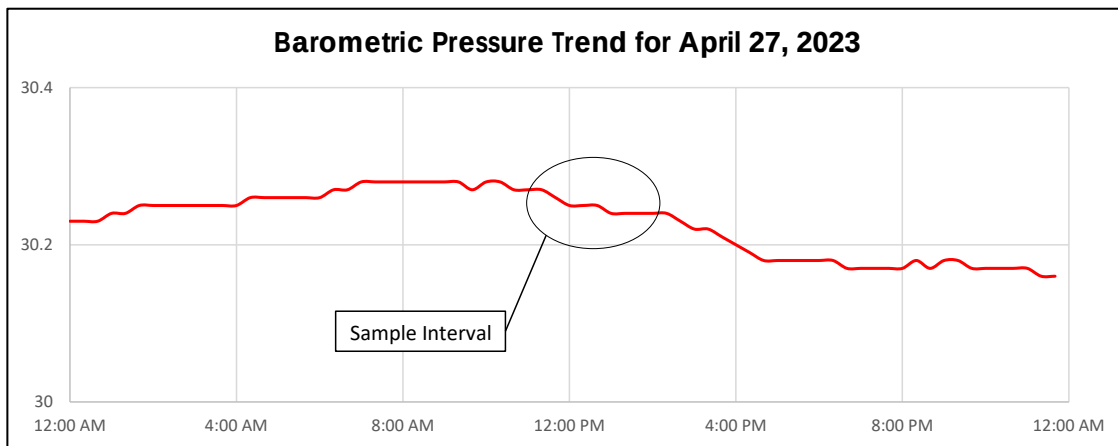
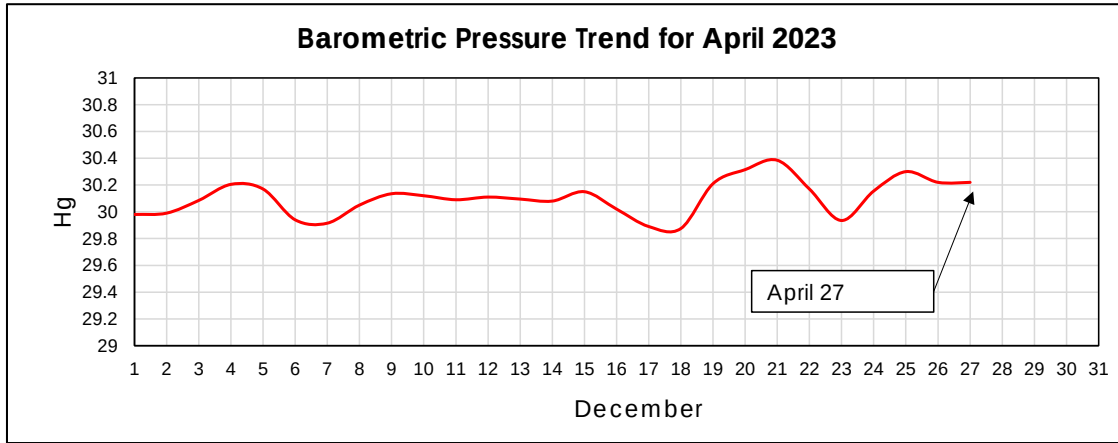
Perimeter Gas Probes

General Data:

Headings:

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		
CO ₂	Carbon Dioxide	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
O ₂	Oxygen		
H ₂ O	Water Vapor	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
N ₂	Nitrogen		
TOC	Top of Casing		

Barometric Pressure Trend - December 2022 LRI Landfill, Pierce County, Washington



Monthly Data Source: Wunderground.com (South Hill, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-04-27/2023-04-27/monthly>

Daily Data Source: Wunderground.com (South Hill, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-04-27/2023-04-27/daily>

LRI Landfill

04223001.04

May-23

[illegible]

Normal Operating Range:

(min)			-	-	0.3	-	-				20.0	
(max)			1.18	-	5.0	5.0	20.3				90.0	

Perimeter Gas Probes

GP-1A	5/24/2023	11:19	-0.64	--	0.0	0.0	20.7	79.3	15.0	5.0	100.0	
GP-2	5/24/2023	11:03	-0.01	--	0.2	14.6	0.1	85.1	15.9	0.0	0.0	
GP-3	5/24/2023	10:40	1.18	--	0.0	6.2	10.9	82.9	9.9	14.9	100.0	
GP-4	5/24/2023	10:34	-0.10	--	0.0	7.6	9.7	82.7	9.8	0.0	0.0	
GP-9	5/24/2023	10:27	0.05	--	0.0	9.6	7.5	82.9	12.0	0.0	0.0	
GP-10	5/24/2023	11:43	0.23	--	6.8	25.7	0.3	67.2				
GP-10P	5/24/2023	11:40	-0.50	--	15.4	26.5	2.6	55.5				
GP-11	5/24/2023	11:56	0.14	--	0.0	20.0	0.2	79.8				
GP-12	5/24/2023	12:06	-0.49	--	17.0	48.3	0.2	34.5				
GP-13	5/24/2023	12:18	-0.37	4.9	0.0	19.3	4.1	76.6				
GP-14	5/24/2023	12:47	0.07	--	0.0	0.2	20.8	79.0	12.4	0.0	0.0	
GP-15	5/24/2023	12:55	-2.02	--	0.0	0.1	20.7	79.2	15.3	0.0	0.0	
GP-16	5/24/2023	10:00	0.00	--	0.0	0.3	20.8	78.9	19.9	12.6	83.7	
GP-17	5/24/2023	10:56	0.0	--	0.0	0.1	21.2	78.7	7.2	0.0	100.0	
GP-18	5/24/2023	10:46	0.0	--	0.0	0.1	21.1	78.8	5.0	0.0	0.0	
GP-19	5/24/2023	13:18	0.0	--	0.0	0.6	20.0	79.4	7.8	0.0	0.0	
GP-20	5/24/2023	12:39	-0.1	--	0.0	0.4	19.8	79.8	7.9	0.0	0.0	
GP-21	5/24/2023	12:24	0.0	--	0.0	0.6	19.1	80.3	7.2	0.0	0.0	

