
2022 Groundwater Monitoring Report Superlon Plastics Property

Prepared for:

White Birch Group LLC

2116 Taylor Way

Tacoma, WA 98401

and

The Chemours Company

Corporate Remediation Group

1007 Market Street, Room 13116A

Wilmington, Delaware 19899

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Nathan Starr, L.G., Senior Hydrogeologist



Pacific Environmental and Redevelopment Corporation

424 East Meadow Lake Drive
Snohomish, Washington 98290

and



PIONEER Technologies Corporation

5205 Corporate Center Ct. SE, Suite A
Olympia, Washington 98503-5901

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Acronyms and Abbreviations

Acronym/Abbreviation	Description
Chemours	The Chemours Company FC, LLC
COPC	Constituent of Potential Concern
Ecology	Washington State Department of Ecology
Eh	Activity of Electrons
GWM	Groundwater Monitoring
mg/L	Milligrams per liter
MW	Groundwater Monitoring Well
MTCA	Model Toxics Control Act
PERC	Pacific Environmental and Redevelopment Corporation
PIONEER	PIONEER Technologies Corporation
Property	Superlon Plastics Property
QA/QC	Quality Assurance / Quality Control
RI	Remedial Investigation
SAP/QAPP	Sampling and Analytical Plan / Quality Assurance Project Plan
USEPA	United States Environmental Protection Agency
White Birch	White Birch Group LLC

1. Introduction

1.1 Overview

On behalf of The Chemours Company FC, LLC (Chemours), Pacific Environmental and Redevelopment Corporation (PERC) and PIONEER Technologies Corporation (PIONEER) have prepared this 2022 Annual Groundwater Monitoring (GWM) Report for the Superlon Plastics Site (Site). The purpose of this report is to document the GWM activities, results, and evaluations associated with Site groundwater samples collected on August 30, 2022 during the 2022 annual GWM sampling event. GWM is conducted at the Site as part of the remedial investigation (RI) for the Site. The RI is a requirement of the Washington State Department of Ecology (Ecology)-approved Agree Order (No. DE 5940) between White Birch Group LLC (White Birch) and the Chemours Company FC, LLC (Chemours). All RI-associated activities are being conducted in accordance with Washington State Model Toxics Control Act (MTCA), Chapter 173-340 of the Washington Administrative Code.

GWM has been conducted at the site since 2011. Initially, GWM was conducted quarterly from the third quarter of 2011 until the fourth quarter of 2015, when the sampling frequency was reduced to one event per year (Ecology 2015). The results of the 2015-2021 GWM events were documented in the 2015, 2016, 2017, 2018, 2019, 2020 and 2021 GWM Reports (Pacific Environmental and Redevelopment Corporation [PERC] and PIONEER Technologies Corporation [PIONEER] 2015, 2016, 2017, 2018, 2019, 2021a and 2021b).

1.2 Site Location and Description

The Site is located at 2116 Taylor Way, Tacoma, Washington in a highly industrial area of the Tacoma Tidal Flats between the Blair and Hylebos Waterways (see Figure 1). The parcel of land located at 2116 Taylor Way is referred to as the Property. Definition of the Site boundaries (per MTCA) and an evaluation of data from other off Property media will be presented in a future RI/Feasibility Study (FS) and Cleanup Action Plan (CAP) for the Site. This approach, which has been approved by Ecology, was adopted in order to continue progress toward a final remedy for on-Property media, while continuing to investigate off-Property issues and to define the Site boundary (Ecology 2013).

The Property is bordered to the northeast by Taylor Way, to the north by a curved rail road right-of-way owned by the City of Tacoma Public Works, to the northwest by Lincoln Avenue and a warehouse operation, and to the southeast by property leased and operated by Gardner-Fields Products, a roofing and waterproofing products manufacturing business (see Figure 2). To the southwest of the Property is a ditch located on the northeast side of a paved trucking yard owned by the Port of Tacoma (see Figure 2).

1.3 Report Organization

The remainder of this report is organized as follows:

- Section 2: Summary of Groundwater Monitoring
- Section 3: Groundwater Monitoring Results
- Section 4: Conclusions
- Section 5: References

2. Summary of Groundwater Monitoring

2.1 Monitoring Well Locations and Installation Chronology

Historically, a total of 26 Shallow and Intermediate Aquifer co-located MWs have been installed at 13 locations on and off of the Property. As of 2022, 10 MWs remain in place, while the other 16 have been decommissioned (see Figure 3). A brief history of MW locations is presented below:

- Seven Shallow Aquifer MWs (MW-1S – MW-7S) were installed during Phase I RI activities in 2011, in accordance with the Phase I RI Work Plan (PERC 2010).
- One Shallow Aquifer MW (MW-8S) and eight Intermediate Aquifer MWs (MW-1I – MW-8I) were installed during Phase III RI activities in 2012, in accordance with the Phase III RI Work Plan (PERC 2012).
- Four Shallow Aquifer MWs (MW-9S – MW-12S) and four Intermediate Aquifer MWs (MW9I – MW12I) were installed during Phase IV RI activities in 2014, in accordance with the Phase IV RI Work Plan (PERC 2014).
- Sixteen MWs were decommissioned in 2017 (MW-1I, MW-1S, MW-3I, MW-3S, MW-5I, MW-5S, MW-6I, MW-6S, MW-7I, MW-7S, MW-8I, MW-8S, MW-11I, MW-11S, MW-12I, and MW-12S; see Figure 3).
- One Shallow Aquifer MW (MW-13S) and one Intermediate Aquifer MW (MW-13I) were installed in November 2019.¹

2.2 Sampling Methods and Procedures

Groundwater sampling methodology and field quality controls were performed in accordance with the Project Sampling and Analytical Plan (SAP) & Quality Assurance Project Plan (QAPP) for the Superlon Plastics Property (PERC 2022). All samples were sent to a Washington State-certified laboratory in accordance with the SAP/QAPP (PERC 2022). Groundwater sampling field notes are presented in Appendix A.

2.3 QA/QC Methods

Laboratory results were verified for usability by performing Quality Assurance/Quality Control (QA/QC) data validation. QA/QC data validation generally followed the applicable guidance and requirements specified in the following:

- Guidance on Environmental Data Verification and Data Validation (United State Environmental Protection Agency [USEPA] 2002);
- USEPA Contract Laboratory Program, National Functional Guidelines for Superfund Organic Methods Data Review. Final. OSWER 9240.1-45. USEPA/540/R-08/01 (USEPA 2016a);
- USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Superfund Data Review. Final. OSWER 8240.1-51. EPA 540-R-10-011 (USEPA 2016b); and
- Method-specific and laboratory-established QA requirements, as applicable.

¹ MW-13S and MW-13I were installed in the proximate location of MW-3S and MW-3I which were abandoned in 2017 to allow for soil remediation.

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QA/QC data validation procedures were performed in accordance with the SAP/QAPP (PERC 2022). The data validation reports are presented with laboratory reports in Appendix B. Overall the data is acceptable for use without qualification.

2.4 Constituent Analyses

The 2022 groundwater samples were analyzed for dissolved arsenic and dissolved lead only, with Ecology approval (Ecology 2015).² The list of constituents evaluated during the monitoring events has been reduced since sampling was initiated in 2011 as other constituents were consistently not detected or were below screening levels (PERC 2015; PERC and PIONEER 2013, 2015).³

2.5 2022 GWM Deviations

The following deviations were noted for 2021 GWM activities:

- Malfunction of the multimeter probe prevented the measuring of oxidation reduction potential during the sampling of MW-9I and MW-10I.
- Malfunction of the multimeter probe reported high turbidity values during sampling of MW-4I when the water was visually clear.

The deviations did not compromise the investigation objectives or the use of the data obtained during the investigation.

² Dissolved arsenic and lead refer to groundwater samples that have been filtered through a 0.45-micron filter (PERC 2022). All arsenic and lead groundwater samples collected in 2022 were filtered in the field during collection of the samples; prior to 2022 the samples were filtered at the laboratory.

³ The constituent list was reduced to focus the monitoring on constituents of potential concern (COPCs) and eliminate the analyses of constituents not detected or infrequently detected during consecutive sampling events.

3. Groundwater Monitoring Results

Shallow and Intermediate Aquifer groundwater samples were collected from ten MWs and analyzed for dissolved arsenic and lead. The laboratory reports and associated QA/QC data validation reports for the 2022 GWM event are presented in Appendix B.

Constituent concentrations are presented by MW and GWM event for arsenic and lead in Tables 1 and 2, respectively. Groundwater pH and Eh⁴ field measurements are presented by MW and GWM event in Tables 3 and 4, respectively. Arsenic and lead concentrations in the Shallow and Intermediate Aquifers are presented on Figures 4 through 7. Concentration trends for arsenic and lead in active MWs are presented on Figures 8 through 11.⁵

3.1 Arsenic

Arsenic concentration trends in the Shallow Aquifer are as follows (see Table 1 and Figure 8):

- Arsenic concentrations in MW-2S and MW-4S have slowly increased since the MWs were installed in 2011 going from detections in the hundredths and thousandths of mg/L to detections in the tenths of mg/L.
- Arsenic concentrations in MW-9S increased from 5.8 mg/L in 2014 to a maximum concentration in 2017 of 88 mg/L, followed by a decrease to 0.54 mg/L in 2022.
- Arsenic concentrations in MW-10S slowly increased from 0.42 mg/L in 2014 (when the MW was installed) to 3.3 mg/L in 2020 followed by decreases in 2021 (2.3 mg/L) and 2022 (1.7 mg/L).
- Arsenic concentrations in MW-13S have remained stable since it was installed in 2020 ranging from 9.1 to 22 mg/L.⁶ This is similar to the arsenic concentrations measured in MW-3S⁷ between 2012 and 2017 (4.9 to 20 mg/L).

Arsenic concentration trends in the Intermediate Aquifer are as follows (see Table 1 and Figure 9):

- Arsenic concentrations in MW-2I have remained stable and in the range of thousandths to tenths of mg/L since the MW was installed in 2011.
- Arsenic concentrations in MW-4I have remained stable since the MW was installed in 2011 with the highest detection being 0.055 mg/L in 2020, followed by a <0.005 mg/L in 2021 and 0.0068 mg/L in 2022.
- Arsenic concentrations in MW-9I have remained stable and in the range of <0.005 to 0.019 mg/L since the MW was installed in 2014, with the exception of a detection at 0.18 mg/L in 2016.
- Arsenic concentrations in MW-10I have remained < 0.005 mg/L since the MW was installed in 2014⁸, with the exception of a detection at 0.0078 mg/L in 2022.
- Arsenic concentrations in MW-13I have remained stable and in the low tenths of mg/L, which are similar to the concentrations detected in MW-3I⁵ between 2013 and 2017.

⁴ Eh is referred to as “Activity of Electrons” and is calculated from oxidation reduction potential.

⁵ Dissolved arsenic and lead trend graphs including decommissioned wells are located in Appendix C.

⁶ The 2021 Annual Groundwater Monitoring Report indicated that the 3Q 2021 event arsenic concentration in MW-13S was 220 mg/L. This was reported incorrectly. The 3Q 2021 event arsenic concentration in MW-13S was 22 mg/L as indicated in the laboratory report (see Appendix B of the 2021 Annual Groundwater Monitoring Report dated November 30, 2021).

⁷ MW-13S replaced MW-3S and MW-13I replaced MW-3I.

⁸ In 2017 the laboratory diluted the groundwater sample resulting in an elevated reporting limit of 0.10 mg/L (PERC and PIONEER 2017).

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Arsenic concentrations in the Shallow Aquifer appear to be responding to the ongoing on-Property soil and perched groundwater interim action removal action with the most significant trend being a three-order of magnitude decrease in MW-9S and the beginning of a decreasing trend in MW-10S. The small increasing trends in MW-2S and MW-4S have maximum concentrations three-orders of magnitude less than the maximum concentration observed in MW-9S indicating that the increase in dissolved arsenic mass observed in MW-2S and MW-4S is much less than the decrease in dissolved mass observed in MW-9S. Arsenic concentrations in source area MW MW-13S remain stable. Arsenic concentrations in the Intermediate Aquifer are generally stable and are less than the Puget Sound groundwater arsenic background threshold value of 0.008 mg/L (Ecology 2022) with the exception of source area MW MW-13I.

3.2 Lead

Lead concentration trends in the Shallow Aquifer are as follows (see Table 2 and Figure 10):

- Lead concentrations in MW-2S have not been detected above the laboratory reporting limits since the MW was installed in 2011.
- Lead concentrations in MW-4S between 2011 and 2021 varied between 0.00015 and 0.0044 mg/L with laboratory reporting limits prior to 2019 being as high as 0.010 mg/L when lead was not detected above the laboratory reporting limit. The lead result was 0.019 mg/L in 2022, which is an order of magnitude higher than the previous maximum concentration.
- Lead concentrations in MW-9S have not been detected above the laboratory reporting limits since the MW was installed in 2014.
- Lead concentrations in MW-10S have slowly increased since the MW was installed in 2014, to a maximum concentration in 2020 of 0.25 mg/L, followed by a decrease to 0.0078 mg/L in 2022.
- Lead concentrations in MW-13S have remained stable and in the hundredths to tenths of mg/L, which are similar to the concentrations detected in MW-3S between 2013 and 2017.

Lead concentration trends in the Intermediate Aquifer are as follows (see Table 2 and Figure 11):

- Lead concentrations in MW-2I, MW-4I, MW-9I, and MW-10I have remained below the laboratory reporting limits in the ten thousandths to thousandths of mg/L since 2015.
- Lead concentrations in MW-13I have remained stable in the range of less than the laboratory reporting limit in the thousandths of mg/L to detections in the thousandths of mg/L, which are similar to the concentrations detected in MW-3I between 2013 and 2017 (with the exception of a detection in 2013 of 0.014 mg/L).

Lead concentrations are generally one to three-orders of magnitude less than arsenic concentrations with lead only being detected in three shallow MWs (MW-4S, MW-10S and MW-13S) and in one intermediate MW (MW-13I) in 2022. Lead concentrations in the Shallow Aquifer are similar to the arsenic trends with the most significant lead trend being a two-order of magnitude decrease in MW-10S. The increasing trend in MW-4S has a maximum concentration one-order of magnitude less than the maximum concentration observed in MW-10S indicating that the increase in dissolved lead mass observed in MW-4S is much less than the decrease in dissolved mass observed in MW-10S. Lead concentrations in the Intermediate Aquifer are stable.

4. Conclusions

Overall, arsenic and lead concentrations in the Shallow Aquifer appear to be responding to the ongoing on-Property soil and perched groundwater interim action removal action with significant decreases of arsenic and lead in MW-9S and MW-10S, respectively. While other MWs have small increasing trends of arsenic and lead the maximum concentrations detected in these MWs is orders of magnitude less than the maximum concentrations observed in the MWs with decreasing trends indicating that the increase in dissolved mass observed in the increasing MWs is much less than the decrease in dissolved mass observed in the MWs with decreasing trends. It is expected that arsenic and lead concentrations will continue to decrease in the Shallow Aquifer in response to the on-Property soil and perched groundwater interim action removal action. Arsenic and lead concentrations in the Intermediate Aquifer are stable.

All MWs will continue to be sampled annually. Following delineation of the plume using hydropunches, new MWs will be installed following the completion of the ongoing soil and perched groundwater interim action and added to the GWM program.

