

Technical Memorandum

TO: Andy Smith, Washington State Department of Ecology
CC: Eric Huseby, City of Tacoma
FROM: Sierra Mott and Jennifer Wynkoop
DATE: March 8, 2019
RE: **Long-Term Groundwater Monitoring Status Report No. 6**
January 2019 Annual Groundwater Monitoring
Former Sauro's Cleanerama Site
Tacoma, Washington
Project No. 0094048.100.102

Introduction

On behalf of the City of Tacoma (City), Landau Associates, Inc. (LAI) is providing results for long-term groundwater monitoring activities at the former Sauro's Cleanerama site (site). Figure 1 shows the site location.

The City conducted 2 years of semiannual sampling (for a total of four sampling events) at nine monitoring wells as outlined in the Cleanup Action Plan (CAP; Ecology 2014), which is part of the Agreed Order (No. DE 11080) between the City and the Washington State Department of Ecology (Ecology). Under the CAP, the City is implementing a monitored natural attenuation (MNA) remedy that included 2 years of semiannual groundwater monitoring beginning in January 2016, followed by annual groundwater monitoring until groundwater at the site reaches cleanup goals (the CAP estimates 26 years of annual sampling). The fourth and final semiannual monitoring event was completed in July 2017 and the subsequent technical memorandum recommended conducting annual groundwater monitoring effective in January 2018 (LAI 2017). The proposal for annual monitoring identified winter as the appropriate sampling timeframe because higher volatile organic compound (VOC) concentrations generally occur in the winter. The City received approval of the proposed sampling schedule from Ecology (Coleman 2018) in January 2018.

This technical memorandum summarizes the sixth groundwater monitoring event under the CAP, conducted on January 9, 2019. Monitoring includes collection of groundwater samples and analysis for VOCs and MNA geochemical parameters in accordance with the CAP.

Groundwater Monitoring Program Summary

The existing site groundwater monitoring well network includes 17 wells. Of the 17 wells, 9 were selected for long-term monitoring under the CAP. Figure 2 shows the locations of the nine wells selected for long-term monitoring. Table 1 presents a sampling matrix for the long-term monitoring wells.

During the January 2019 sampling event, groundwater samples were collected in accordance with the Sampling and Analysis Plan (LAI 2013) and the sample matrix in Table 1. Samples for VOC and MNA analysis were collected using a peristaltic pump at MW-2. The other eight wells were sampled using passive diffusion bags for VOCs and dedicated Waterra foot valves for MNA parameters. VOC samples at RNS-MW6 were collected at two discrete depths because of the relatively long screen (20 feet) and because prior sampling has demonstrated stratification within the well; all other wells were sampled at a single depth. All samples were submitted for analysis under proper chain-of-custody protocols to TestAmerica Laboratories, Inc. (TestAmerica) located in Tacoma, Washington.

All groundwater samples were analyzed by the laboratory for VOC constituents of concern tetrachloroethene (PCE), trichloroethene (TCE), cis-1,2-dichloroethene (cDCE), and vinyl chloride (VC), and MNA parameters (nitrate, nitrite, total organic carbon [TOC], sulfate, sulfide, chloride, and dissolved gases [acetylene, methane, ethane, and ethene]). Samples were analyzed by the following methods: VOCs by US Environmental Protection Agency (EPA) Method 8260C; nitrate/nitrite and chloride/sulfate by EPA Method 300.0; TOC by EPA Method SM 5310B; sulfide by SM 4500-S2 D; and dissolved gases by EPA Method RSK-175. Field parameters were also collected, including dissolved oxygen (DO) and oxygen-reduction potential (ORP) using a field meter (YSI Quatro Pro Plus) and ferrous iron using a HACH® field test kit (Model IR-18C). A duplicate sample was collected at LAI-MW4 (Dup1) for quality control purposes. Data will be electronically submitted to Ecology's Environmental Information Management system following submittal of this report. Table 2 presents the analytical methods, practical quantitation limits (i.e., reporting limits), preservatives, and holding times. Table 3 and Figure 2 present VOC analytical results. Table 4 presents MNA analytical results. VOC time series plots are provided in Attachment 1. A copy of the laboratory data package for the most recent sampling event (January 2019) is provided in Attachment 2.