General Data:

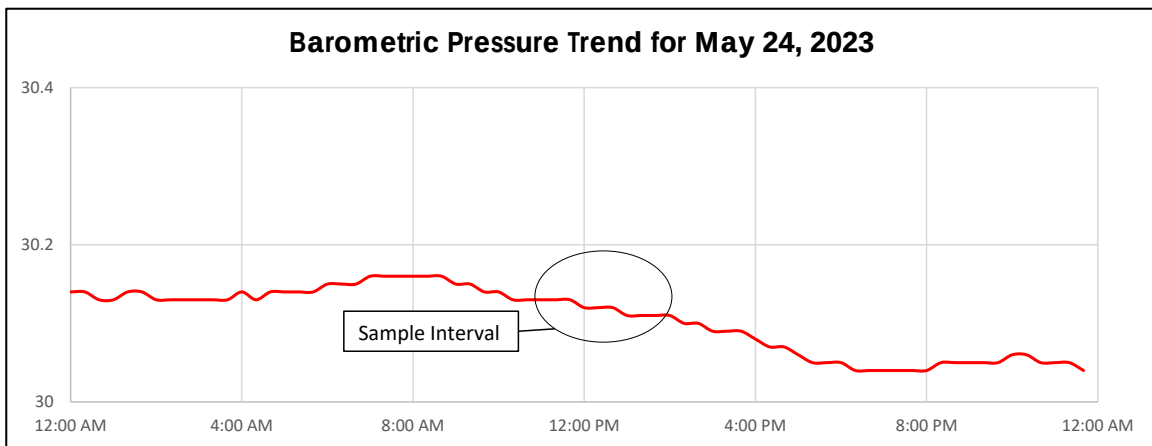
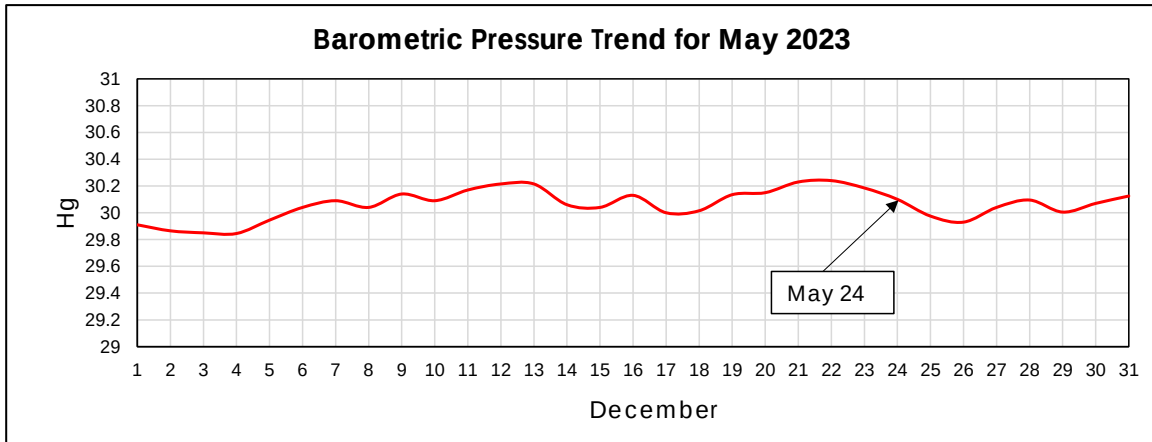
	Beginning	Ending	Average	Starting Date:	5/24/2023
Weather:	Sunny	Sunny	Sunny	Starting Time:	10:00
Temperature, T (deg F):	62	69	65.5	Finishing Date:	5/24/2023
Wind Speed (mph):	5	10	7.5	Finishing Time:	13:18
Wind Direction:	292.5	315	303.75	Monitored by:	L. Walker
Barometric Pressure, P (in Hg):	29.62	29.61	29.62	Instruments:	GEM 2000
24hr Baro.Trend (rising / falling / steady / unsteady)	Falling			Calibration Date:	5/24/2023

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		
CO ₂	Carbon Dioxide	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
O ₂	Oxygen		
H ₂ O	Water Vapor	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
N ₂	Nitrogen		
TOC	Top of Casing		

Barometric Pressure Trend - December 2022 LRI Landfill, Pierce County, Washington



Monthly Data Source: Wunderground.com (South Hill, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-04-27/2023-04-27/monthly>

Daily Data Source: Wunderground.com (South Hill, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-05-24/2023-05-24/daily>