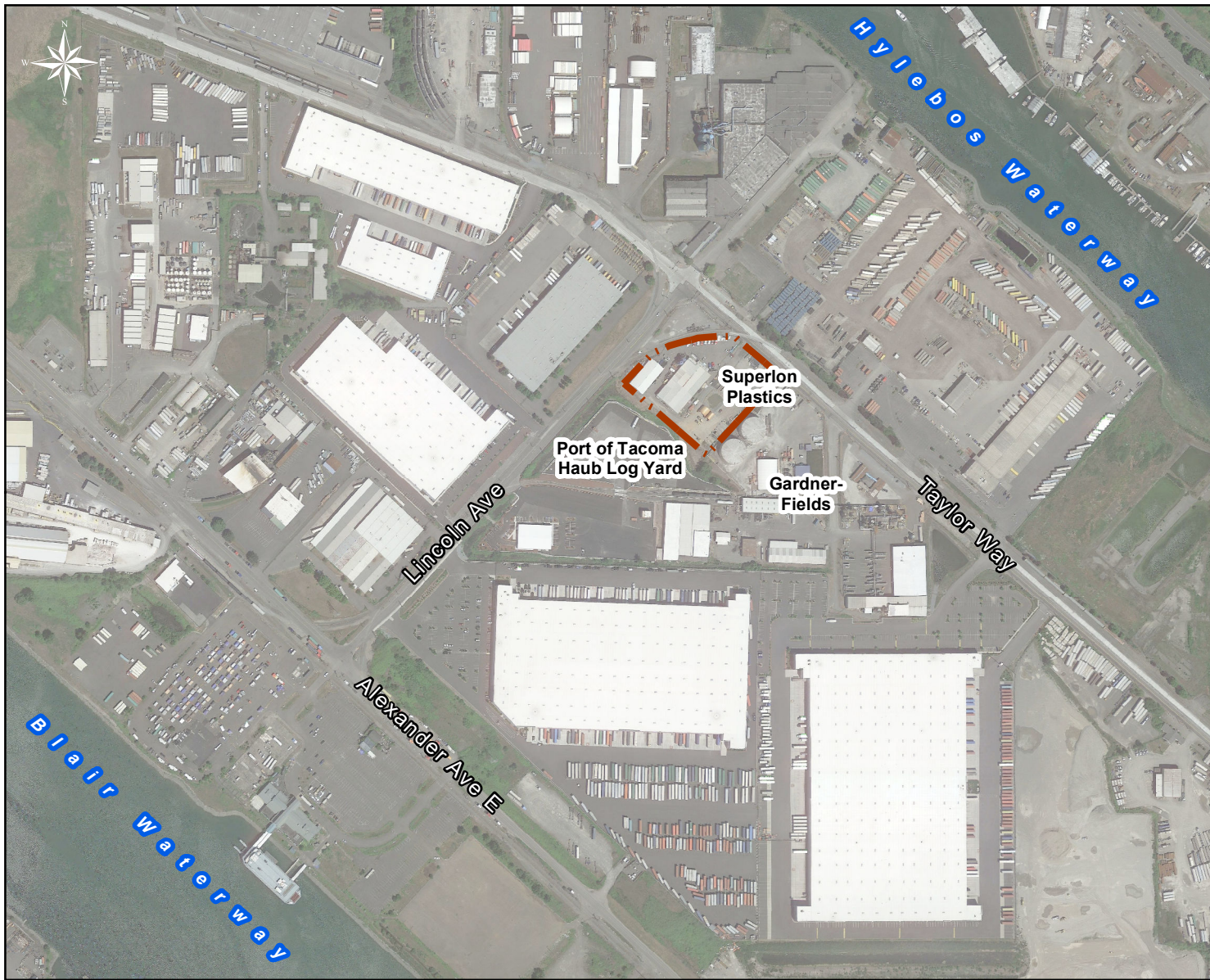
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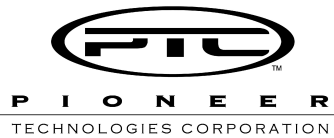
Figures

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Legend

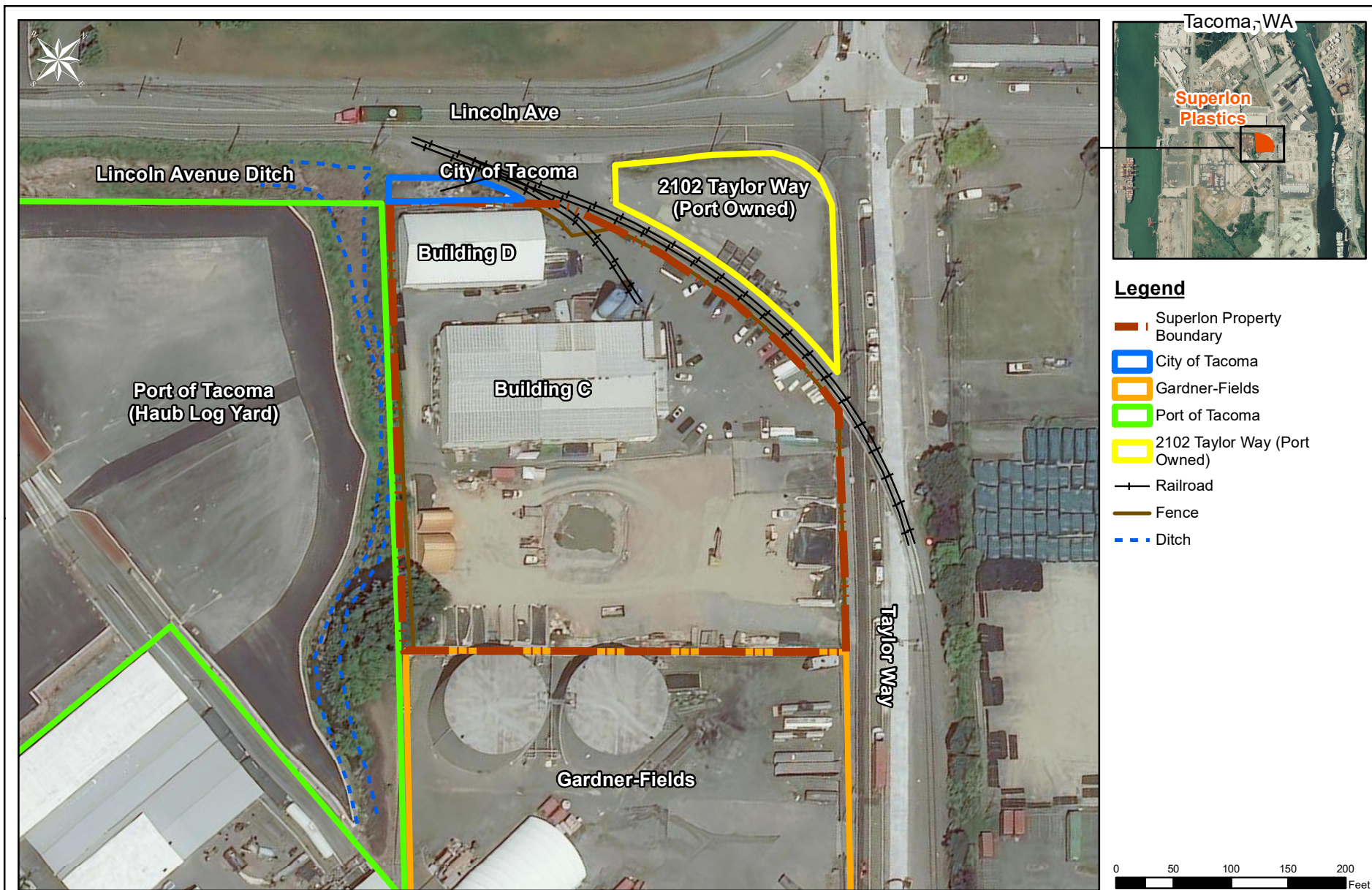
— Superlon Property Boundary



Superlon Property Location
2022 Groundwater Monitoring Report
Superlon Plastics Property, Tacoma, Washington

Figure 1

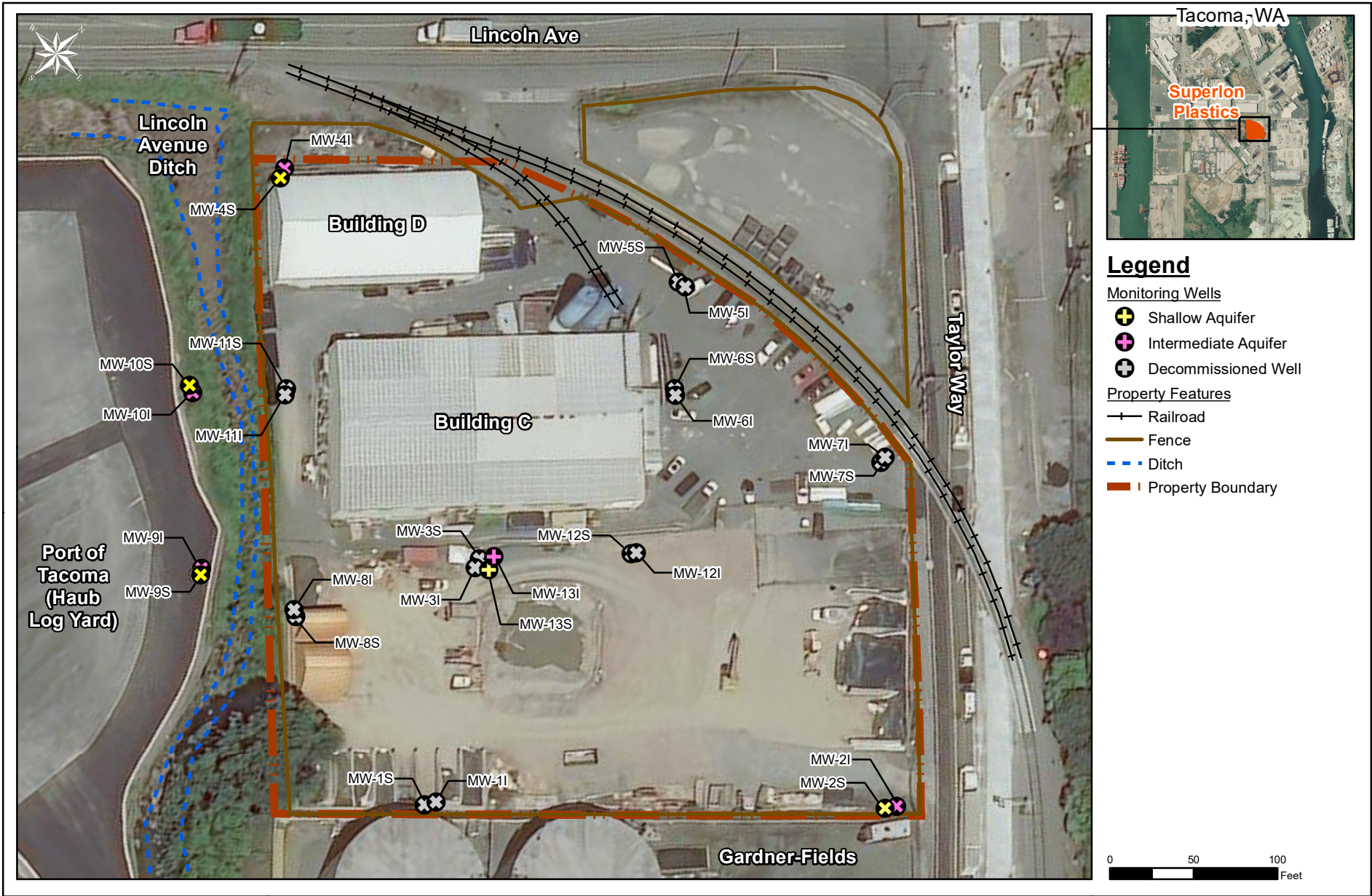
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Property Features
2022 Groundwater Monitoring Report
Superlon Plastics Property, Tacoma, Washington

Figure 2

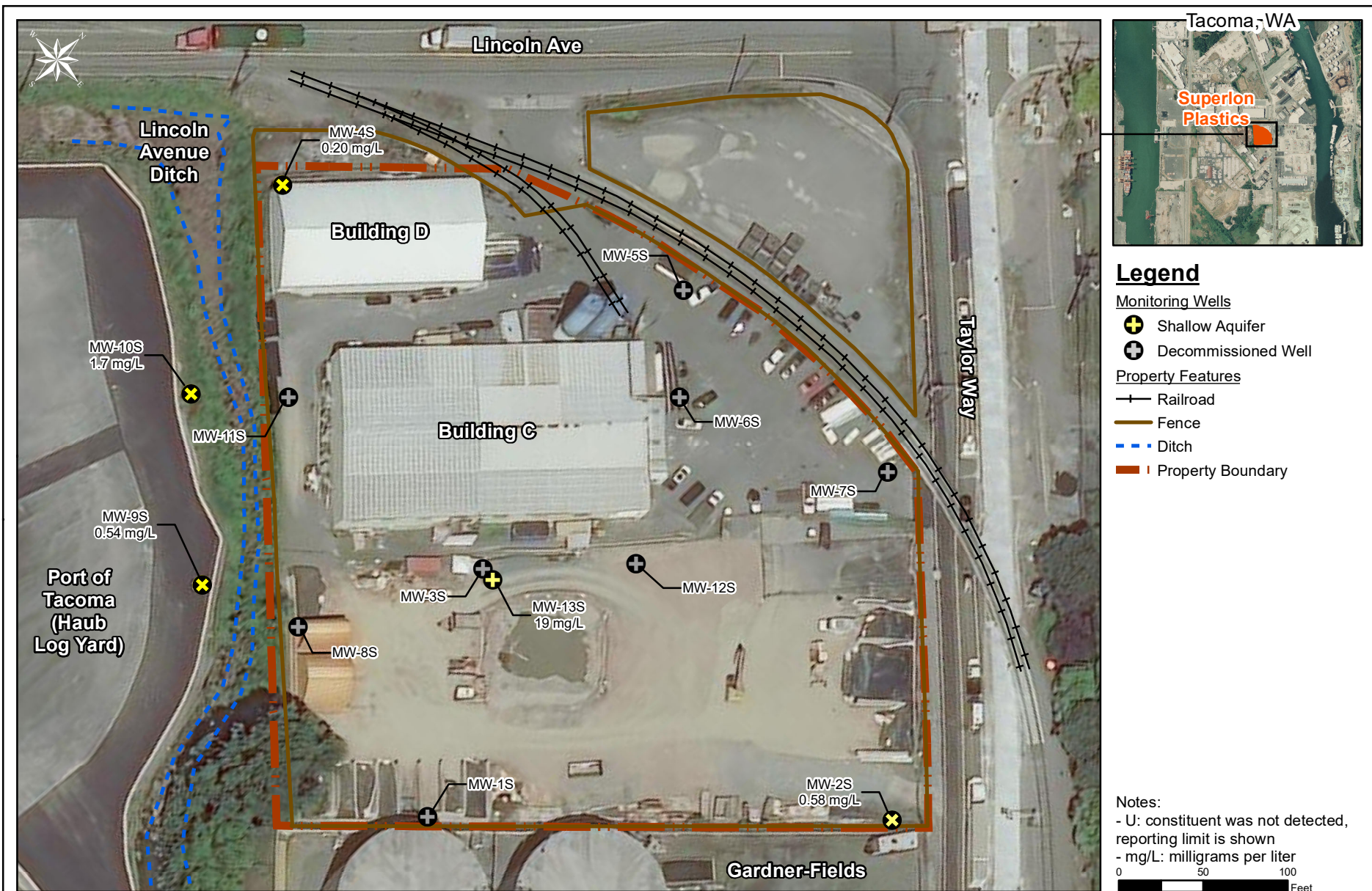
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Monitoring Well Locations
2022 Groundwater Monitoring Report
Superlon Plastics Site, Tacoma, Washington