Volatile Organic Compound Results

The VOC plume at the site is somewhat bifurcated with the main portion of the plume extending east-northeast of the site and a smaller, lower-concentration portion of the plume extending south-southeast of the site. The east-northeast segment of the plume is characterized by monitoring wells LAI-MW5, RNS-MW6, MW-13, LAI-MW1, LAI-MW2, LAI-MW3, and LAI-MW4. The south-southeast segment of the plume is characterized by monitoring wells RNS-MW2 and MW-2.

VOC analytical results from the January 2019 sampling event are consistent with historical results. At three wells (LAI-MW1, LAI-MW4, and LAI-MW5), all VOC concentrations remain below their respective cleanup levels. LAI-MW5 is located adjacent to the northeast corner of the property, while LAI-MW1 and LAI-MW4 are located at the downgradient end of the east-northeast segment of the plume. At the six remaining wells, one or more VOCs exceeded cleanup levels. The cleanup level for both PCE and TCE is 5 micrograms per liter ($\mu\text{g/L}$), the cleanup level for cDCE is 70 $\mu\text{g/L}$, and the cleanup level for VC is 0.02 $\mu\text{g/L}$.

- LAI-MW2, MW-13, and RNS-MW6 (42.5 and 52.5), which are located in the core of the east-northeast plume segment, continue to have the highest concentrations of VOCs. The January 2019 results indicate concentrations above cleanup levels for all four constituents except for VC at RNS-MW6-42.5 with PCE and TCE concentrations having the largest exceedances of cleanup levels. Concentrations of PCE at these wells ranged from 320 µg/L to 800 µg/L and concentrations of TCE ranged from 84 µg/L to 190 µg/L.
- Analytical results from LAI-MW3, also located in the east-northeast plume segment, indicate concentrations of PCE and TCE exceeded applicable cleanup levels; however, concentrations are somewhat lower (78 µg/L and 33 µg/L, respectively) than at the three wells discussed above. LAI-MW3 is located downgradient of MW-13.
- Analytical results from RNS-MW2, located in the south-southeast plume segment, indicate that the concentration of PCE (22 µg/L) continues to exceed the applicable cleanup level. However, the concentration of PCE at adjacent well MW-2 (0.42 µg/L) is below the cleanup level.
- In well MW-2, results indicate that only VC exceeded the cleanup level (0.2 µg/L) with a concentration of 0.36 µg/L.

Discussion of Volatile Organic Compound Data Trends

An interim soil removal action was completed at the site in 2010 and the site was subsequently filled and paved. In the downgradient well nearest the source area (RNS-MW6), a period of increasing VOC concentrations occurred following the removal action, likely due to significant soil disturbance associated with the removal action. A turning point occurred in 2013 and formerly increasing VOC concentration trends at RNS-MW6 began to decline. In wells farther downgradient, the shift in concentration trends from increasing to decreasing occurred later, in 2016. The following sections provide detailed observations regarding VOC concentration trends. VOC concentration time series plots are provided in Attachment 1.

East-Northeast Plume Segment

- LAI-MW1, LAI-MW4, and LAI-MW5 have historically shown decreasing concentration trends with recent trends indicating that concentrations of all VOCs remain below cleanup levels and near or below the laboratory reporting limits. LAI-MW5 is located adjacent to the former source area, LAI-MW1 is located downgradient and partially crossgradient of the source area. LAI-MW4 is the farthest downgradient well and is intended to monitor the downgradient extent of the plume.
- RNS-MW6, located immediately downgradient of the source area, is sampled at two depths within the screen. The data trends at the 52.5-foot sampling depth indicate decreasing PCE, TCE, and cDCE concentrations from the historical maximums in 2012 and 2013 and overall decreasing trends; the VC concentration is also generally decreasing, although an anomalous spike occurred during January 2017. VOC concentration trends at the 42.5-foot depth vary by constituent. PCE shows a generally decreasing trend since the historical maximum concentration in 2013. TCE also shows a generally decreasing trend since 2013 with the exception of an anomalous concentration spike in February 2018. Concentrations of cDCE

continued to increase until 2016 but have since trended downward with the exception of an anomalous concentration spike in February 2018 that correlates with the aforementioned spike in TCE. VC concentrations were detected historically, but were not detected in 2019.