LRI Landfill

04223001.04

June-23

[illegible]

Normal Operating Range:

(min)			-	-	0.3	-	-			20.0	
(max)			0.10	-	5.0	5.0	20.3			90.0	

Perimeter Gas Probes

GP-1A	6/21/2023	11:17	-0.02	--	14.7	23.3	12.8	49.2	0.0	0.0	0.0	
GP-2	6/21/2023	10:59	-0.06	--	0.0	14.1	2.1	83.8	16.4	0.0	0.0	
GP-3	6/21/2023	10:45	-1.08	--	0.0	5.6	12.4	82.0	10.2	15.2	100.0	
GP-4	6/21/2023	10:40	-0.06	--	0.0	9.3	7.7	83.0	11.8	2.0	39.0	
GP-9	6/21/2023	10:34	-0.05	--	0.0	9.6	6.7	83.7	11.5	0.0	0.0	
GP-10	6/21/2023	11:33	-0.16	--	15.3	26.9	2.2	55.6				
GP-10P	6/21/2023	11:37	-0.09	--	0.0	2.9	16.7	80.4				
GP-11	6/21/2023	11:46	-0.17	--	0.0	20.1	2.7	77.2				
GP-12	6/21/2023	13:20	-0.10	--	19.9	50.7	1.1	28.3				
GP-13	6/21/2023	13:28	-0.11	4.9	0.0	24.5	1.5	74.0				
GP-14	6/21/2023	15:13	-0.12	--	0.0	0.1	20.3	79.6	14.3	0.0	0.0	
GP-15	6/21/2023	15:21	0.10	--	0.0	10.0	13.5	76.5	17.2	1.6	31.4	
GP-16	6/21/2023	10:26	0.00	--	0.0	0.3	20.4	79.3	21.1	13.7	91.6	
GP-17	6/21/2023	11:05	0.0	--	0.0	0.3	19.0	80.7	8.8	0.0	100.0	
GP-18	6/21/2023	10:50	0.0	--	0.0	0.2	20.1	79.7	8.9	0.0	0.0	
GP-19	6/21/2023	15:52	-0.1	--	0.0	0.7	20.6	78.7	9.7	0.0	0.0	
GP-20	6/21/2023	13:45	-0.1	--	0.0	0.1	21.0	78.9	8.6	0.0	0.0	
GP-21	6/21/2023	13:33	-0.1	--	0.0	0.6	20.2	79.2	12.2	0.0	0.0	

General Data:

	Beginning	Ending	Average	Starting Date:	6/21/2023
Weather:	Sunny	Sunny	Sunny	Starting Time:	10:26
Temperature, T (deg F):	60.4	68.5	64.45	Finishing Date:	6/21/2023
Wind Speed (mph):	0	2	1	Finishing Time:	15:52
Wind Direction:	360	360	360	Monitored by:	J. Faille
Barometric Pressure, P (in Hg):	30.27	30.22	30.25	Instruments:	GEM 2000
24hr Baro.Trend (rising / falling / steady / unsteady)	Falling			Calibration Date:	6/21/2023

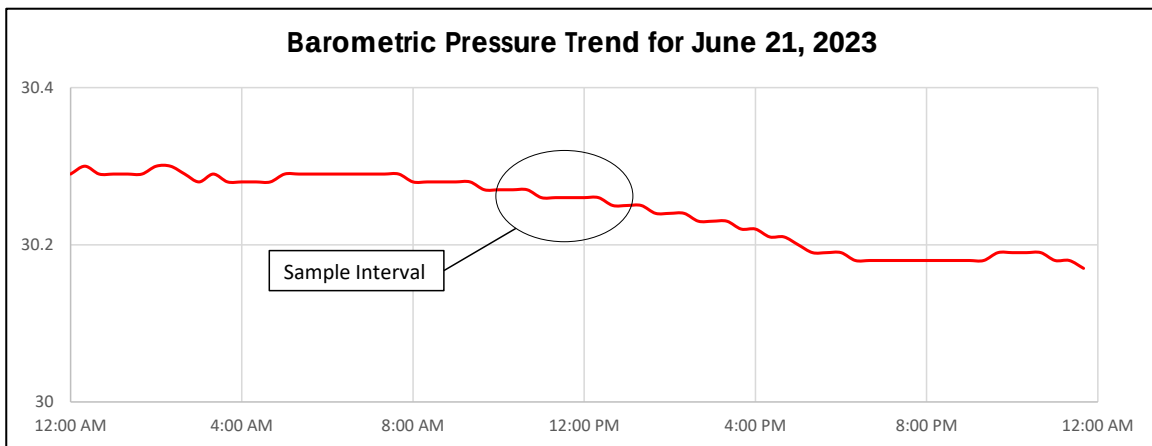
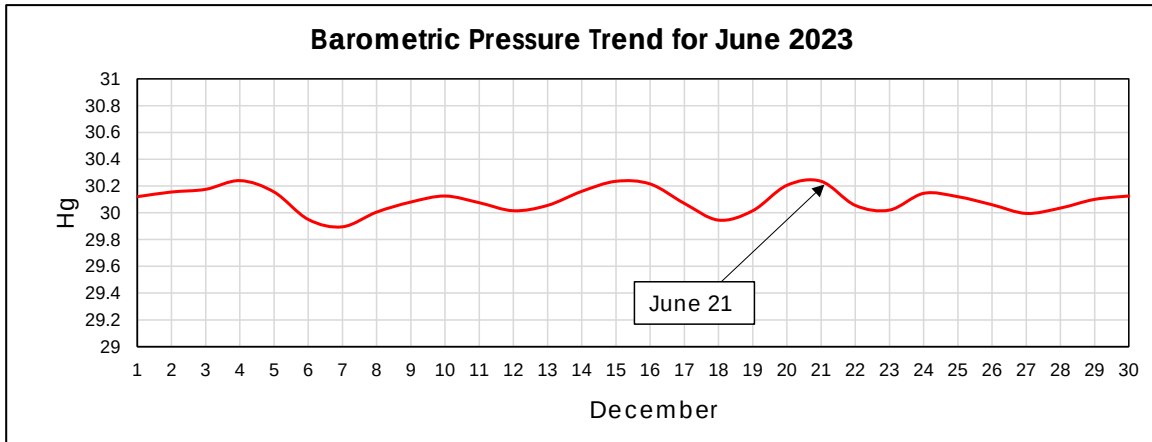
Headings:

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		
CO ₂	Carbon Dioxide	2.	Water level measurements made where gas probe monitoring port allows for measurement, or where there is an adjacent measurement piezometer.
O ₂	Oxygen		
H ₂ O	Water Vapor	3.	Exposed Perforation = perforated pipe section not submerged by liquid.
N ₂	Nitrogen		
TOC	Top of Casing		

Barometric Pressure Trend - December 2022

LRI Landfill, Pierce County, Washington



Monthly Data Source: Wunderground.com (South Hill, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-06-21/2023-06-21/monthly>

Daily Data Source: Wunderground.com (South Hill, WA)

Lat: 46.98 Long: 122.34 Elev: 692 ft-AMSL

Data Source:

<https://www.wunderground.com/dashboard/pws/KWAGRAHA52/table/2023-06-21/2023-06-21/daily>

LRI 304th Street Landfill

Landfill Gas Monitoring of On-site Buildings

Date: ~~5/25/2023~~ 9/31/23
Weather Conditions: overcast, slight breeze
Instrument: FID
Measured By: JTF

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.

Repair Shop – survey atmosphere conditions throughout (lower height levels).

Pay/Scale Booth – interior of building.

Background Concentrations:

Upwind	<u>0</u>	ppm
Downwind	<u>0</u>	ppm

Ju7. JTF
Signature

May 15, 2023
File No. 04223001.15

Mr. George Duvendack
Region Engineer
Pierce County Recycling, Composting and Disposal, LLC dba LRI
17925 Meridian Street East
Puyallup, Washington 98375

Subject: **2023 Phase 1 Gas System Expansion Well Installation Report**
LRI Landfill, Graham, Washington

Dear George:

This letter report presents a summary of field activities performed by SCS Engineers (SCS) during the installation of 8 new interim landfill gas (LFG) wells at the LRI Landfill located in Graham, Washington. The LFG extraction wells were installed in general accordance with the 2023 Gas System Expansion design plans, approved well construction variance, and well completion schedule issued by SCS on April 6th, 2023. Following completion of the well installation work, each well was given a standard well designation consistent with LRI naming convention as shown in Table 1.

Summary

SCS personnel were onsite from April 11, 2023 through April 13, 2023 to observe and document drilling and installation of 8 new interim LFG extraction wells performed by DBM Contractors, Inc. (DBM). Observations of the cuttings from well drilling were logged for each boring and are included on the attached boring and construction logs prepared by SCS. The following table presents a summary of the completed well installation data.

Table 1: Summary of Well Completion

Well ID	Design ID	Surface Elevation (ft-msl) ⁽¹⁾	Well Material	ECY Well Tag ⁽²⁾	Design Depth (ft)	Installed Depth (ft)	Length of Screen (ft)
WE-360	IW-01	711.1	HDPE	BLP 700	40	40	20
WE-361	IW-02	719.3	HDPE	BLP 699	40	41	20
WE-362	IW-03	731.2	HDPE	BLP 698	40	41	20
WE-363	IW-04	751.6	HDPE	BLP 693	40	43	20
WE-364	IW-05	753.3	HDPE	BLP 697	40	41	20
WE-365	IW-06	772.3	HDPE	BLP 696	40	41.5	20
WE-366	IW-07	785.2	HDPE	BLP 695	40	40.5	20
WE-367	IW-08	799.9	HDPE	BLP 694	40	41	20

Notes:

1. Survey data provided by HRK prior to drilling and installation. Elevations are for the original staked locations and do not account for minor relocation at time of installation.
2. ECY Well Tags were provided by DBM upon completion of each well.

LFG Extraction Well Drilling and Installation

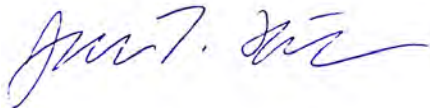
The borings for the LFG extraction wells were drilled using an IMT AF250 drill rig with a 10 foot long, 36-inch diameter core barrel. For each of the extraction wells, the borings were advanced to the design depths and over drilled up to 3-feet based on drilling conditions. The extraction wells were then constructed using 6-inch diameter SDR11 high density polyethylene (HDPE) pipe and fittings. Backfill was completed with 2-inch minus round rock, bentonite chips and granules, and clean soil as shown on the attached well construction logs. All construction materials were provided by DBM and verified by SCS prior to use, with the exception of clean soil backfill which was obtained from onsite sources. Drilling and installation of each well was completed in one day. No boreholes were left open overnight.