Figure 3

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Legend

Monitoring Wells

- ⊕ Shallow Aquifer
- ⊕ Decommissioned Well

Property Features

- Railroad
- Fence
- - - Ditch
- ▬ Property Boundary

Notes:

- U: constituent was not detected, reporting limit is shown
- mg/L: milligrams per liter

0 50 100 Feet



Dissolved Arsenic in Shallow Aquifer
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure 4

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Dissolved Arsenic in Intermediate Aquifer
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure 5

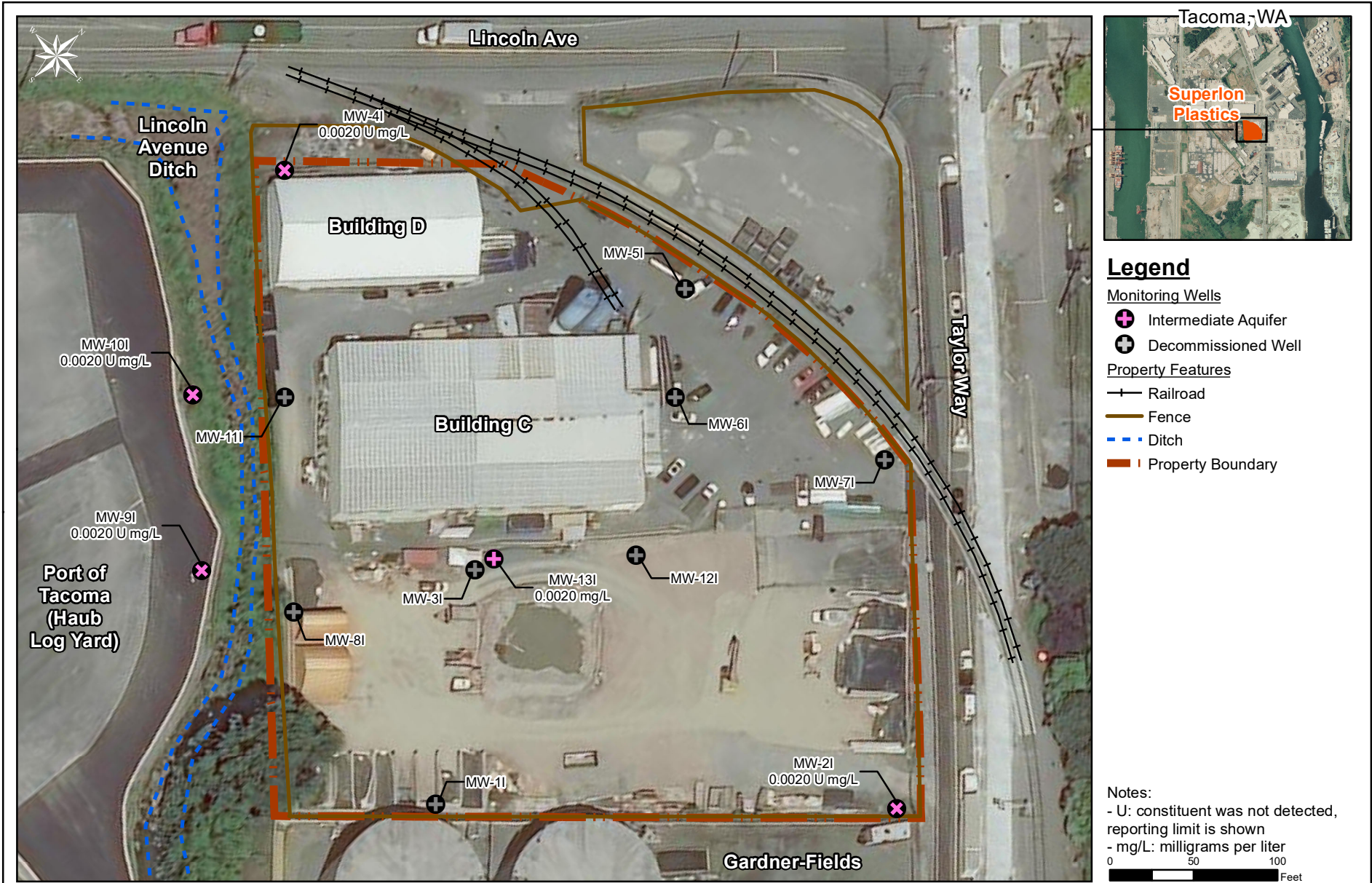
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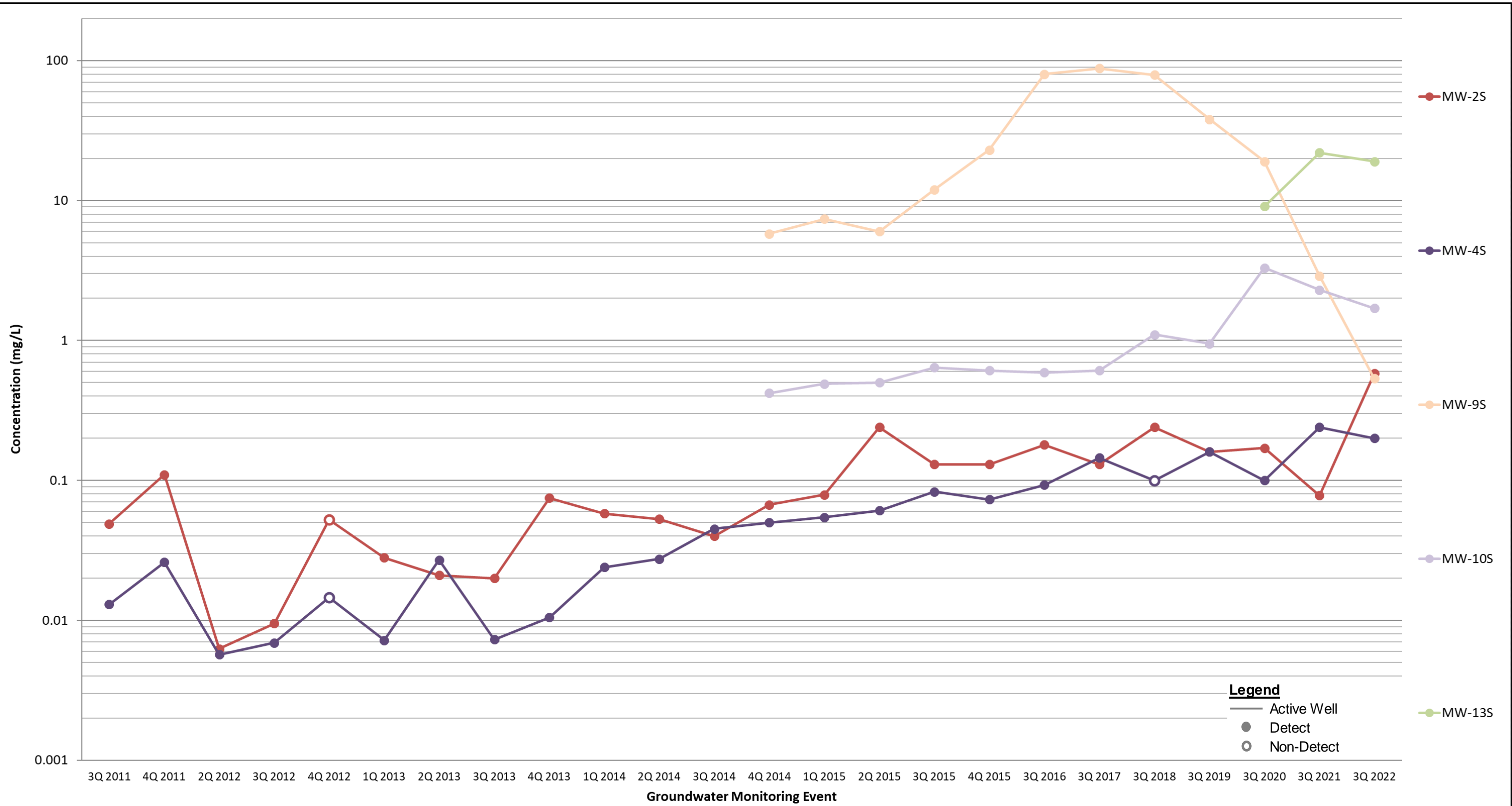
Dissolved Lead in Shallow Aquifer
2022 Groundwater Monitoring Report
Superlon Plastics Site, Tacoma, Washington

Figure 6

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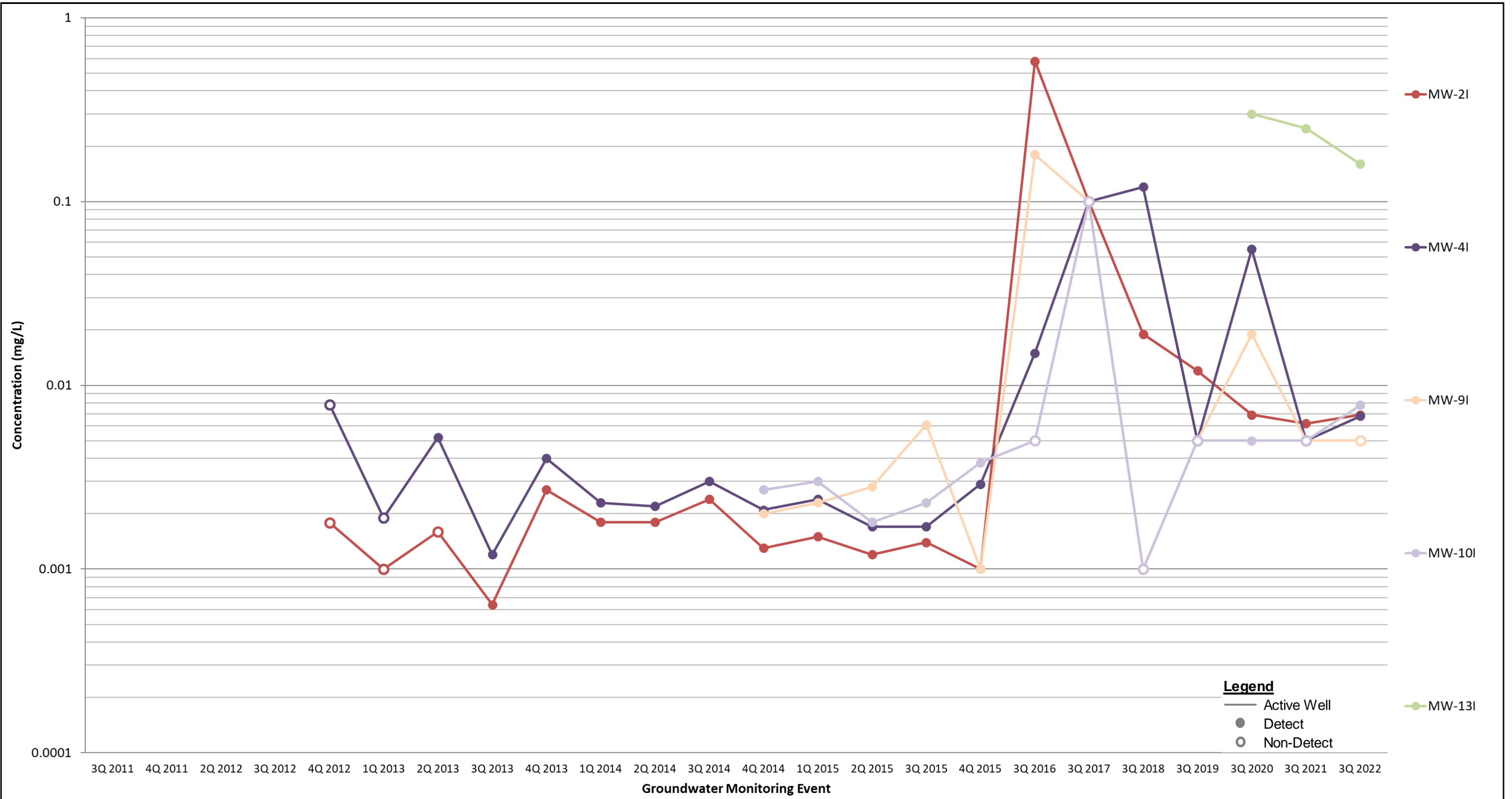
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Dissolved Arsenic Trends in the Shallow Aquifer
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure 8

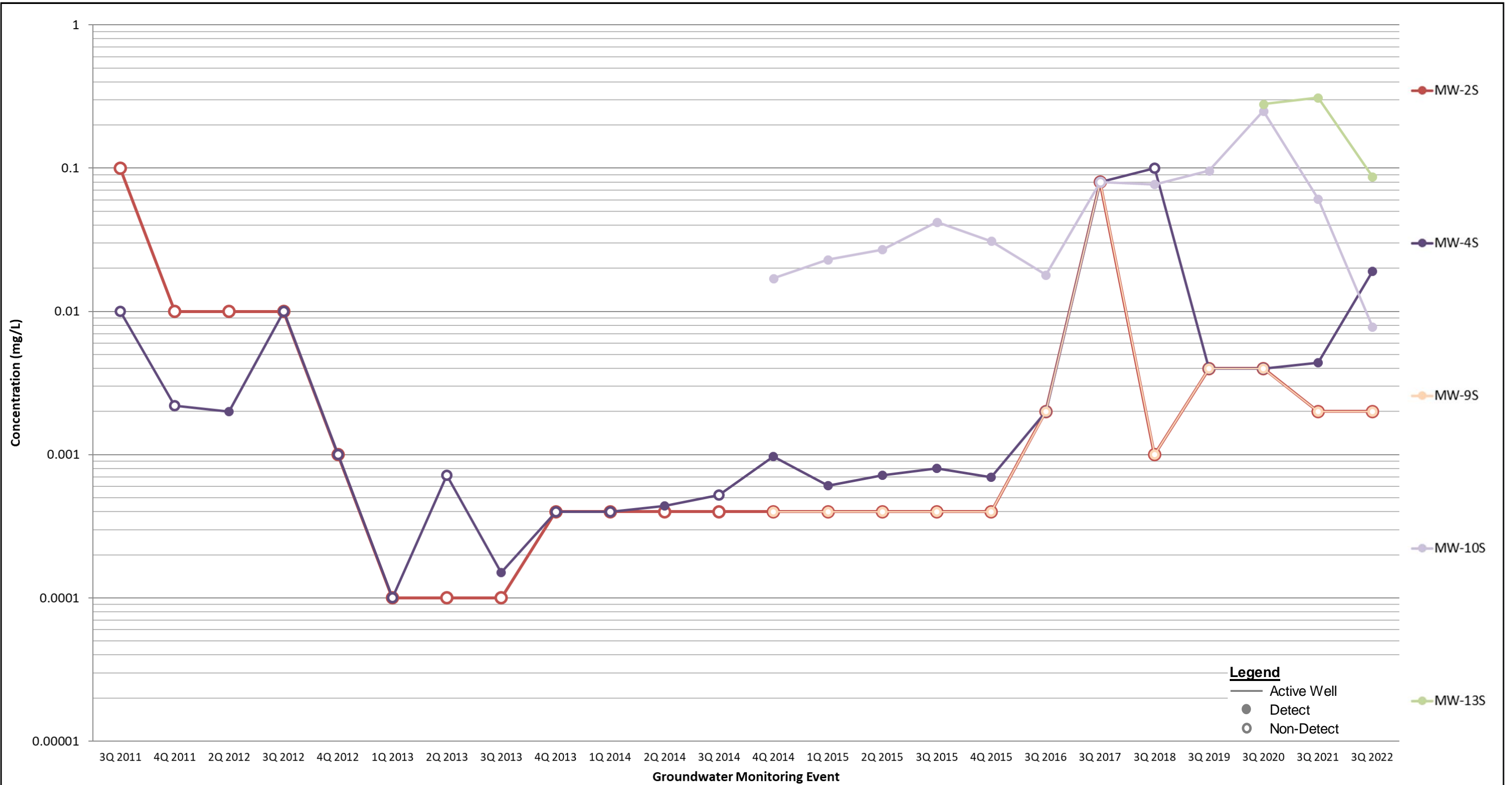
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Dissolved Arsenic Trends in the Intermediate Aquifer
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure 9