- Data trends in the mid-plume region are generally declining. Concentrations at MW-13 show decreasing trends for all four VOCs over time. At LAI-MW2, peak concentrations of PCE, TCE and VC occurred somewhat later, in 2016, than other upgradient wells; since 2016 concentrations of these three constituents have been declining. Concentrations of cDCE at LAI-MW2 have been declining since 2013. LAI-MW3 exhibits similar trends to LAI-MW2 in terms of the PCE, TCE and cDCE trends; however, VC at this well was not detected in 2019.

South-Southeast Plume Segment

- At RNS-MW2, only PCE exceeded the applicable cleanup level in 2019. PCE concentrations showed an increasing trend until 2016; however, concentrations have been declining since then.
- At MW-2, only VC exceeded the applicable cleanup level in 2019. VC concentrations at this well fluctuate, with no apparent trend, but have been less than 0.5 µg/L since 2016.

Monitored Natural Attenuation Results

Natural attenuation of chlorinated ethenes occurs through several mechanisms with the primary mechanism being biologically mediated reductive dechlorination. For reductive dechlorination to occur, the aquifer must be reducing, and a food source (electron donor) for the bacteria must be available. Measures of aquifer redox conditions include DO, ORP, nitrate, ferrous iron, sulfate, and methane. TOC concentration is a measure of available electron donor. In general, low concentrations of DO, nitrate, and sulfate and detections or elevated concentrations of ferrous iron and methane are indicators of reduced aquifer conditions. However, the redox state of the aquifer can be variable and complex, and assessment typically requires evaluation of multiple indicators.

MNA data appear to suggest favorable conditions for reductive dechlorination at LAI-MW5 (near the source area) and LAI-MW4 (the most downgradient well) where ferrous iron concentrations are highest. The highest TOC concentrations also occur at these wells, indicating the presence of electron donor. Indicators of reducing aquifer conditions and electron donor availability at LAI-MW4 and LAI-MW5 during the January 2019 sampling event are summarized below.

- Ferrous iron was detected in both wells at concentrations of 4.5 milligrams per liter (mg/L) at LAI-MW4 and 7.0 mg/L at LAI-MW5.
- Nitrate and nitrite were not detected above the laboratory reporting limit at either LAI-MW4 or LAI-MW5. Detections of sulfate are relatively low.
- Methane was detected at a concentration of 2.1 mg/L at LAI-MW4 and 5.4 mg/L at LAI-MW5.
- ORP readings were negative at both wells.

-
- TOC concentrations were somewhat elevated at both wells (concentrations of 2.6 mg/L and 6.2 mg/L at LAI-MW4 and LAI-MW5, respectively).

At the remaining seven wells, results were not conclusive regarding the potential for reductive dechlorination; however, low or no detection of nitrate and nitrite indicates some capacity for reductive dechlorination at all wells. Additionally, VOC concentrations at most wells appear to be declining. January 2019 MNA analytical results are provided in Table 4.

Occurrence of Problems

None occurred.

Planned Groundwater Monitoring Activities

Groundwater monitoring results will continue to be submitted to Ecology 60 days after completion of sampling activities. The next scheduled sampling event will occur in January 2020.

Use of this Technical Memorandum

This technical memorandum has been prepared for the exclusive use of the City of Tacoma and Ecology for specific application to the former Sauro's Cleanarama Groundwater Monitoring project. No other party is entitled to rely on the information, conclusions, and recommendations included in this document without the express written consent of LAI. Further, the reuse of information, conclusions, and recommendations provided herein for extensions of the project or for any other project, without review and authorization by LAI, shall be at the user's sole risk. LAI warrants that within the limitations of scope, schedule, and budget, our services have been provided in a manner consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions as this project. We make no other warranty, either express or implied.

* * * * *

Please contact us if you have any questions concerning groundwater monitoring activities at the site or the results presented in this status report. This document has been prepared under the supervision and direction of the following key staff.

LANDAU ASSOCIATES, INC.