The wells were completed with approximately 5 feet of pipe stickup above the ground surface to allow for grading, landfill cover/closure, and connection to the existing LFG collection system. Upon completion, each well was issued a Washington State Department of Ecology (ECY) Well Tag in accordance with state regulations and connected to the existing gas collection and control system (GCCS).

Closing

If you have any questions regarding the information presented in this letter or the attached boring logs, please do not hesitate to contact us.

Sincerely,



John Faille, EIT
Staff Professional II
SCS Engineers



Karam Singh, P.E.
Senior Project Engineer
SCS Engineers

cc: Olivier Moi, LRI
Kevin Green, LRI
Samantha Winkle, LRI
Keith Johnston, TPCHD
Trevor Priestley, TPCHD
Bill Harris, Ecology
Derek Rockett, Ecology

Attachments:

2023 LFG Well Completion Logs
2023 GCCS Improvements Phase 1 March – Existing Grades



2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: WE-360

Page 1 of 2

2023 GCCS Expansion Phase 1 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-700. Drawing ID: 2023-C5. IW-01

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0					SM-GM		Soil Cover	
	1								Soil Backfill (from Owner)
	2							08:30 Fresh waste.	
	3								
1	4								
	5								Bentonite Seal (Hydrated)
	6								6-inch Dia. SDR 11 HDPE Solid Pipe
2	7					REFUSE			
	8							08:40 Mixed refuse (plastic, soils, textiles, rubber, wire). Moist, blacks and greys with many colors, light decomposition.	Soil Backfill (from Owner)
	9								
3	10								
	11								
	12								
4	13							08:45 Temperature =94°F.	Bentonite Seal (Hydrated)
	14								
	15								
5	16							08:49 Depth of 16' reached.	2-inch Minus Round Rock Backfill
	17								
	18								
	19								
6	20								

Drilling Company: **DBM Contractors, Inc.**

Drilling Method: **Core Barrel**

Logged By: **J. Faille**

Date Started: **4/11/23**

Date Ended: **4/11/23**

Boring Diameter: **36-inch**

Well Diameter: **6-inch**

Time Started: **08:15**

Time Ended: **13:00**

Total Depth: **40.0 ft.**

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: WE-360

Page 2 of 2

2023 GCCS Expansion Phase 1 - LRI Landfill

JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE			20
21									
22									
7 23								08:55 Mixed refuse (plastic, soils, textiles, rubber, wire). Moist/very moist, blacks and greys with many colors, light/medium decomposition.	Centralizer
24									
25									25
26									6-inch Dia. SDR 11 HDPE Perforated Pipe
27									
28								09:00 Mixed refuse (plastic, soils, textiles, rubber, wire). Moist/very moist, blacks and greys with many colors, light/medium decomposition.	
29									
9 30									2-inch Minus Round Rock Backfill
31								09:02 Temperature =104°F.	
32									
10 33									
34									
35								09:15 Mixed refuse (plastic, textiles). Very moist/wet, blacks with many colors, medium decomposition.	
11 36									
37									
38						REFUSE		09:21 Temperature =102°F.	Bottom Cap
12 39									
40								09:29 40' depth taped, boring complete.	40
41									
42									
13 43									
44									

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: WE-361

Page 1 of 2

2023 GCCS Expansion Phase 1 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-699. Drawing ID: 2023-C5. IW-02

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0					SM-GM		Soil Cover	
	1								Soil Backfill (from Owner)
	2								
	3							13:35 Mixed refuse (plastic, soils, textiles, rubber, wire, wood debris). Moist, blacks and greys with many colors, light decomposition.	Bentonite Seal (Hydrated)
1	4								6-inch Dia. SDR 11 HDPE Solid Pipe
	5								
	6					REFUSE			Soil Backfill (from Owner)
2	7								
	8								
	9								
3	10							13:40 Temperature =110°F.	
	11								
	12								
4	13								Bentonite Seal (Hydrated)
	14							Mixed refuse (plastic, textiles, rubber). Moist, blacks and greys with many colors, medium decomposition.	
	15								
5	16								2-inch Minus Round Rock Backfill
	17								
	18								
	19								
6	20								

Drilling Company: **DBM Contractors, Inc.**Drilling Method: **Core Barrel**Logged By: **J. Faille**Date Started: **4/11/23**Date Ended: **4/11/23**Boring Diameter: **36-inch**Well Diameter: **6-inch**Time Started: **13:30**Time Ended: **15:30**Total Depth: **41.0 ft.**

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: WE-361

Page 2 of 2

2023 GCCS Expansion Phase 1 - LRI Landfill

JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE		13:45 Temperature =102°F.	20
21									
22									
7 23									Centralizer
24								Increase in moisture level, now very moist/slightly wet.	
25									25
8 26								13:56 Temperature =113°F.	6-inch Dia. SDR 11 HDPE Perforated Pipe
27									
28									
9 29									
30									2-inch Minus Round Rock Backfill
31									
32								Mixed refuse (plastic, textiles). Very moist/wet, blacks and browns with some colors, medium decomposition.	
10 33									35
34									
35									
11 36									
37									
38						REFUSE		14:20 Temperature =105°F.	
12 39									Bottom Cap
40									40
41								14:27 41' depth taped, boring complete.	
42									
13 43									
44									