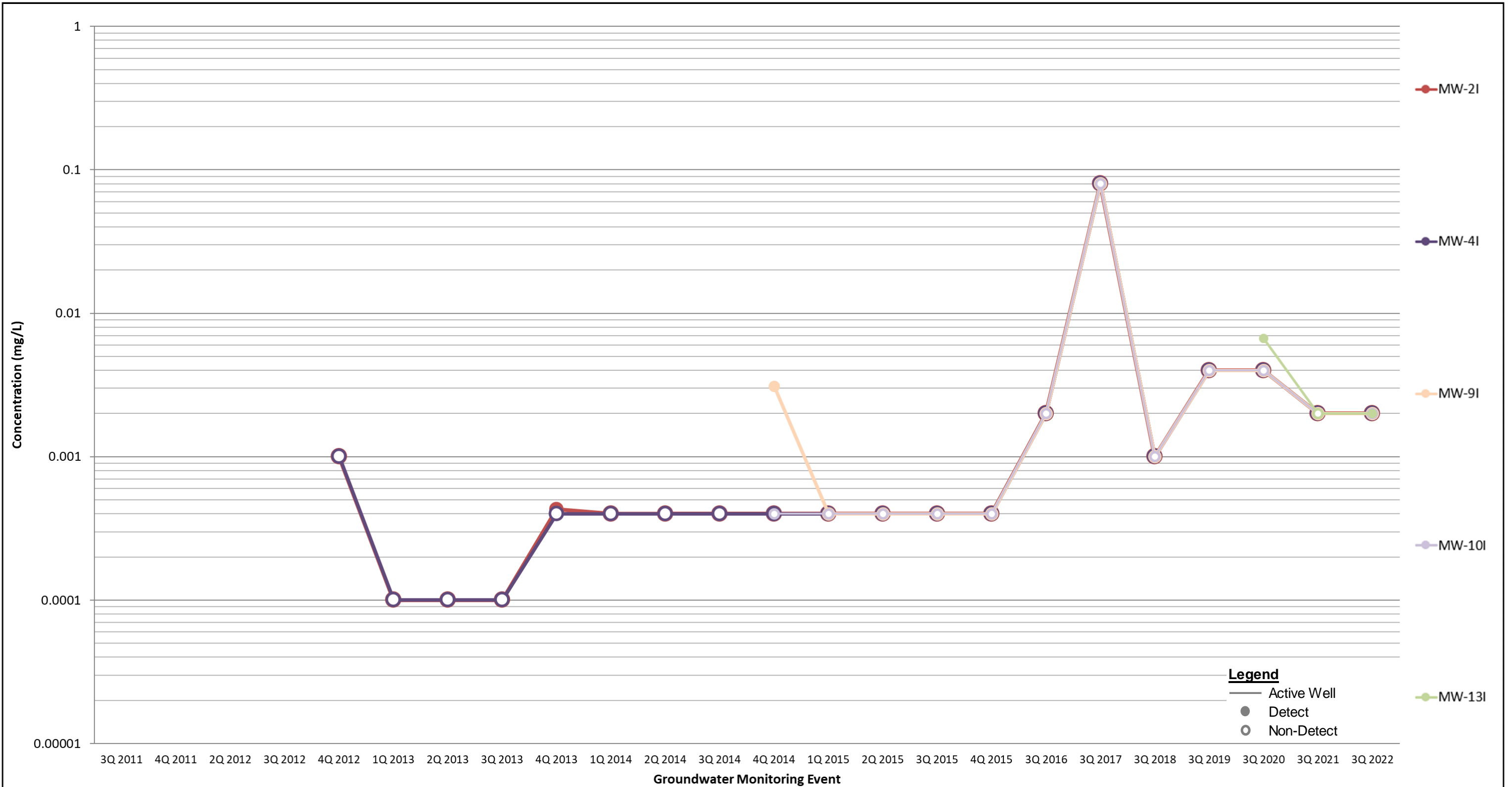
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Dissolved Lead Trends in the Shallow Aquifer
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure 10

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Dissolved Lead Trends in the Intermediate Aquifer
2022 Groundwater Monitoring Report
Superlon Plastics Site, Tacoma, Washington

Figure 11

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Tables

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Table 1: Dissolved Arsenic Concentrations by Well and Groundwater Monitoring Event

Well ID	3Q 2011	Qual	4Q 2011	Qual	2Q 2012	Qual	3Q 2012	Qual	4Q 2012	Qual	1Q 2013	Qual	2Q 2013	Qual	3Q 2013	Qual	4Q 2013	Qual	1Q 2014	Qual	2Q 2014	Qual	3Q 2014	Qual	4Q 2014	Qual	1Q 2015	Qual	2Q 2015	Qual
MW-1S	0.0052	J	0.0063	J	0.0026	J	0.0071	J	0.013	UB	0.0093	B	0.0060	UB	0.019		0.010		0.0083		0.011		0.037		0.044		0.057		0.13	
MW-2S	0.049		0.11		0.0063	J	0.0095	J	0.052	UB	0.028	B	0.021	B	0.020		0.075		0.058		0.053		0.040		0.067		0.079		0.24	
MW-3S	4.0		15		11		4.9		5.8	B	5.0	B	4.6	B	4.9		7.8		12		16		16		14		13		14	
MW-4S	0.013	J	0.026		0.0057	J	0.0069	J	0.015	UB	0.0072	UB	0.027	B	0.0073		0.011		0.024		0.028		0.045		0.050		0.055		0.061	
MW-5S	0.36		0.28		0.41		0.51		0.45	B	0.48	B	0.32	B	0.37		0.54		0.34		0.24		0.28		0.40		0.40		0.50	
MW-6S	1.3		2.0		1.8		1.7		1.8	B	1.8	B	1.4	B	1.9		1.9		1.7		1.6		0.50		1.9		1.8		1.5	
MW-7S	0.0032	J	0.0041	J	0.020	U	0.0032	J	0.0025	UB	0.0020	UB	0.0016	UB	0.0014		0.0030		0.0019		0.0022		0.0025		0.0047		0.0021		0.0019	
MW-8S	NS		NS		NS		NS		21	B	13	B	21	B	7.7		8.9		27		0.66		13		25		5.5		40	
MW-9S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		5.8		7.4		6.0	
MW-10S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.42		0.49		0.50	
MW-11S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		1.4		2.2		2.2	
MW-12S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		100		71		90	
MW-13S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
MW-1I	NS		NS		NS		NS		0.0042	UB	0.0011	UB	0.0031	UB	0.0028		0.0025		0.0024		0.0018		0.0026		0.0011		0.0015		0.0010	
MW-2I	NS		NS		NS		NS		0.0018	UB	0.0010	UB	0.0016	UB	0.00064		0.0027		0.0018		0.0018		0.0024		0.0013		0.0015		0.0012	
MW-3I	NS		NS		NS		NS		1.6	B	0.91	B	0.86	B	0.69		0.56		0.54		0.42		0.48		0.49		0.45		0.32	
MW-4I	NS		NS		NS		NS		0.0078	UB	0.0019	UB	0.0052	B	0.0012		0.0040		0.0023		0.0022		0.0030		0.0021		0.0024		0.0017	
MW-5I	NS		NS		NS		NS		0.0047	UB	0.0034	UB	0.0049	B	0.000088		0.0027		0.0017		0.0017		0.0026		0.0013		0.0014		0.0016	
MW-6I	NS		NS		NS		NS		0.0075	UB	0.0013	UB	0.0023	UB	0.0020		0.0033		0.0021		0.0020		0.0012		0.0014		0.0016		0.0011	
MW-7I	NS		NS		NS		NS		0.0017	UB	0.00073	UB	0.0011	UB	0.00070		0.0029		0.0018		0.0017		0.0027		0.0019		0.0013		0.0010	U
MW-8I	NS		NS		NS		NS		0.021	UB	0.0027	UB	0.0040	UB	0.0017		0.0043		0.0026		0.0023		0.012		0.0063		0.0016		0.0048	
MW-9I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0020		0.0023		0.0028	
MW-10I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0027		0.0030		0.0018	
MW-11I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0025		0.086		0.097	
MW-12I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.29		0.22		0.15	
MW-13I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	

Notes:

- Results shown are in mg/L.
- Detection limit changed in 3Q17 event due to the analytical laboratory changing the analytical method for testing.
- The 2021 Annual Groundwater Monitoring Report indicated that the 3Q21 event arsenic concentration in MW-13S was 220 mg/L. This was reported incorrectly. The 3Q21 event arsenic concentration in MW-13S was 22 mg/L as indicated in the laboratory report (see Appendix B of the 2021 Annual Groundwater Monitoring Report dated November 30, 2021). Tables and figures included in this report have been updated accordingly.

NS: Not sampled

Data Qualifiers:

- U: Constituent was not detected, reporting limit is shown
- J: Constituent was detected, concentration is estimated
- B: Constituent was detected in an associated blank sample

Table 1: Dissolved Arsenic Concentrations by Well and Groundwater Monitoring Event

Well ID	3Q 2015	Qual	4Q 2015	Qual	3Q 2016	Qual	3Q 2017	Qual	3Q 2018	Qual	3Q 2019	Qual	3Q 2020	Qual	3Q 2021	Qual	3Q 2022	Qual
MW-1S	0.11		1.2		44		57		NS		NS		NS		NS		NS	
MW-2S	0.13		0.13		0.18		0.13		0.24		0.16		0.17		0.078		0.58	
MW-3S	15		13		14		20		NS		NS		NS		NS		NS	
MW-4S	0.083		0.073		0.093		0.15		0.10	U	0.16		0.10		0.24		0.20	
MW-5S	0.49		0.50		1.1		0.86		NS		NS		NS		NS		NS	
MW-6S	1.6		1.4		1.6		1.1		NS		NS		NS		NS		NS	
MW-7S	0.0019		0.0023		0.0050	U	0.10	U	NS		NS		NS		NS		NS	
MW-8S	32		32		40		41		NS		NS		NS		NS		NS	
MW-9S	12		23		80		88		79		38		19		2.9		0.54	
MW-10S	0.64		0.61		0.59		0.61		1.1		0.95		3.3		2.3		1.7	
MW-11S	2.5		1.8		3.6		9.7		NS		NS		NS		NS		NS	
MW-12S	120		110		67		59		NS		NS		NS		NS		NS	
MW-13S	NS		NS		NS		NS		NS		NS		9.1		22		19	
MW-1I	0.0012		0.0025		0.83		0.13		NS		NS		NS		NS		NS	
MW-2I	0.0014		0.0010		0.58		0.10	U	0.019		0.012		0.0069		0.0062		0.0069	
MW-3I	0.39		0.39		0.38		0.10	U	NS		NS		NS		NS		NS	
MW-4I	0.0017		0.0029		0.015		0.10	U	0.12		0.0050	U	0.055		0.0050	U	0.0068	
MW-5I	0.0014		0.0025		0.0050	U	0.10	U	NS		NS		NS		NS		NS	
MW-6I	0.0015		0.0028		0.0050	U	0.13		NS		NS		NS		NS		NS	
MW-7I	0.0012		0.0026		0.0059		0.10	U	NS		NS		NS		NS		NS	
MW-8I	0.011		0.0012		0.0050	U	0.10	U	NS		NS		NS		NS		NS	
MW-9I	0.0061		0.0010		0.18		0.10	U	0.0010	U	0.0050	U	0.019		0.0050	U	0.0050	U
MW-10I	0.0023		0.0038		0.0050	U	0.10	U	0.0010	U	0.0050	U	0.0050	U	0.0050	U	0.0078	
MW-11I	0.067		0.025		0.12		0.80		NS		NS		NS		NS		NS	
MW-12I	0.13		0.22		0.098		1.0		NS		NS		NS		NS		NS	
MW-13I	NS		NS		NS		NS		NS		NS		0.30		0.25		0.16	

Notes:

- Results shown are in mg/L.
- Detection limit changed in 3Q17 event due to the analytical laboratory changing the analytical method for testing.
- The 2021 Annual Groundwater Monitoring Report indicated that the 3Q21 event arsenic concentration in MW-13S was 220 mg/L. This was reported incorrectly. The 3Q21 event arsenic concentration in MW-13S was 22 mg/L as indicated in the laboratory report (see Appendix B of the 2021 Annual Groundwater Monitoring Report dated November 30, 2021). Tables and figures included in this report have been updated accordingly.

NS: Not sampled

Data Qualifiers:

- U: Constituent was not detected, reporting limit is shown
- J: Constituent was detected, concentration is estimated
- B: Constituent was detected in an associated blank sample

Table 2: Dissolved Lead Concentrations by Well and Groundwater Monitoring Event

Well ID	3Q 2011	Qual	4Q 2011	Qual	2Q 2012	Qual	3Q 2012	Qual	4Q 2012	Qual	1Q 2013	Qual	2Q 2013	Qual	3Q 2013	Qual	4Q 2013	Qual	1Q 2014	Qual	2Q 2014	Qual	3Q 2014	Qual	4Q 2014	Qual	1Q 2015	Qual	2Q 2015	Qual
MW-1S	0.010	U	0.010	U	0.010	U	0.010	U	0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-2S	0.010	U	0.010	U	0.010	U	0.010	U	0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-3S	0.0052	J	0.30		0.28		0.034		0.13		0.11	B	0.15	B	0.090		0.18		0.13		0.083		0.094		0.14		0.15		0.14	
MW-4S	0.010	U	0.0022	J	0.0020	J	0.010	U	0.0010	U	0.00010	U	0.00072	UB	0.00015		0.00040	U	0.00040	U	0.00044		0.00053		0.00097		0.00061		0.00072	
MW-5S	0.010	U	0.010	U	0.010	U	0.010	U	0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-6S	0.022		0.0032	J	0.010	U	0.010	U	0.0031		0.00062	UB	0.00081	B	0.00037		0.00040	U	0.00040	U	0.00064		0.0013		0.00092		0.0012		0.00042	
MW-7S	0.012		0.010	U	0.010	U	0.010	U	0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00065		0.00040	U	0.0012		0.00040	U
MW-8S	NS		NS		NS		NS		0.0012		0.00010	U	0.00010	U	0.00024		0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-9S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00040	U	0.00040	U	0.00040	U
MW-10S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.017		0.023		0.027	
MW-11S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.027		0.052		0.047	
MW-12S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.087		0.010		0.019	
MW-13S	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	
MW-1I	NS		NS		NS		NS		0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-2I	NS		NS		NS		NS		0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00043		0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-3I	NS		NS		NS		NS		0.014		0.00084	UB	0.0010	UB	0.00026		0.00040	U	0.00040	U	0.0011		0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-4I	NS		NS		NS		NS		0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-5I	NS		NS		NS		NS		0.0010	U	0.00010	UB	0.00011	UB	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-6I	NS		NS		NS		NS		0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-7I	NS		NS		NS		NS		0.0010	U	0.00010	U	0.00010	U	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-8I	NS		NS		NS		NS		0.0010	U	0.00050	U	0.00010	UB	0.00010	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U	0.00040	U
MW-9I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.0031		0.00040	U	0.00040	U
MW-10I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00040	U	0.00040	U	0.00040	U
MW-11I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00040	U	0.015		0.023	
MW-12I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		0.00097		0.00040	U	0.00040	U
MW-13I	NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS		NS	

Notes:

- Results shown are in mg/L.
- Detection limit changed in 3Q17 event due to the analytical laboratory changing the analytical method for testing.