Sierra Mott
Senior Project Scientist



Jennifer Wynkoop
Principal Scientist

KMG/SMM/JWW/ccy

\\tacoma3\PROJECT\094\048.100\102 Year 2 2019\R>Status Report No. 6\LAI Sauros GW Monitoring Jan 2019_tm - 03-08-19.docx

References

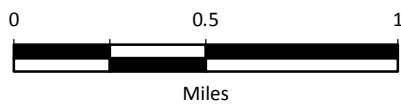
- Coleman, M. 2018. "Re: Draft Sauro's Long-Term Groundwater Monitoring Status Report No. 4." From Marv Coleman, Toxics Cleanup Program, Washington State Department of Ecology, to Sierra Mott, Senior Project Scientist, Landau Associates, Inc. January 22.
- Ecology. 2014. Draft: Cleanup Action Plan, Former Sauro's Cleanerama Site, Tacoma, Washington. Washington State Department of Ecology. December.
- LAI. 2013. Draft Sampling and Analysis Plan, Former Sauro's Property, Tacoma, Washington. Landau Associates, Inc. January 24.
- LAI. 2017. Draft Technical Memorandum: Long-Term Groundwater Monitoring Status Report No. 4 for July 2017, Former Sauro's Cleanerama Site, Tacoma, Washington. Landau Associates, Inc. September 7.

Attachments

- Figure 1: Vicinity Map
- Figure 2: Monitoring Well Network and Volatile Organic Compound Concentrations in Groundwater (January 2019)
- Table 1: Sample Matrix
- Table 2: Laboratory Analytical and Field Parameter Details
- Table 3: Groundwater Analytical Results for Constituents of Concern
- Table 4: Monitored Natural Attenuation Parameters
- Attachment 1: Constituents of Concern Concentration Time Series Plots
- Attachment 2: January 2019 Laboratory Data Package



G:\Projects\094\048\090\093\Long-Term GW Monitoring Status Report\F01VicMap.mxd 2/24/2016