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: WE-362

Page 1 of 2

2023 GCCS Expansion Phase 1 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-698. Drawing ID: 2023-C5. IW-03

Depth		Sample Information						Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.				
0	0					SM-GM			Soil Cover	
	1									Soil Backfill (from Owner)
	2									
	3								Mixed refuse, plastics, dry, light decomposition.	
1	4									Bentonite Seal (Hydrated)
	5									6-inch Dia. SDR 11 HDPE Solid Pipe
	6					REFUSE				
2	7									Soil Backfill (from Owner)
	8									
	9									
3	10								Mixed refuse, plastics and soils, darks with many colors.	
	11									
	12									
4	13									Bentonite Seal (Hydrated)
	14								Temperature =66°F.	
	15									
5	16									2-inch Minus Round Rock Backfill
	17									
	18									
	19									
6	20									

Drilling Company: **DBM Contractors, Inc.**Drilling Method: **Core Barrel**Logged By: **L.Walker**Date Started: **4/12/23**Date Ended: **4/12/23**Boring Diameter: **36-inch**Well Diameter: **6-inch**Time Started: **08:04**Time Ended: **12:15**Total Depth: **41.0 ft.**

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

2405 140th Avenue NE, Suite 107
Bellevue, Washington 98005-1877

BORING NUMBER: WE-362

Page 2 of 2

2023 GCCS Expansion Phase 1 - LRI Landfill

JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE			20
21									
22									
7 23								08:25 Temperature =84°F.	
24									
25								Mixed refuse, plastics and soils, dark with grey plastics, moist, light decomposition.	25
26									
8 27									
28								Mixed refuse, increased portion of soils, dark browns and blacks, moist, light decomposition.	
29									
9 30								08:41 Temperature =97°F.	30
31									
32									
10 33									
34									
35									
11 36									
37								Mixed refuse, soils and plastics, less soils than above, many colors, moist, light decomposition.	
38									
12 39						REFUSE			
40									
41								09:02 Temperature =90°F. Depth of 41' taped, boring complete.	
42									
13 43									
44									

Centralizer

6-inch Dia. SDR 11
HDPE Perforated Pipe

2-inch Minus Round
Rock Backfill

Bottom Cap

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2023 GCCS Expansion Phase 1 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-693. Drawing ID: 2023-C5. IW-04

Depth		Sample Information						Graphic Log	Description	Completion Detail	
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.					
0	0					SM-GM			Soil Cover		
	1										Soil Backfill (from Owner)
	2										
	3								Mixed refuse, plastics, soils, wood pallets, many colors, dry, light decomposition.		
1	4										
	5										Bentonite Seal (Hydrated)
	6										6-inch Dia. SDR 11 HDPE Solid Pipe
2	7					REFUSE					
	8										Soil Backfill (from Owner)
	9										
3	10								Mixed refuse, plastics and soils, darks with many colors.		
	11								12:44 Temperature =62°F.		
	12										
4	13								Mixed refuse, plastics and soils, many colors, moist, light decomposition.		
	14										Bentonite Seal (Hydrated)
	15								Increased portion of metals encountered, possibly aluminum.		
5	16										
	17										2-inch Minus Round Rock Backfill
	18										
	19										
6	20										

Drilling Company: **DBM Contractors, Inc.**

Drilling Method: **Core Barrel**

Logged By: **L.Walker**

Date Started: **4/13/23**

Date Ended: **4/13/23**

Boring Diameter: **36-inch**

Well Diameter: **6-inch**

Time Started: **12:35**

Time Ended: **13:26**

Total Depth: **43.0 ft.**

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

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2023 GCCS Expansion Phase 1 - LRI Landfill

JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE			20
21									
22									
7 23								12:59 Temperature =85°F.	
24									
25								Mixed refuse (soils and plastics), many colors.	
26									
8 27									
28									
29									
9 30									
31									
32									
10 33								13:13 Temperature =88°F.	
34									
35									
11 36									
37									
38								Mixed refuse (soils, plastics, textiles, wood debris), blacks with many colors, moist, light decomposition.	
12 39						REFUSE			
40									
41									
42									
13 43								13:26 Depth of 43' taped, boring complete.	
44									

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

Centralizer

6-inch Dia. SDR 11
HDPE Perforated Pipe

2-inch Minus Round
Rock Backfill

Bottom Cap

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BORING NUMBER: WE-364

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2023 GCCS Expansion Phase 1 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-697. Drawing ID: 2023-C5. IW-05

Depth		Sample Information						Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.				
0	0					SM-GM			Soil Cover	
	1									Soil Backfill (from Owner)
	2									
	3								Mixed refuse (plastics and tarps), many colors, fresh waste.	Bentonite Seal (Hydrated)
1	4									6-inch Dia. SDR 11 HDPE Solid Pipe
	5									
	6					REFUSE				Soil Backfill (from Owner)
2	7									
	8									
	9									
3	10									
	11									
	12									Bentonite Seal (Hydrated)
4	13									
	14									
	15								10:58 Temperature =72°F.	
5	16									
	17								Mixed refuse, many colors, light soil portion, slightly moist.	2-inch Minus Round Rock Backfill
	18									
	19									
6	20									