NS: Not sampled

Data Qualifiers:

- U: Constituent was not detected, reporting limit is shown
- J: Constituent was detected, concentration is estimated
- B: Constituent was detected in an associated blank sample

Table 2: Dissolved Lead Concentrations by Well and Groundwater Monitoring Event

Well ID	3Q 2015	Qual	4Q 2015	Qual	3Q 2016	Qual	3Q 2017	Qual	3Q 2018	Qual	3Q 2019	Qual	3Q 2020	Qual	3Q 2021	Qual	3Q 2022	Qual
MW-1S	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-2S	0.00040	U	0.00040	U	0.0020	U	0.080	U	0.0010	U	0.0040	U	0.0040	U	0.0020	U	0.0020	U
MW-3S	0.083		0.14		0.10		0.11		NS		NS		NS		NS		NS	
MW-4S	0.00080		0.00070		0.0020	U	0.080	U	0.10	U	0.0040	U	0.0040	U	0.0044		0.019	
MW-5S	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-6S	0.0013		0.0012		0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-7S	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-8S	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-9S	0.00040	U	0.00040	U	0.0020	U	0.080	U	0.0010	U	0.0040	U	0.0040	U	0.0020	U	0.0020	U
MW-10S	0.042		0.031		0.018		0.080	U	0.077		0.096		0.25		0.061		0.0078	
MW-11S	0.058		0.087		0.15		0.27		NS		NS		NS		NS		NS	
MW-12S	0.060		0.051		0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-13S	NS		NS		NS		NS		NS		NS		0.28		0.31		0.087	
MW-1I	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-2I	0.00040	U	0.00040	U	0.0020	U	0.080	U	0.0010	U	0.0040	U	0.0040	U	0.0020	U	0.0020	U
MW-3I	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-4I	0.00040	U	0.00040	U	0.0020	U	0.080	U	0.0010	U	0.0040	U	0.0040	U	0.0020	U	0.0020	U
MW-5I	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-6I	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-7I	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-8I	0.00040	U	0.00040	U	0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-9I	0.00040	U	0.00040	U	0.0020	U	0.080	U	0.0010	U	0.0040	U	0.0040	U	0.0020	U	0.0020	U
MW-10I	0.00040	U	0.00040	U	0.0020	U	0.080	U	0.0010	U	0.0040	U	0.0040	U	0.0020	U	0.0020	U
MW-11I	0.014		0.0040		0.042		0.12		NS		NS		NS		NS		NS	
MW-12I	0.00040	U	0.0011		0.0020	U	0.080	U	NS		NS		NS		NS		NS	
MW-13I	NS		NS		NS		NS		NS		NS		0.0067		0.0020	U	0.0020	

Notes:

- Results shown are in mg/L.
- Detection limit changed in 3Q17 event due to the analytical laboratory changing the analytical method for testing.

NS: Not sampled

Data Qualifiers:

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- J: Constituent was detected, concentration is estimated
- B: Constituent was detected in an associated blank sample

Table 3: pH by Well and Groundwater Monitoring Event

Well ID	3Q11	4Q11	2Q12	3Q12	4Q12	1Q13	2Q13	3Q13	4Q13	1Q14	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	3Q16	3Q17	3Q18	3Q19	3Q20	3Q21	3Q22
MW-1S	6.7	6.6	6.5	6.8	6.8	8.5	6.7	6.5	6.6	7.1	6.0	7.0	6.6	6.5	6.7	7.5	6.3	6.6	6.6	NS	NS	NS	NS	NS
MW-2S	6.8	7.0	6.4	6.7	6.7	8.5	6.7	6.7	6.7	7.0	6.5	6.9	6.6	6.5	6.9	7.5	6.3	6.5	6.5	6.7	6.8	6.4	6.7	6.5
MW-3S	7.5	7.1	7.0	7.6	7.4	8.5	7.2	7.5	7.6	7.6	6.4	7.7	7.0	6.9	7.1	7.9	6.8	7.1	7.1	NS	NS	NS	NS	NS
MW-4S	9.1	6.7	6.5	7.0	6.7	8.3	6.1	6.9	6.5	6.9	6.2	7.0	6.6	6.5	6.7	7.5	6.1	6.7	7.5	6.8	6.9	7.0	6.9	6.9
MW-5S	8.5	6.8	6.1	6.7	6.4	7.9	6.4	6.5	6.4	6.8	5.8	6.9	6.4	6.4	6.7	6.9	6.3	6.7	6.5	NS	NS	NS	NS	NS
MW-6S	7.3	6.9	6.5	7.0	6.8	7.9	6.3	6.3	6.6	8.9	5.9	6.8	6.6	6.5	6.7	7.2	6.1	6.7	6.5	NS	NS	NS	NS	NS
MW-7S	11.0	7.0	6.6	7.3	6.9	9.1	6.9	7.2	6.9	7.2	6.2	7.1	6.8	6.8	6.9	7.6	6.6	6.8	6.5	NS	NS	NS	NS	NS
MW-8S	NS	NS	NS	NS	7.0	NS	7.0	7.4	7.6	7.5	7.5	8.3	7.3	7.5	7.4	8.4	7.1	7.2	6.8	NS	NS	NS	NS	NS
MW-9S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6.7	6.6	6.9	7.7	6.5	6.8	6.5	6.8	7.0	7.0	7.2	4.4
MW-10S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6.8	6.6	6.9	7.6	6.4	6.8	6.7	6.3	6.8	7.0	6.9	6.9
MW-11S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6.4	6.5	6.8	7.6	6.4	6.7	7.5	NS	NS	NS	NS	NS
MW-12S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	6.8	6.5	6.7	7.6	6.3	6.5	6.3	NS	NS	NS	NS	NS
MW-13S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	12.0	12.0	12.2
MW-1I	NS	NS	NS	NS	7.2	8.1	6.9	6.8	6.9	7.2	6.5	7.3	6.8	6.7	7.0	7.7	6.6	6.9	6.7	NS	NS	NS	NS	NS
MW-2I	NS	NS	NS	NS	7.8	8.6	7.0	7.0	7.1	7.4	7.1	7.4	6.9	6.8	7.2	7.9	6.8	6.9	6.7	7.1	7.6	7.4	7.8	8.1
MW-3I	NS	NS	NS	NS	8.7	9.2	7.6	7.6	7.7	8.0	8.1	8.4	7.5	7.5	7.7	8.5	7.3	7.6	7.5	NS	NS	NS	NS	NS
MW-4I	NS	NS	NS	NS	8.1	7.9	7.0	7.3	7.2	7.4	6.4	7.6	7.3	7.0	7.2	8.0	6.7	7.2	6.9	7.1	7.6	7.5	7.6	7.6
MW-5I	NS	NS	NS	NS	7.7	8.0	9.0	7.2	7.2	7.4	6.1	7.6	7.1	7.0	7.2	7.6	6.7	7.1	6.8	NS	NS	NS	NS	NS
MW-6I	NS	NS	NS	NS	7.4	7.5	7.0	6.5	6.8	7.0	6.5	6.9	6.8	6.0	6.8	7.5	6.4	6.8	6.4	NS	NS	NS	NS	NS
MW-7I	NS	NS	NS	NS	7.2	8.9	7.1	7.2	7.0	7.3	6.6	7.2	6.8	6.8	7.0	8.3	6.6	6.8	6.6	NS	NS	NS	NS	NS
MW-8I	NS	NS	NS	NS	8.0	8.7	7.4	7.3	7.6	7.8	7.1	7.9	7.0	7.2	7.6	8.4	7.3	7.5	7.3	NS	NS	NS	NS	NS
MW-9I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.2	7.4	7.6	8.6	7.4	7.6	7.1	7.3	8.0	8.1	8.0	8.2
MW-10I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.2	7.0	7.4	8.1	7.1	7.2	7.0	7.3	7.1	7.3	7.2	7.3
MW-11I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.5	7.4	7.6	NS	7.3	7.1	6.8	NS	NS	NS	NS	NS
MW-12I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.5	7.5	7.7	8.5	7.3	7.6	7.2	NS	NS	NS	NS	NS
MW-13I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	7.5	7.8	8.0

Notes:

- The YSI meter stopped displaying pH values after the first few readings for MW-9I. The pH shown in this table for MW-9I was recorded after 3 minutes of purging, before stability of the remaining parameters was achieved.

- The YSI meter had a fluctuating second decimal place of the pH reading during the purging of MW-9S.

NS: not sampled

Table 4: Eh by Well and Groundwater Monitoring Event

Well ID	3Q11	4Q11	2Q12	3Q12	4Q12	1Q13	2Q13	3Q13	4Q13	1Q14	2Q14	3Q14	4Q14	1Q15	2Q15	3Q15	4Q15	3Q16	3Q17	3Q18	3Q19	3Q20	3Q21	3Q22
MW-1S	121	82	66	98	103	96	55	103	82	39	104	-28	81	-6	-16	10	41	30	71	NS	NS	NS	NS	NS
MW-2S	89	55	62	98	100	80	45	82	69	32	48	-20	88	-19	-58	20	41	31	63	143	107	147	104	64
MW-3S	58	78	36	62	112	90	49	48	45	33	60	-47	59	-32	14	-10	5	-1	89	NS	NS	NS	NS	NS
MW-4S	58	92	49	3	97	68	76	32	42	31	27	-27	58	-14	113	6	27	17	82	425	109	79	118	6
MW-5S	69	89	1	102	119	90	53	69	66	42	60	-17	80	-22	6	14	31	24	60	NS	NS	NS	NS	NS
MW-6S	32	60	59	89	77	80	84	100	78	45	81	-22	75	-16	51	8	45	29	69	NS	NS	NS	NS	NS
MW-7S	58	66	76	90	53	82	52	52	64	38	29	-38	81	-7	-6	-5	18	24	87	NS	NS	NS	NS	NS
MW-8S	NS	NS	NS	NS	93	NS	24	56	36	20	-1	-65	38	-49	-65	-20	5	2	61	NS	NS	NS	NS	NS
MW-9S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	62	-74	-60	-20	12	10	47	282	54	65	32	169
MW-10S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	92	-92	-34	-6	27	27	63	270	89	77	78	47
MW-11S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	31	-23	-27	-6	21	31	76	NS	NS	NS	NS	NS
MW-12S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	100	15	30	40	45	71	120	NS	NS	NS	NS	NS
MW-13S	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	25	-129	-105
MW-1I	NS	NS	NS	NS	132	143	94	134	115	77	104	15	126	39	31	24	65	58	262	NS	NS	NS	NS	NS
MW-2I	NS	NS	NS	NS	82	87	50	104	79	45	93	-18	91	-8	-36	-2	30	37	90	270	58	340	400	185
MW-3I	NS	NS	NS	NS	183	30	11	73	31	-5	-34	-66	28	-64	-79	-36	-15	-10	187	NS	NS	NS	NS	NS
MW-4I	NS	NS	NS	NS	138	101	70	68	49	31	54	-32	59	-7	116	-6	40	26	72	469	307	110	68	77
MW-5I	NS	NS	NS	NS	82	89	-72	76	62	32	77	-36	51	-18	55	2	42	34	60	NS	NS	NS	NS	NS
MW-6I	NS	NS	NS	NS	102	122	74	125	95	76	74	5	97	-2	73	6	46	36	86	NS	NS	NS	NS	NS
MW-7I	NS	NS	NS	NS	74	66	41	80	65	39	23	-21	92	-1	7	2	41	50	115	NS	NS	NS	NS	NS
MW-8I	NS	NS	NS	NS	104	79	39	79	53	18	45	-38	46	-17	2	-16	23	5	53	NS	NS	NS	NS	NS
MW-9I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	57	-129	-81	-56	-23	-21	46	366	18	11	36	NR
MW-10I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	89	-30	1	-14	29	21	71	365	306	77	93	NR
MW-11I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	21	-42	-30	NS	13	45	91	NS	NS	NS	NS	NS
MW-12I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	37	-72	-70	-36	-15	-7	50	NS	NS	NS	NS	NS
MW-13I	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	99	151	76

Notes:

- Activity of Electrons (Eh) values were calculated from the final field oxidation reduction potential results during water quality parameter stabilization (see Appendix A) by adding the correction factor of 200. Eh values are shown in millivolts (mV).

NS: not sampled

NR: no reading

Appendix A

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**PIONEER TECHNOLOGIES CORPORATION (PIONEER)
GROUNDWATER MONITORING FORM**

Stabilization:	
SWL < 0.33 ft	Turb ± 10%
pH ± 0.1	DO ± 0.3 mg/L
SC, Temp ± 3%	ORP ± 10 mV

SITE NAME: Superior

FIELD TECHNICIAN(S): H. Morse / M. Kurkov

DATE: 8/20/22

WELL INFO				DTW			PURGING										SAMPLE COLLECTION		PURGE WATER		
Well ID	Total Depth (ft)	Screen Interval (ft)	Current Condition (e.g., seal, cover, cap, casing, lock)	Time	Depth to NAPL (ft)	Depth to Water (ft)	NAPL Thick. (ft)	Pump Type	Intake Depth (ft)	Stabilization								Time	Field Kit Results / General Comments	Vol (gal)	Disposal / Storage Comments
										Elaps. Time (min)	Flow Rate (L/min)	SWL (ft)	pH	Spec. Cond. (mS/cm)	Turb (NTU)	D.O. (mg/L)	Temp (°C)				
4S	22.75		good; bolts on cover too small	0655	-	4.73	-	Peri		0725		4.73	6.84	2.551	9.9	0.90	16.1	-127.4	Brown color; No odor	2 gal	
										0728		4.79	6.82	2.552	34.0	0.87	15.7	-150.9			
										0731		4.78	6.84	2.551	58.7	0.89	15.6	-161.3			
										0734		4.81	6.84	2.550	89.6	0.82	15.4	-165.4			
										0737		4.81	6.85	2.548	110.6	0.79	15.3	-169.2			
										0740		4.81	6.85	2.551	20.6	0.74	15.1	-173.0			
										0743		4.80	6.86	2.547	29.0	0.70	15.3	-177.4			
13S	23.95		Good; Well lid Rusted in	0906	-	5.85	-	Peri		0746		4.80	6.86	2.547	50.0	0.68	14.9	-182.8	Light Brown color; Metallic odor	1.5	
										0749		4.79	6.87	2.546	58.7	0.67	14.8	-181.7			
										0751		4.79	6.87	2.542	62.4	0.65	14.6	-188.2			
										0754		4.79	6.87	2.541	70.0	0.64	14.6	-190.0			
										0757		4.79	6.87	2.539	72.3	0.63	14.6	-194.3			
										0916		5.85	8.08	2.134	34.1	1.60	19.6	-190.6			
										0919		5.92	12.18	2.233	62.1	0.40	17.2	-254.3			
0925		6.23	12.19	2.251	109.17	0.32	16.8	-270.6													
0928		6.18	12.20	2.268	142.41	0.30	16.5	-287.6													
0931		6.18	12.21	2.257	205.71	0.29	15.9	-294.4													
0934		6.17	12.21	2.193	263.2	0.23	15.6	-301.3													
0937		6.18	12.22	2.164	261.23	0.24	15.5	-309.4													
0940		6.18	12.22	2.159	263.11	0.24	15.5	-304.9													
				X	X	X	X	X	X	X	X	X	X	X	X	X					
2S	24.35		Good; No lock on well	1007	-	9.36	-	Peri		0944		6.18	12.22	2.164	261.23	0.24	15.5	-309.4	No odor	1.0	
										1010		9.40	6.74	0.749	14.86	3.13	18.1	-184.3			
										1013		9.41	6.56	0.697	12.21	0.52	15.3	-141.1			
										1016		9.41	6.54	0.695	12.33	0.37	15.3	-138.6			
										1019		9.42	6.54	0.697	12.28	0.31	15.3	-136.4			
				X	X	X	X	X	X	X	X	X	X	X	X						
9S	21.78		Good.	1200	-	8.62	-	Peri		1023		9.40	6.74	0.749	14.86	3.13	18.1	-184.3	Duplicate "Sample A"	1.5	
										1208		9.93	6.61	0.314	330.10	0.79	21.2	-53.4			
										1211		9.10	5.6	0.313	980.31	0.53	20.9	-36.9			
										1214		9.40	5.1	0.312	732.18	0.48	20.9	-31.0			
										1217		9.42	4.6	0.312	492.3	0.41	20.8	-30.9			
										1220		9.42	4.4	0.312	500.72	0.40	21.5	-30.2			
1223		9.43	4.4	0.311	493.73	0.40	21.4	-31.0													