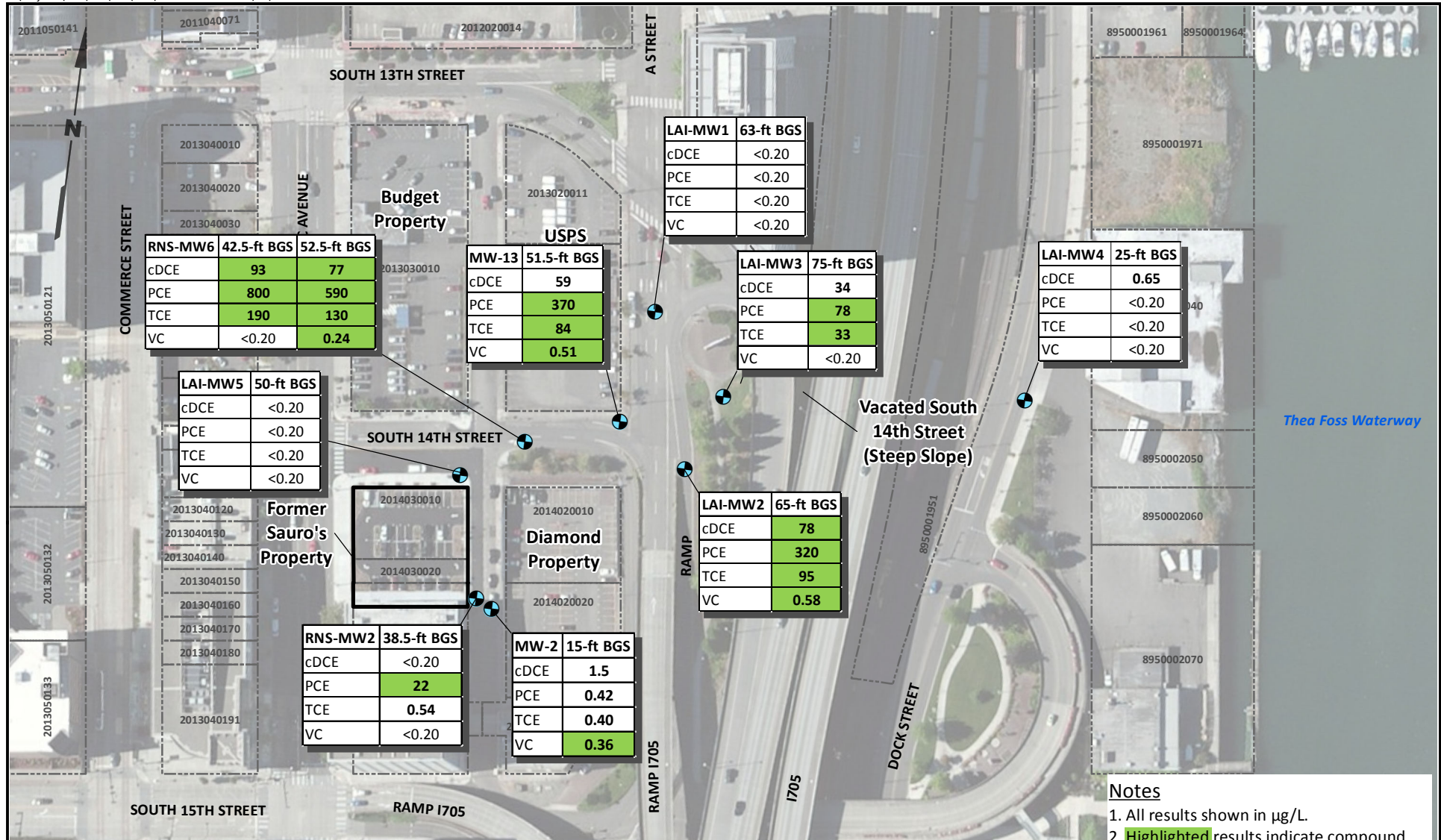
Data Source: Esri 2012



Sauro's Cleanerama
Tacoma, Washington

Vicinity Map

Figure
1



RNS-MW6	42.5-ft BGS	52.5-ft BGS
cDCE	93	77
PCE	800	590
TCE	190	130
VC	<0.20	0.24

MW-13	51.5-ft BGS
cDCE	59
PCE	370
TCE	84
VC	0.51

LAI-MW1	63-ft BGS
cDCE	<0.20
PCE	<0.20
TCE	<0.20
VC	<0.20

LAI-MW3	75-ft BGS
cDCE	34
PCE	78
TCE	33
VC	<0.20

LAI-MW4	25-ft BGS
cDCE	0.65
PCE	<0.20
TCE	<0.20
VC	<0.20

LAI-MW5	50-ft BGS
cDCE	<0.20
PCE	<0.20
TCE	<0.20
VC	<0.20

LAI-MW2	65-ft BGS
cDCE	78
PCE	320
TCE	95
VC	0.58

RNS-MW2	38.5-ft BGS
cDCE	<0.20
PCE	22
TCE	0.54
VC	<0.20

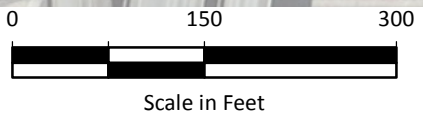
MW-2	15-ft BGS
cDCE	1.5
PCE	0.42
TCE	0.40
VC	0.36

Notes

1. All results shown in µg/L.
2. **Highlighted** results indicate compound detected above cleanup level.
3. Black and white reproduction of this color original may reduce its effectiveness and lead to incorrect interpretation.

Legend

- Long-Term Groundwater Monitoring Well (and Sampling Depth)
- ▭ Subject Property
- ▭ Tax Parcels with Parcel ID



Data Source: Esri World Imagery, 2016.

Sauro's Cleanorama
Tacoma, Washington

**Monitoring Well Network and
VOC Concentrations in Groundwater
(January 2019)**

Figure
2

Table 1
Sample Matrix
Sauro's Cleanerama – Tacoma, Washington

Location	VOC Sampling Depth (ft)	VOC Sampling Method	MNA Parameters Sampling Depth (ft)	MNA Parameters Sampling Method
LAI-MW1	63	PDB	63	WAT
LAI-MW2	65	PDB	65	WAT
LAI-MW3	75	PDB	75	WAT
LAI-MW4	25	PDB	25	WAT
LAI-MW5	50	PDB	50	WAT
MW-2	15	PP	15	PP
MW-13	51.5	PDB	51.5	WAT
RNS-MW2	38.5	PDB	38.5	WAT
RNS-MW6 ^a	42.5 and 52.5	PDB	47.5	WAT

Note:

^a For RNS-MW6, where there are two VOC sampling depths, the MNA sampling depth is the mid-point between the two VOC sampling depths.