Drilling Company: **DBM Contractors, Inc.**

Drilling Method: **Core Barrel**

Logged By: **L.Walker**

Date Started: **4/12/23**

Date Ended: **4/12/23**

Boring Diameter: **36-inch**

Well Diameter: **6-inch**

Time Started: **10:43**

Time Ended: **11:35**

Total Depth: **41.0 ft.**

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2023 GCCS Expansion Phase 1 - LRI Landfill

JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE		Increase in soil portion.	20
21									
22									
7 23									Centralizer
24								11:10 Temperature =81°F.	
25									
8 26									6-inch Dia. SDR 11 HDPE Perforated Pipe
27								Mixed refuse (plastics and soils), many colors, slightly moist, light decomposition.	
28									
29									
9 30									2-inch Minus Round Rock Backfill
31									
32									
10 33								11:22 Temperature =81°F.	
34									
35									
11 36								Mixed refuse, soils and plastics, many colors, moist, light decomposition.	
37									
38						REFUSE			
12 39									Bottom Cap
40									
41								11:35 Temperature =81°F. Depth of 41' taped, boring complete.	
42									
13 43									
44									

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

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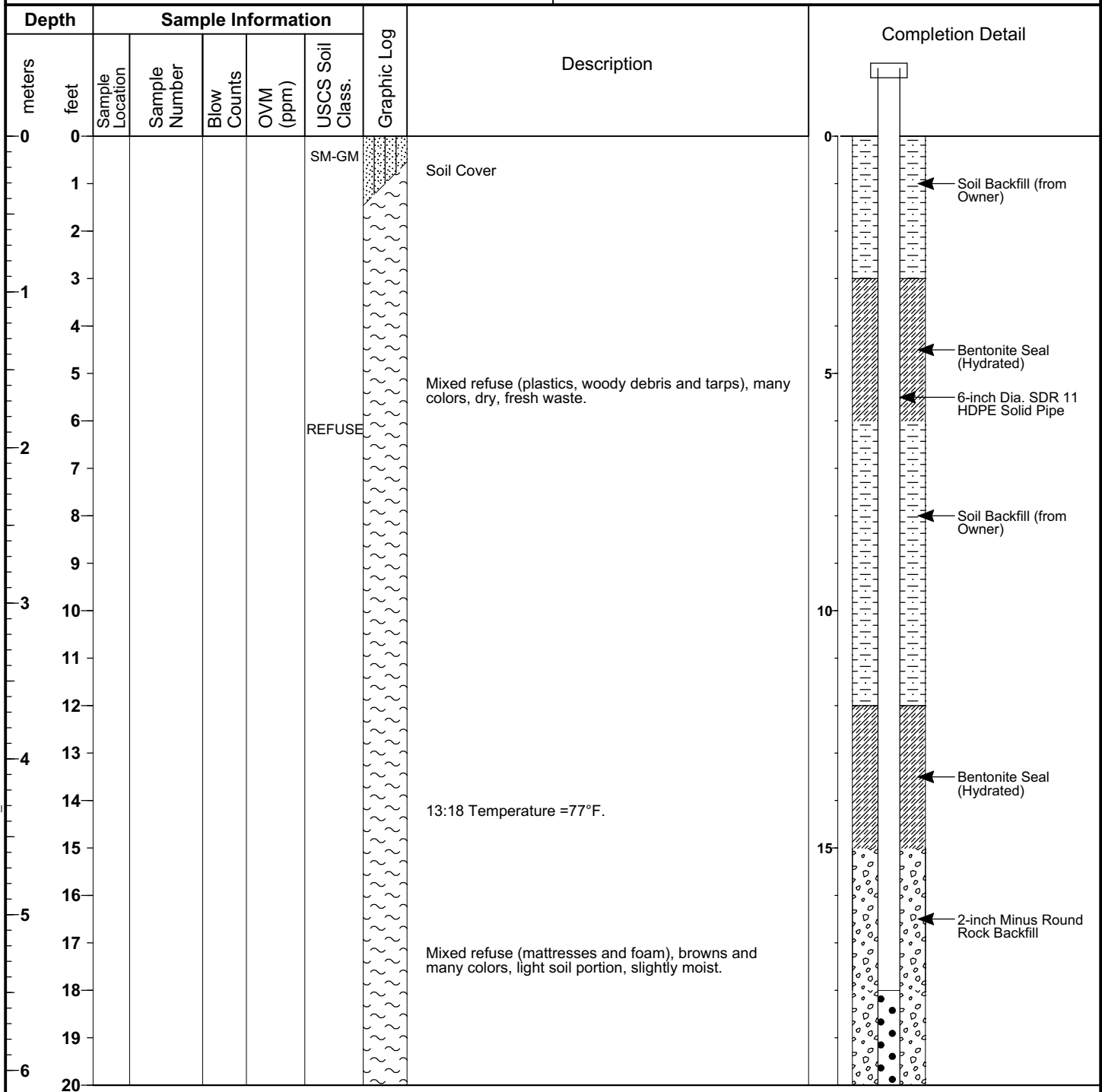
BORING NUMBER: WE-365

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2023 GCCS Expansion Phase 1 - LRI Landfill
30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-696. Drawing ID: 2023-C5. IW-06