Issues w/ pH meter changing decimals between readings

**PIONEER TECHNOLOGIES CORPORATION (PIONEER)
GROUNDWATER MONITORING FORM**

Stabilization:
 SWL < 0.33 ft Turb ± 10%
 pH ± 0.1 DO ± 0.3 mg/L
 SC, Temp ± 3% ORP ± 10 mV

SITE NAME: Superion

FIELD TECHNICIAN(S): H/m/mk

DATE: _____

WELL INFO				DTW			PURGING										SAMPLE COLLECTION		PURGE WATER	
Well ID	Total Depth (ft)	Screen Interval (ft)	Current Condition (e.g., seal, cover, cap, casing, lock)	Time	Depth to NAPL (ft)	Depth to Water (ft)	NAPL Thick. (ft)	Pump Type	Intake Depth (ft)	Stabilization							Time	Field Kit Results / General Comments	Vol (gal)	Disposal / Storage Comments
										Elaps. Time (min)	Flow Rate (L/min)	SWL (ft)	pH	Spec. Cond. (mS/cm)	Turb (NTU)	D.O. (mg/L)				
101	45.42		good; vegetation fully cover well	1310	9.69	Peri			1321	9.69	7.61	8.665	97.0	1.31	19.9	-	PH meter ysi NOT recording ORP or PH 1347	2.0	POND ON-site	
									1324	9.89	7.55	8.598	20.6	0.95	18.9	-				
									1327	9.93	7.67	8.564	32.8	0.78	18.1	-				
									1330	9.91	7.62	8.484	40.8	0.69	18.4	-				
									1333	9.91	7.51	8.520	38.4	0.68	18.4	-				
									1336	9.92	7.41	8.491	91.0	0.63	18.5	-				
↓	↓			↓					1339	9.93	7.36	8.504	93.8	0.62	18.1	-		↓	↓	
									1342	9.91	7.29	8.531	99.2	0.64	18.2	-				
									X	X	X	X	X	X	X					
105	27.17		good; vegetation fully cover well	1312	9.41	Peri			1325	9.41	7.15	2.652	16.67	1.37	22.4	-151.9	1335	2.0	POND ON-site	
									1328	9.58	6.97	2.253	26.05	0.38	19.8	-151.2				
									1331	9.57	6.95	2.548	142.11	0.38	20.0	-153.8				
									1334	9.57	6.91	2.569	140.17	0.26	19.9	-153.1				
									X	X	X	X	X	X	X					

Chain of Custody Record



Client Information		Sampler: HM/MK		Lab PM:		Carrier Tracking No(s):		COC No:							
Client Contact: Nathan Starr		Phone:		E-Mail:		State of Origin:		Page: Page 1 of 1							
Company: PIONEER Technologies				PWSID:		Analysis Requested									
Address: 5205 Corporate Ctr Ct SE Ste A		Due Date Requested:		Dissolved Arsenic/Lead		Total Number of Containers		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)							
City: Olympia		TAT Requested (days): Standard													
State, Zip: WA 98503		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No													
Phone: 360 570 1700		PO #:													
Email: starrn@uspioneer.com		Purchase Order not required													
Project Name: Superlon		WO #:													
Site: Tacoma, WA		Project #:		SSOW#:		Special Instructions/Note:									
Sample Identification		Sample Date		Sample Time		Sample Type (C=Comp, G=grab)		Matrix (Water, Swab, On-wash, ST-Tissue, Air)		Field Filtered Sample (Yes or No)		Perform MS/ASP (Yes or No)		Preservation Code:	
MW-2S-083022		8/30/22		1023		G		W		Y		X		Field Filtered	
MW-2I-083022		8/30/22		1023		G		W		Y		X			
MW-4S-083022		8/30/22		801		G		W		Y		X			
MW-4I-083022		8/30/22		803		G		W		Y		X			
MW-10S-083022		8/30/22		1325		G		W		Y		X			
MW-10I-083022		8/30/22		1347		G		W		Y		X			
MW-9S-083022		8/30/22		1325		G		W		Y		X			
MW-9I-083022		8/30/22		1236		G		W		Y		X			
MW-13S-083022		8/30/22		944		G		W		Y		X			
MW-13I-083022		8/30/22		940		G		W		Y		X			
MW-SAMPLE A-083022		8/30/22		1215		G		W		Y		X			
Possible Hazard Identification						Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)									
<input type="checkbox"/> Non-Hazard <input type="checkbox"/> Flammable <input type="checkbox"/> Skin Irritant <input type="checkbox"/> Poison B <input type="checkbox"/> Unknown <input type="checkbox"/> Radiological						<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months									
Deliverable Requested: I, II, III, IV, Other (specify)						Special Instructions/QC Requirements:									
Empty Kit Relinquished by:				Date:		Time:		Method of Shipment:							
Relinquished by: Hannah Morse		Date/Time: 8/30 1435		Company:		Received by: <i>[Signature]</i>		Date/Time: 8/30/22 1435		Company:					
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:					
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time:		Company:					
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:				Cooler Temperature(s) °C and Other Remarks:									

Appendix B

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QA/QC SOLUTIONS, LLC



James J. Mc Ateer, Jr., BS, MRSC
Managing Member
7532 Champion Hill Rd. SE
Salem, Oregon 97306
Telephone: 503.763.6948
Facsimile: 503.566.2114
Cellular: 503.881.1501
email: jjmcateer@msn.com

October 13, 2022

Jeff King, L.G.
Pacific Environmental and Redevelopment (PERC-NW)
8424 East Meadow Lake Drive
Snohomish, WA 98290

Subject: Data Validation Review for the Superlon Plastics Site Annual 2022
Groundwater Monitoring Well Sampling Event
Task Order No.: 22-1
QA/QC Solutions, LLC Project No.: 092622.1

Sent via e-mail to jking@perc-nw.com on October 13, 2022

Dear Jeff:

This letter documents the results of the data validation review for the analysis of dissolved arsenic and dissolved lead completed on groundwater samples associated with Superlon Plastic Site Annual 2022 groundwater monitoring well sampling event.

The data reported were validated to verify applicable laboratory quality assurance and quality control (QA/QC) procedures were documented and of sufficient quality to support its intended purpose(s). A summary of the overall assessment of data quality, the data set, a summary of the analytical methods used to complete the chemical analyses, a summary of the data validation procedures used, and a summary of the reasons why data were qualified (including other items noted during data validation) is presented below.

Overall Assessment of Data Quality

Overall, the data reported are of good quality and the results for the applicable QA/QC procedures that were used by the laboratory during the analysis of the samples were acceptable. During data validation no results required qualification as estimated (*J*), restatement as undetected (*U*), or rejection (*R*).

Data Set

The data set consisted of 11 groundwater samples, (10 filtered samples and 1 filtered field duplicate sample) collected on August 30, 2022. *QA/QC Solutions, LLC* received the abbreviated data summary and electronic data deliverable (EDD) from Pioneer Technologies, Inc. on September 26, 2022.

A summary of the samples collected and analyses completed for dissolved arsenic and dissolved lead is presented in Table 1. All samples were analyzed by Eurofins Seattle located in Tacoma, Washington under Laboratory Job ID 580-117424-1.

Analytical Methods

Analyses for dissolved arsenic and lead was completed by filtration through 0.45- μ m filter in the field, the samples pH was adjusted to <2, and the analyses completed by inductively coupled plasma-mass spectrometry (ICP-MS) using U.S. EPA SW-846 Method 6020B (U.S. EPA 2022).

Data Validation Procedures

Data validation procedures included evaluating a summary of the sample results and applicable quality control results that were reported by the laboratory. This level of validation is also referred to as a Stage 2A (U.S. EPA 2009) or also as an abbreviated data review. The analytical data were validated generally following the applicable guidance and requirements specified in:

- Method-specific and laboratory-established quality control requirements, as applicable.
- *Guidance on Environmental Data Verification and Validation* (U.S. EPA 2002).
- *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use*. OSWER No. 9200.1-85. EPA 540-R-08-005. (U.S. EPA 2009).
- *National Functional Guidelines for Inorganic Data Superfund Data Review. Final*. OLEM 9240.1-66 EPA 542-R-20-006 November 2020. U.S. Environmental Protection Agency (EPA), Office of Superfund Remediation and Technology Innovation (OSRTI), Washington, DC. (U.S. EPA 2020).

The laboratory data deliverables that were validated included the following:

- Case narrative discussing analytical problems (if any) and procedures.
- Chain-of-custody (COC) documentation to verify completeness of the data set.
- Laboratory summary result forms to verify analytical holding times were met.
- Results for the method blank to determine whether an analyte that was reported as detected in any sample was the result of possible contamination introduced at the laboratory.
- Results for laboratory control sample (LCS) (i.e., blank spike), duplicate LCS, matrix spike (MS), and matrix spike duplicate (MSD) recoveries to assess analytical accuracy.
- Results for applicable laboratory duplicate sample, duplicate LCS, and MSD analyses to assess analytical precision.
- Results for the field duplicate samples to provide additional information in support of the quality assurance review.
- Laboratory summaries of analytical results.

Verification and validation of 100-percent of all applicable laboratory calculations, transcriptions, review of instrument printouts, and review of bench sheets were not completed during the data validation review. There may be analytical problems that could only be identified by reviewing every instrument printouts and associated analytical quality control results. Verification of all possible factors that could result in the degradation of data quality was not completed nor should be inferred at this time. The laboratory case narrative did not indicate any significant problems with data that were not reviewed during data validation. The adequacy of the sampling procedures was not completed during the data validation.

Performance based control limits established by the laboratory, applicable control limits specified in the analytical methods, and best professional judgement were used to evaluate data quality and to determine if specific data required qualification. Data qualifiers were assigned during data validation following guidance specified by U.S. EPA (2002 and 2020) to the EDD when applicable QC measurement criteria were not met, and qualification of the data was warranted.

Reasons for Data Qualification

No sample results required qualification.

General Comments

- Data users should refer to the laboratory data package for complete information pertinent to the analyses completed.
- Samples were received at the laboratory at 12.5 °C which is above the recommend limit of 6 °C. No samples required qualification because the cooler did not have time to equilibrate from the date and time the last sample was collected (8/30/22 at 1225) and the date and time the cooler was received (8/30/22 at 1435) at the laboratory.
- Data users should note that filtration through 0.45-µm filter is an “operational” definition and is not indicative of a “truly dissolved” aqueous fraction.
- Some samples were received at the laboratory required additional preservation with acid to bring the pH to <2 as is required for analysis.
- Results were reported as a non-detect were at the applicable reporting limit.
- Some sample results were reported from a dilution analysis that was required. In these instances, all other sample results were reported from the undiluted analysis.

This concludes the data validation review. Should you have any questions regarding the information presented herein, please contact me by telephone at 503.763.6948 or by e-mail at jjmcateer@msn.com.

Cordially,



James J. Mc Ateer, Jr., BS, MRSC
Managing Member

cc: Brad Grimsted, Pioneer Technologies Corporation via email at grimstedb@uspioneer.com
Nathan Starr, Pioneer Technologies Corporation via email at starrn@uspioneer.com

Attachment

References

U.S. EPA 2002. Guidance on Environmental Data Verification and Data Validation. EPA QA/G-8. EPA/240/R-02/004. November 2002. U.S. Environmental Protection Agency, Office of Environmental Information, Washington DC.

U.S. EPA 2009. Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use. OSWER No. 9200.1-85. EPA 540-R-08-005. January 13, 2009. U.S. Environmental Protection Agency, Office of Solid Waste and Emergency Response, Washington, DC.

U.S. EPA 2020. National Functional Guidelines for Inorganic Data Superfund Data Review. Final. OLEM 9240.1-66 EPA 542-R-20-006. November 2020. Office of Superfund Remediation and Technology Innovation (OSRTI), U.S. Environmental Protection Agency.

U.S. EPA 2022. SW-846 on-line. Test methods for evaluating solid wastes, physical/chemical methods. <https://www.epa.gov/hw-sw846/sw-846-compendium> (last updated on June 15, 2022). U.S. Environmental Protection Agency, Office of Solid Waste, Washington, DC.

Table 1. Summary of Samples Collected and Analyses Completed

Sample Number	Laboratory Sample Number	Sample Date	Dissolved Arsenic and Lead by 6020B
MW-2S-083022	580-117424-1	08/30/22	✓
MW-2I-08052020	580-117424-2	08/30/22	✓
MW-4S-08052020	580-117424-3	08/30/22	✓
MW-4I-08052020	580-117424-4	08/30/22	✓
MW-10S-08052020	580-117424-5	08/30/22	✓
MW-10I-08052020	580-117424-6	08/30/22	✓
MW-9S-08052020	580-117424-7	08/30/22	✓
MW-9I-08052020	580-117424-8	08/30/22	✓
MW-13S-08052020	580-117424-9	08/30/22	✓
MW-13I-08052020	580-117424-10	08/30/22	✓
MW-SAMPL A-083022	580-117424-11	08/30/22	✓

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double-sided printing.

ANALYTICAL REPORT

Eurofins Seattle
5755 8th Street East
Tacoma, WA 98424
Tel: (253)922-2310

Laboratory Job ID: 580-117424-1
Client Project/Site: Superlon Plastics

For:
Pioneer Technologies Corp
5205 Corporate Center Ct SE
Suite A
Olympia, Washington 98503

Attn: Nathan Starr



Authorized for release by:
9/14/2022 3:32:29 PM
Kristine Allen, Client Service Manager
(253)433-0390
Kristine.Allen@et.eurofinsus.com

Designee for
Katie Grant, Project Manager I
(253)922-2310
Katie.Grant@et.eurofinsus.com

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This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.



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Case Narrative

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Job ID: 580-117424-1

Laboratory: Eurofins Seattle

Narrative

Job Narrative
580-117424-1

Comments

No additional comments.

Receipt

The samples were received on 8/30/2022 2:35 PM. Unless otherwise noted below, the samples arrived in good condition, and where required, properly preserved and on ice. The temperature of the cooler at receipt was 12.5° C.

Receipt Exceptions

The reference method requires samples to be preserved to a pH of <2. The following samples were received with insufficient preservation at a pH of <~7. All of the samples were preserved to the appropriate pH in the laboratory with 3244512. These samples were received field filtered.

Metals

No analytical or quality issues were noted, other than those described in the Definitions/Glossary page.



Definitions/Glossary

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
▫	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CFU	Colony Forming Unit
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MCL	EPA recommended "Maximum Contaminant Level"
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
MPN	Most Probable Number
MQL	Method Quantitation Limit
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
NEG	Negative / Absent
POS	Positive / Present
PQL	Practical Quantitation Limit
PRES	Presumptive
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)
TNTC	Too Numerous To Count

Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-2S-083022

Lab Sample ID: 580-117424-1

Date Collected: 08/30/22 10:23

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.58		0.0050		mg/L		09/09/22 19:04	09/12/22 14:48	5
Lead	ND		0.0020		mg/L		09/09/22 19:04	09/12/22 14:48	5



Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-2I-083022

Lab Sample ID: 580-117424-2

Date Collected: 08/30/22 10:23

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0069		0.0050		mg/L		09/09/22 19:04	09/12/22 14:51	5
Lead	ND		0.0020		mg/L		09/09/22 19:04	09/12/22 14:51	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-4S-083022

Lab Sample ID: 580-117424-3

Date Collected: 08/30/22 08:01

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.20		0.0050		mg/L		09/09/22 19:04	09/12/22 14:55	5
Lead	0.019		0.0020		mg/L		09/09/22 19:04	09/12/22 14:55	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-4I-083022

Lab Sample ID: 580-117424-4

Date Collected: 08/30/22 08:03

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0068		0.0050		mg/L		09/09/22 19:04	09/12/22 14:58	5
Lead	ND		0.0020		mg/L		09/09/22 19:04	09/12/22 14:58	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-10S-083022

Lab Sample ID: 580-117424-5

Date Collected: 08/30/22 13:35

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	1.7		0.0050		mg/L		09/09/22 19:04	09/12/22 15:02	5
Lead	0.0078		0.0020		mg/L		09/09/22 19:04	09/12/22 15:02	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-10I-083022

Lab Sample ID: 580-117424-6

Date Collected: 08/30/22 13:47

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.0078		0.0050		mg/L		09/09/22 19:16	09/13/22 00:38	5
Lead	ND		0.0020		mg/L		09/09/22 19:16	09/13/22 00:38	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-9S-083022

Lab Sample ID: 580-117424-7

Date Collected: 08/30/22 12:25

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.54		0.0050		mg/L		09/09/22 19:16	09/13/22 01:17	5
Lead	ND		0.0020		mg/L		09/09/22 19:16	09/13/22 01:17	5



Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-9I-083022

Lab Sample ID: 580-117424-8

Date Collected: 08/30/22 12:36

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	ND		0.0050		mg/L		09/09/22 19:16	09/13/22 01:20	5
Lead	ND		0.0020		mg/L		09/09/22 19:16	09/13/22 01:20	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-13S-083022

Lab Sample ID: 580-117424-9

Date Collected: 08/30/22 09:44

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	19		0.0050		mg/L		09/09/22 19:16	09/13/22 01:24	5
Lead	0.087		0.0020		mg/L		09/09/22 19:16	09/13/22 01:24	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-13I-083022

Lab Sample ID: 580-117424-10

Date Collected: 08/30/22 09:40

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.16		0.0050		mg/L		09/09/22 19:16	09/13/22 01:27	5
Lead	0.0020		0.0020		mg/L		09/09/22 19:16	09/13/22 01:27	5

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Client Sample Results

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-SAMPLE A-083022

Lab Sample ID: 580-117424-11

Date Collected: 08/30/22 12:25

Matrix: Water

Date Received: 08/30/22 14:35

Method: 6020B - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Arsenic	0.53		0.0050		mg/L		09/09/22 19:16	09/13/22 01:31	5
Lead	ND		0.0020		mg/L		09/09/22 19:16	09/13/22 01:31	5

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QC Sample Results

Client: Pioneer Technologies Corp
 Project/Site: Superlon Plastics

Job ID: 580-117424-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: MB 580-403463/26-A
Matrix: Water
Analysis Batch: 403662

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 403463

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.0010		mg/L		09/09/22 19:04	09/12/22 13:03	1
Lead	ND		0.00040		mg/L		09/09/22 19:04	09/12/22 13:03	1

Lab Sample ID: LCS 580-403463/27-A
Matrix: Water
Analysis Batch: 403662

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 403463

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Arsenic	1.00	0.995		mg/L		100	80 - 120
Lead	1.00	1.01		mg/L		101	80 - 120

Lab Sample ID: LCSD 580-403463/28-A
Matrix: Water
Analysis Batch: 403662

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 403463

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec Limits	RPD	
		Result	Qualifier					RPD	Limit
Arsenic	1.00	0.991		mg/L		99	80 - 120	0	20
Lead	1.00	1.00		mg/L		100	80 - 120	0	20

Lab Sample ID: MB 580-403465/14-A
Matrix: Water
Analysis Batch: 403688

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 403465

Analyte	MB MB		RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Arsenic	ND		0.0050		mg/L		09/09/22 19:16	09/13/22 00:34	5
Lead	ND		0.0020		mg/L		09/09/22 19:16	09/13/22 00:34	5

Lab Sample ID: LCS 580-403465/15-A
Matrix: Water
Analysis Batch: 403688

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 403465

Analyte	Spike Added	LCS LCS		Unit	D	%Rec	%Rec Limits
		Result	Qualifier				
Arsenic	1.00	0.999		mg/L		100	80 - 120
Lead	1.00	1.00		mg/L		100	80 - 120

Lab Sample ID: LCSD 580-403465/16-A
Matrix: Water
Analysis Batch: 403688

Client Sample ID: Lab Control Sample Dup
Prep Type: Total Recoverable
Prep Batch: 403465

Analyte	Spike Added	LCSD LCSD		Unit	D	%Rec	%Rec Limits	RPD	
		Result	Qualifier					RPD	Limit
Arsenic	1.00	0.997		mg/L		100	80 - 120	0	20
Lead	1.00	1.01		mg/L		101	80 - 120	1	20

Lab Sample ID: 580-117424-6 MS
Matrix: Water
Analysis Batch: 403688

Client Sample ID: MW-10I-083022
Prep Type: Dissolved
Prep Batch: 403465

Analyte	Sample Sample		Spike Added	MS MS		Unit	D	%Rec	%Rec Limits
	Result	Qualifier		Result	Qualifier				
Arsenic	0.0078		1.00	1.06		mg/L		105	80 - 120
Lead	ND		1.00	1.04		mg/L		104	80 - 120

QC Sample Results

Client: Pioneer Technologies Corp
 Project/Site: Superlon Plastics

Job ID: 580-117424-1

Method: 6020B - Metals (ICP/MS)

Lab Sample ID: 580-117424-6 MSD

Matrix: Water

Analysis Batch: 403688

Client Sample ID: MW-10I-083022

Prep Type: Dissolved

Prep Batch: 403465

Analyte	Sample	Sample	Spike	MSD	MSD	Unit	D	%Rec	%Rec	RPD	
	Result	Qualifier	Added	Result	Qualifier				Limits	RPD	Limit
Arsenic	0.0078		1.00	1.05		mg/L		105	80 - 120	1	20
Lead	ND		1.00	1.05		mg/L		105	80 - 120	1	20

Lab Sample ID: 580-117424-6 DU

Matrix: Water

Analysis Batch: 403688

Client Sample ID: MW-10I-083022

Prep Type: Dissolved

Prep Batch: 403465

Analyte	Sample	Sample	DU	DU	Unit	D	RPD	RPD	
	Result	Qualifier	Result	Qualifier				Limit	Limit
Arsenic	0.0078		0.00780		mg/L		0.4		20
Lead	ND		ND		mg/L		NC		20

Lab Chronicle

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-2S-083022

Lab Sample ID: 580-117424-1

Date Collected: 08/30/22 10:23

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403463	JLS	EET SEA	09/09/22 19:04
Dissolved	Analysis	6020B		5	403662	FCW	EET SEA	09/12/22 14:48

Client Sample ID: MW-2I-083022

Lab Sample ID: 580-117424-2

Date Collected: 08/30/22 10:23

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403463	JLS	EET SEA	09/09/22 19:04
Dissolved	Analysis	6020B		5	403662	FCW	EET SEA	09/12/22 14:51

Client Sample ID: MW-4S-083022

Lab Sample ID: 580-117424-3

Date Collected: 08/30/22 08:01

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403463	JLS	EET SEA	09/09/22 19:04
Dissolved	Analysis	6020B		5	403662	FCW	EET SEA	09/12/22 14:55

Client Sample ID: MW-4I-083022

Lab Sample ID: 580-117424-4

Date Collected: 08/30/22 08:03

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403463	JLS	EET SEA	09/09/22 19:04
Dissolved	Analysis	6020B		5	403662	FCW	EET SEA	09/12/22 14:58

Client Sample ID: MW-10S-083022

Lab Sample ID: 580-117424-5

Date Collected: 08/30/22 13:35

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403463	JLS	EET SEA	09/09/22 19:04
Dissolved	Analysis	6020B		5	403662	FCW	EET SEA	09/12/22 15:02

Client Sample ID: MW-10I-083022

Lab Sample ID: 580-117424-6

Date Collected: 08/30/22 13:47

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403465	JLS	EET SEA	09/09/22 19:16
Dissolved	Analysis	6020B		5	403688	FCW	EET SEA	09/13/22 00:38

Lab Chronicle

Client: Pioneer Technologies Corp
 Project/Site: Superlon Plastics

Job ID: 580-117424-1

Client Sample ID: MW-9S-083022

Lab Sample ID: 580-117424-7

Date Collected: 08/30/22 12:25

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403465	JLS	EET SEA	09/09/22 19:16
Dissolved	Analysis	6020B		5	403688	FCW	EET SEA	09/13/22 01:17

Client Sample ID: MW-9I-083022

Lab Sample ID: 580-117424-8

Date Collected: 08/30/22 12:36

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403465	JLS	EET SEA	09/09/22 19:16
Dissolved	Analysis	6020B		5	403688	FCW	EET SEA	09/13/22 01:20

Client Sample ID: MW-13S-083022

Lab Sample ID: 580-117424-9

Date Collected: 08/30/22 09:44

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403465	JLS	EET SEA	09/09/22 19:16
Dissolved	Analysis	6020B		5	403688	FCW	EET SEA	09/13/22 01:24

Client Sample ID: MW-13I-083022

Lab Sample ID: 580-117424-10

Date Collected: 08/30/22 09:40

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403465	JLS	EET SEA	09/09/22 19:16
Dissolved	Analysis	6020B		5	403688	FCW	EET SEA	09/13/22 01:27

Client Sample ID: MW-SAMPLE A-083022

Lab Sample ID: 580-117424-11

Date Collected: 08/30/22 12:25

Matrix: Water

Date Received: 08/30/22 14:35

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Analyst	Lab	Prepared or Analyzed
Dissolved	Prep	3005A			403465	JLS	EET SEA	09/09/22 19:16
Dissolved	Analysis	6020B		5	403688	FCW	EET SEA	09/13/22 01:31

Laboratory References:

EET SEA = Eurofins Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Accreditation/Certification Summary

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics

Job ID: 580-117424-1

Laboratory: Eurofins Seattle

The accreditations/certifications listed below are applicable to this report.

Authority	Program	Identification Number	Expiration Date
Washington	State	C788	07-13-23

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Sample Summary

Client: Pioneer Technologies Corp
Project/Site: Superlon Plastics


Job ID: 580-117424-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-117424-1	MW-2S-083022	Water	08/30/22 10:23	08/30/22 14:35
580-117424-2	MW-2I-083022	Water	08/30/22 10:23	08/30/22 14:35
580-117424-3	MW-4S-083022	Water	08/30/22 08:01	08/30/22 14:35
580-117424-4	MW-4I-083022	Water	08/30/22 08:03	08/30/22 14:35
580-117424-5	MW-10S-083022	Water	08/30/22 13:35	08/30/22 14:35
580-117424-6	MW-10I-083022	Water	08/30/22 13:47	08/30/22 14:35
580-117424-7	MW-9S-083022	Water	08/30/22 12:25	08/30/22 14:35
580-117424-8	MW-9I-083022	Water	08/30/22 12:36	08/30/22 14:35
580-117424-9	MW-13S-083022	Water	08/30/22 09:44	08/30/22 14:35
580-117424-10	MW-13I-083022	Water	08/30/22 09:40	08/30/22 14:35
580-117424-11	MW-SAMPLE A-083022	Water	08/30/22 12:25	08/30/22 14:35



Chain of Custody Record

Client Information		Company: PIONEER TECHNOLOGIE I	Sampler: HM/MLK	Lab PM:	Center Tracking No(s):	COC No:
Client Contact: NATHAN STAFF		Address: 5205 CORPORATE CRT CT SE STE A Olympia WA 98503	Phone: 360 570 1700	E-Mail:	State of Origin:	Page: Page 1 of 1
City: Olympia WA		State: WA	PO #: Standard	Job #:		
Phone: 360 570 1700		Compliance Project: <input type="checkbox"/> Yes <input type="checkbox"/> No	Purchase Order not required	Analysis Requested		
Email: STAFFN@PIONEER.COM		Project #:	SSOW#:	Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - Ashtad D - Nitric Acid P - Na2O/S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Anchor S - H2SO4 H - Ascorbic Acid T - TSP Dodecylhydrate I - Ice U - Acetone J - DI Water V - MeCAA K - EDTA W - MCAA L - EDTA X - other (Specify) Z - other (Specify)		
Project Name: SUPERION		Field Filtered Sample (Yes or No) <input checked="" type="checkbox"/>				
Site: TACOMA, WA		Perform MS/MSD (Yes or No) <input checked="" type="checkbox"/>				
Sample Identification		Sample Date	Sample Time	Sample Type (C=Comp, G=grab, br=bulk, A=H)	Matrix (W=Water, S=Soil, O=Other, A=Air)	Field Filtered
1	NW-2S-083022	8/30/22	1023	G	W	X
2	NW-2I-083022	8/30/22	1023	G	W	X
3	NW-4S-083022	8/30/22	901	G	W	X
4	NW-4I-083022	8/30/22	803	G	W	X
5	NW-10S-083022	8/30/22	1335	G	W	X
6	NW-10I-083022	8/30/22	1347	G	W	X
7	NW-9S-083022	8/30/22	1225	G	W	X
8	NW-9I-083022	8/30/22	1236	G	W	X
9	NW-13S-083022	8/30/22	944	G	W	X
10	NW-13I-083022	8/30/22	940	G	W	X
11	NW-5 SAMPLE A-083022	8/30/22	1225	G	W	X



580-117424 Chain of Custody

Special Instructions/Note: **Field Filtered**

Special Instructions/QC Requirements:

Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)