Drilling Company: **DBM Contractors, Inc.**

Drilling Method: **Core Barrel**

Logged By: **L.Walker**

Date Started: **4/12/23**

Date Ended: **4/12/23**

Boring Diameter: **36-inch**

Well Diameter: **6-inch**

Time Started: **13:07**

Time Ended: **14:04**

Total Depth: **41.5 ft.**

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

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JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE		13:25 Temperature =77°F.	20
21									
22									
7 23									Centralizer
24									
25								Mixed refuse (soils, plastics, textiles), many colors, light decomposition, slightly moist.	25
8 26									6-inch Dia. SDR 11 HDPE Perforated Pipe
27									
28									
9 29									
30								13:37 Temperature =80°F.	30
31									2-inch Minus Round Rock Backfill
32									
10 33									
34									
35									35
11 36								13:53 Temperature =82°F.	
37									
38									
12 39						REFUSE		Mixed refuse (soils, metals, shredded rubber, plastics), many colors, moist, light decomposition.	Bottom Cap
40									40
41									
42								14:04 Depth of 41.5' taped, boring completed.	
13 43									
44									

STANDARD_LOG 04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

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30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-695. Drawing ID: 2023-C5. IW-07

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
0	0					SM-GM		Soil Cover	
	1								Soil Backfill (from Owner)
	2								
	3								
1	4								Bentonite Seal (Hydrated)
	5							Mixed refuse (mainly plastics), many colors, dry, fresh waste.	6-inch Dia. SDR 11 HDPE Solid Pipe
	6					REFUSE			
2	7								Soil Backfill (from Owner)
	8								
	9								
3	10							08:09 Temperature =71°F.	
	11								
	12							Mixed refuse (mattresses and foam), browns and many colors, light soil portion, dry, fresh waste.	
4	13								Bentonite Seal (Hydrated)
	14								
	15								
5	16								2-inch Minus Round Rock Backfill
	17								
	18								
	19							08:21 Temperature =66°F.	
6	20								

Drilling Company: **DBM Contractors, Inc.**Drilling Method: **Core Barrel**Logged By: **L.Walker**Date Started: **4/13/23**Date Ended: **4/13/23**Boring Diameter: **36-inch**Well Diameter: **6-inch**Time Started: **07:59**Time Ended: **09:02**Total Depth: **40.5 ft.**

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JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.			
20						REFUSE			20
21									
22									
7 23									Centralizer
24									
25								Mixed refuse (soils and plastics), many colors, light decomposition, slightly moist.	25
8 26									6-inch Dia. SDR 11 HDPE Perforated Pipe
27									
28									
9 29									
30								08:48 Temperature =63°F.	30
31									2-inch Minus Round Rock Backfill
32									
10 33									
34									
35									35
11 36								Mixed refuse, increase in soil portion, many colors, slightly moist, light decomposition.	
37									
38						REFUSE			
12 39									Bottom Cap
40									40
41								09:02 Depth of 40.5' taped, boring completed.	
42									
13 43									
44									

STANDARD_LOG 04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

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30919 Meridian East
Graham, Washington

JOB NUMBER: 04223001.15

REMARKS:
Ecology Tag BLP-694. Drawing ID: 2023-C6. IW-08

Depth		Sample Information						Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OVM (ppm)	USCS Soil Class.				
0	0					SM-GM			Soil Cover	
	1									Soil Backfill (from Owner)
	2									
	3									
1	4									Bentonite Seal (Hydrated)
	5								Mixed refuse (mainly plastics), many colors, moist soil, fresh waste.	6-inch Dia. SDR 11 HDPE Solid Pipe
	6					REFUSE				
2	7								10:22 Temperature =73°F.	
	8									Soil Backfill (from Owner)
	9									
3	10									
	11									
	12								Mixed refuse (rubber tire encountered), many colors, moist soil, fresh waste.	
4	13									Bentonite Seal (Hydrated)
	14									
	15									
5	16									2-inch Minus Round Rock Backfill
	17									
	18									
	19									
6	20									

Drilling Company: **DBM Contractors, Inc.**Drilling Method: **Core Barrel**Logged By: **L.Walker**Date Started: **4/13/23**Date Ended: **4/13/23**Boring Diameter: **36-inch**Well Diameter: **6-inch**Time Started: **10:13**Time Ended: **11:05**Total Depth: **41.0 ft.**

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23

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JOB NUMBER: 04223001.15

Depth		Sample Information					Graphic Log	Description	Completion Detail
meters	feet	Sample Location	Sample Number	Blow Counts	OM (ppm)	USCS Soil Class.			
20						REFUSE		10:35 Temperature =70°F.	20
21									
22									
7 23									Centralizer
24								Mixed refuse (soils and plastics), many colors, light decomposition, slightly moist.	
25								10:47 Temperature =82°F.	25
26									6-inch Dia. SDR 11 HDPE Perforated Pipe
27									
28									
29									
9 30								Mixed refuse, increase in soil portion, many colors, dry, light decomposition.	30
31									2-inch Minus Round Rock Backfill
32									
10 33									
34									
35								Mixed refuse, many colors, moist soil, light decomposition.	35
36									
37									
38						REFUSE			
39									Bottom Cap
12 40									40
41								11:05 Depth of 41' taped, boring completed.	
42									
13 43									
44									

STANDARD_LOG_04223001.15 - LRI 304 GAS WELLS APRIL 2023.GPJ STD_LOG.GDT 5/10/23