Return To Client Disposal By Lab Archive For

Months

Login Sample Receipt Checklist

Client: Pioneer Technologies Corp

Job Number: 580-117424-1

Login Number: 117424

List Number: 1

Creator: Vallelunga, Diana L

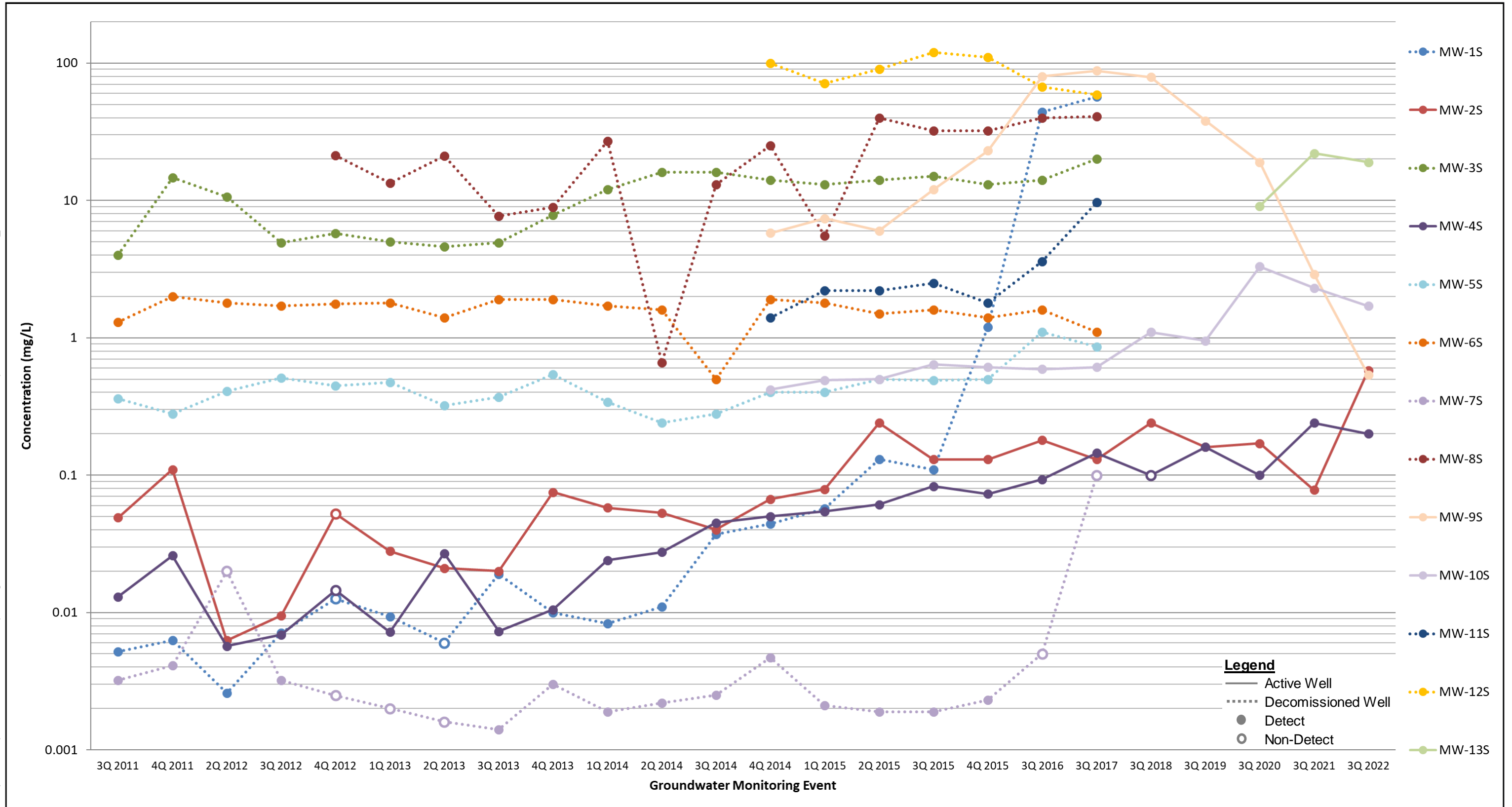
List Source: Eurofins Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is <=/ background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	Thermal preservation not required.
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	False	Refer to Job Narrative for details.
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	N/A	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

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Appendix C

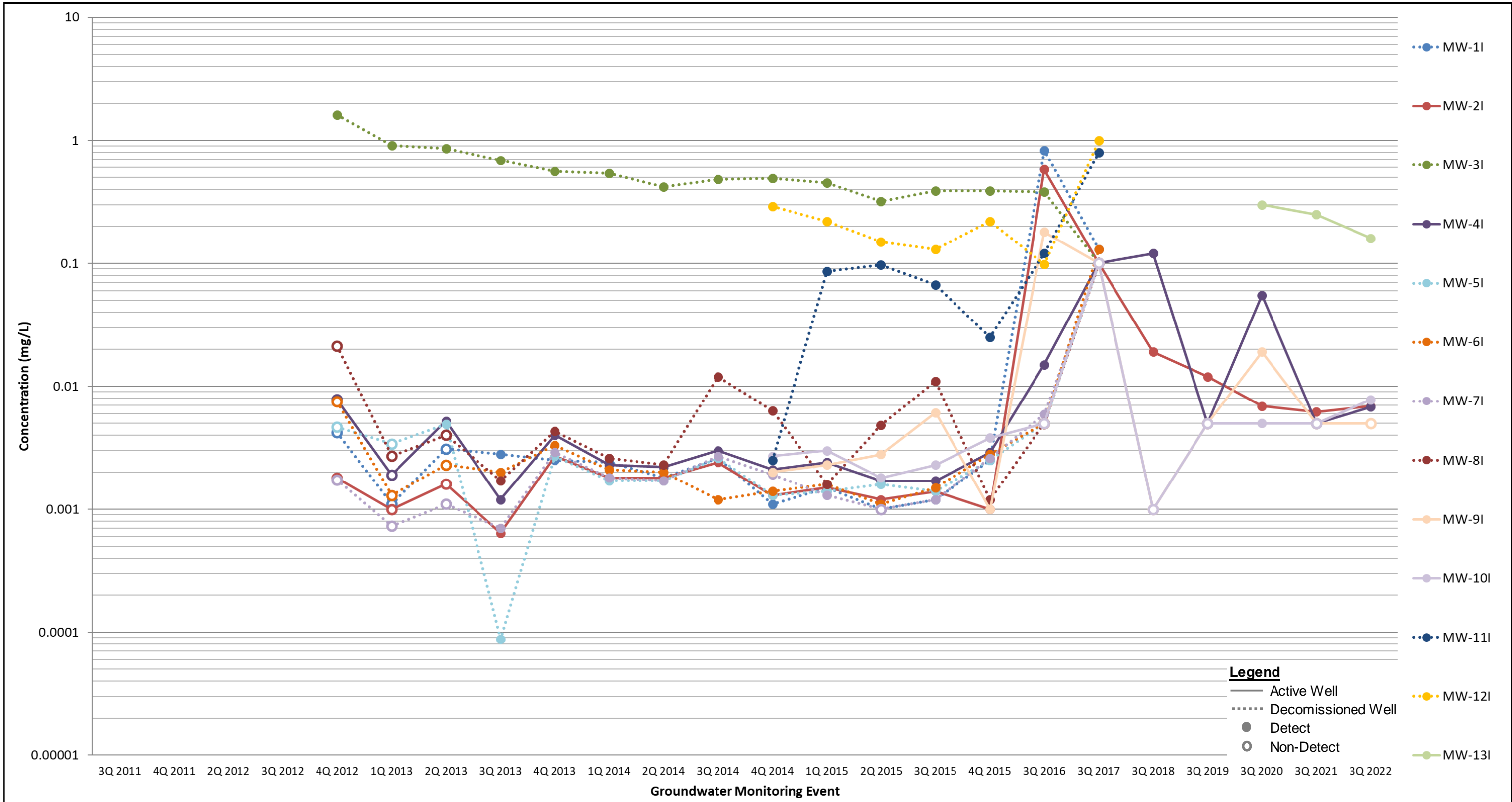
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Dissolved Arsenic Trends in the Shallow Aquifer with Decommissioned Wells
2022 Groundwater Monitoring Report
Superlon Plastics Site, Tacoma, Washington

Figure C1

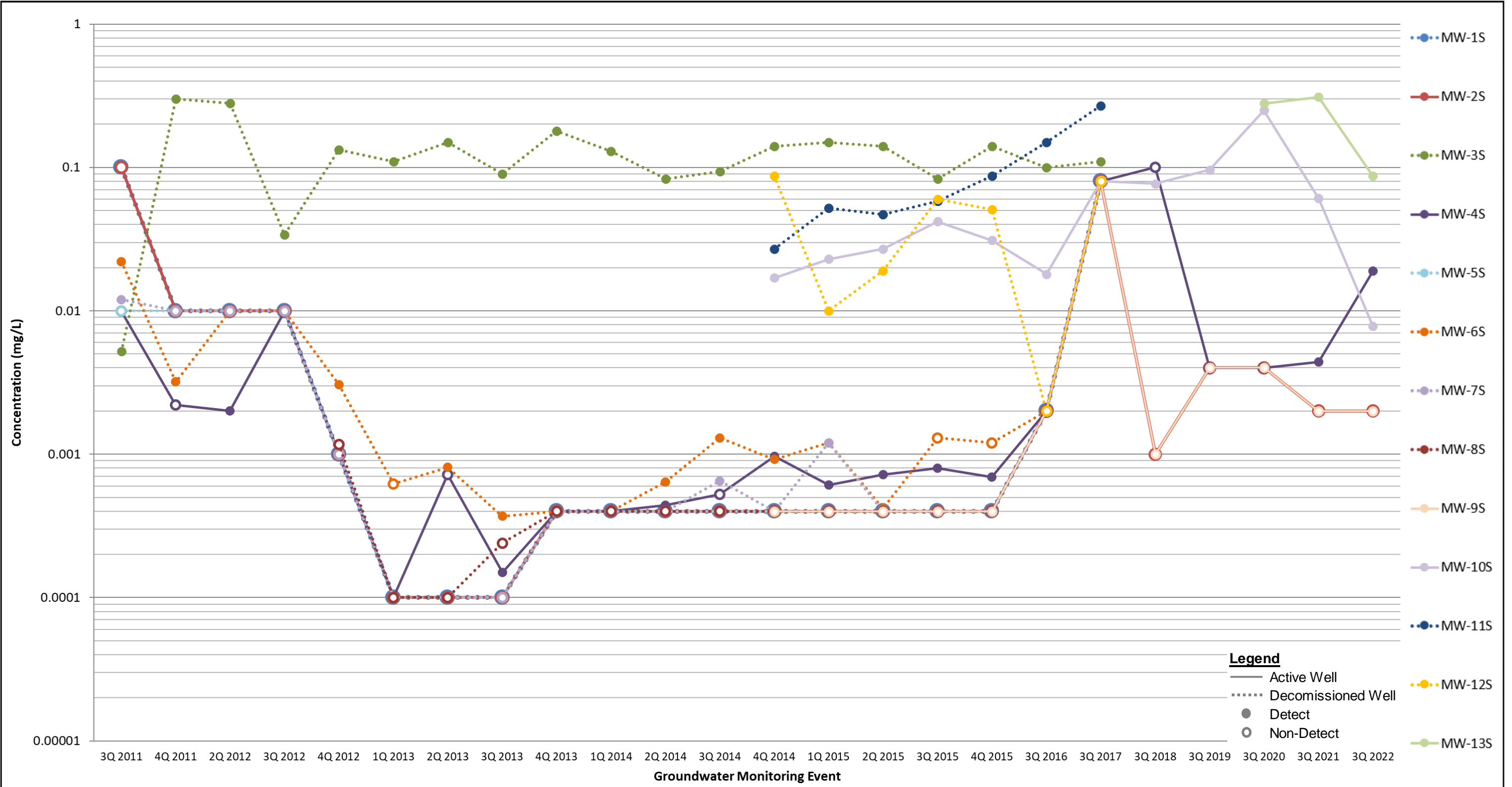
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Dissolved Arsenic Trends in the Intermediate Aquifer with Decommissioned Wells
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure C2

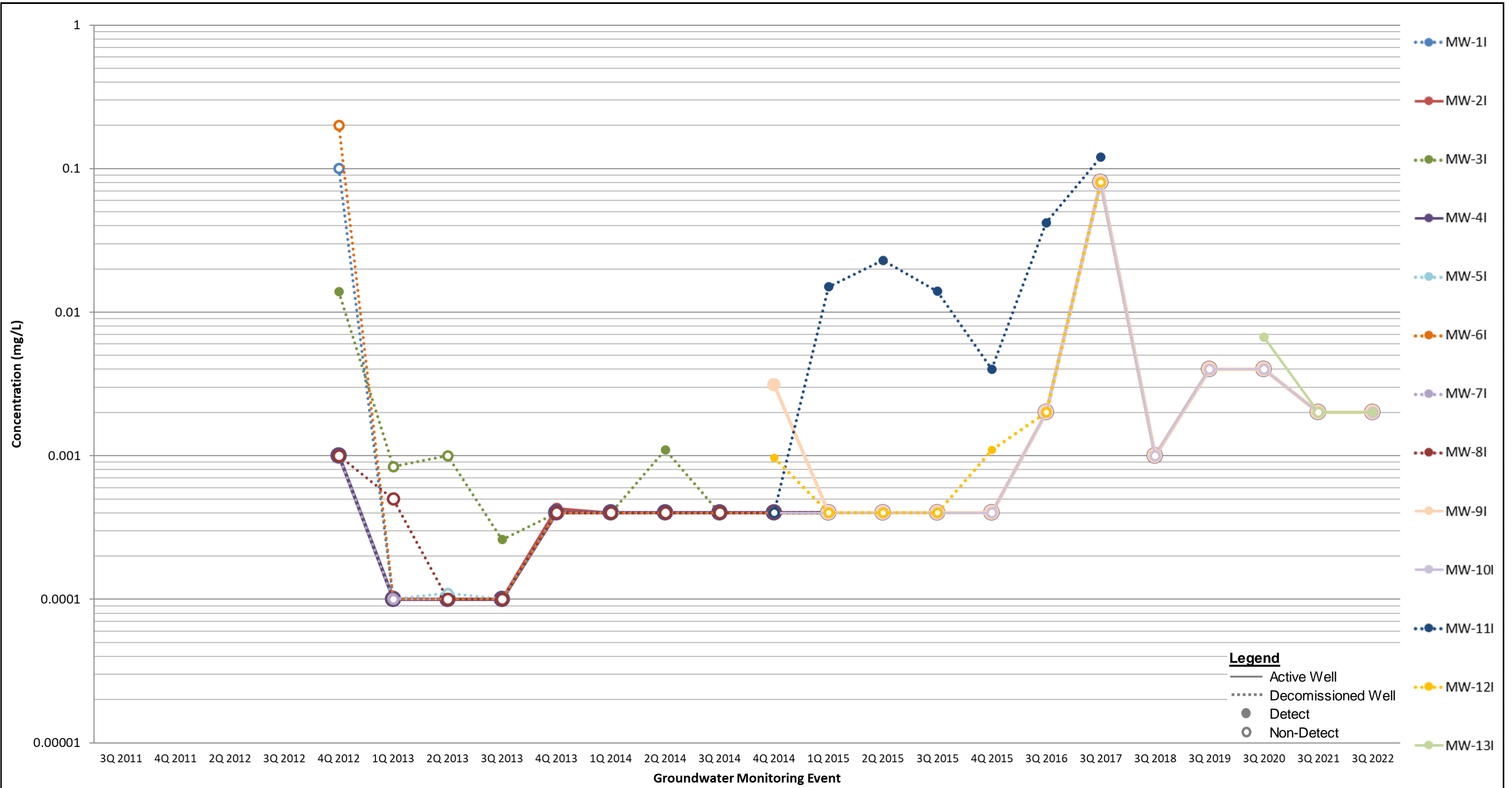
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double-sided printing.



Dissolved Lead Trends in the Shallow Aquifer with Decommissioned Wells
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure C3

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Dissolved Lead Trends in the Intermediate Aquifer with Decommissioned Wells
 2022 Groundwater Monitoring Report
 Superlon Plastics Site, Tacoma, Washington

Figure C4

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double-sided printing.