Abbreviations/Acronyms:

ft = feet

HDPE = high-density polyethylene

MNA = monitored natural attenuation

PDB = passive diffusion bag

PP = peristaltic pump with dedicated tubing

VOC = volatile organic compound

WAT = (dedicated) Waterra foot valve (with dedicated 5/8-inch HDPE tubing)

Table 2
Laboratory Analytical and Field Parameter Details
Former Sauro's Cleanerama Site – Tacoma, Washington

Groundwater Analytical Parameters	EPA Analytical Method	Practical Quantitation Limit	Preservation	Maximum Holding Time (Days)
Volatile Organic Compounds				
Tetrachloroethene	8260C	0.2 µg/L	Add HCl to pH<2; Store cool at 6°C	14
Trichloroethene	8260C	0.2 µg/L	Add HCl to pH<2; Store cool at 6°C	14
cis-1,2-Dichloroethene	8260C	0.2 µg/L	Add HCl to pH<2; Store cool at 6°C	14
Vinyl Chloride	8260C	0.2 µg/L	Add HCl to pH<2; Store cool at 6°C	14
Monitored Natural Attenuation				
Chloride	300.0	0.90 mg/L	Store cool at 6°C	28
Nitrate (NO ₃) (Total) as N	300.0	0.2 mg/L ^a	Store cool at 6°C	48 hours
Nitrite (NO ₂) (Total) as N	300.0	0.4 mg/L ^a	Store cool at 6°C	48 hours
Total Organic Carbon	SM 5310B	1.00 mg/L	Add 2mL 9N H2SO4 pH<2; Store at 6°C	28
Sulfate (SO ₄) (Total)	300.0	1.2 mg/L	Store cool at 6°C	28
Sulfide (SO ₂) (Total)	SM 4500-S2 D	0.050 mg/L	Store cool at 6°C	7
AMEE	RSK-175	0.0050 mg/L	Store cool at 6°C	14

Groundwater Field Parameters	Data Collection Method	Instrument	Units
Monitored Natural Attenuation			
Conductivity	Field meter	YSI ^b	µS/cm
Dissolved Oxygen	Field meter	YSI	mg/L
Oxidation Reduction Potential	Field meter	YSI	units +/- mV
pH	Field meter	YSI	unitless
Temperature	Field meter	YSI	(°C)
Ferrous Iron (Fe ²⁺)	Field meter	Hach® Kit	mg/L
Turbidity	Field meter	Turbidity Meter	NTU
Water Level	Field meter	Water Level Indicator	0.01 ft

Notes:

^a Reporting limits for nitrate and nitrite were raised prior to the July 2016 sampling event due to laboratory capabilities.

^b YSI shall be recalibrated daily.

Abbreviations/Acronyms:

AMEE = acetylene, methane, ethane, and ethene

°C = degrees Celsius

EPA = US Environmental Protection Agency

ft = foot

µg/L = micrograms per liter

mg/L = milligrams per liter

mL = millimeters

mV = millivolts

µS/cm = microSiemens per centimeter

NTU = nephelometric turbidity units

Table 3
Groundwater Analytical Results for Constituents of Concern
Former Sauro's Cleanerama Site – Tacoma, Washington

Analyte	Groundwater MTCA Method A CUL or Federal/State MCL (µg/L)	Sampling Location, Sampling Date, Laboratory Sample ID, Sample Type										
		LAI-MW1 1/9/2019 580-83199-2 N	LAI-MW2 1/9/2019 580-83199-3 N	LAI-MW3 1/9/2019 580-83199-4 N	LAI-MW4 1/9/2019 580-83199-5 N	LAI-MW4 1/9/2019 580-83199-12 FD	LAI-MW5 1/9/2019 580-83199-6 N	MW-2 1/9/2019 580-83199-7 N	MW-13 1/9/2019 580-83199-8 N	RNS-MW2 1/9/2019 580-83199-9 N	RNS-MW6-42.5 1/9/2019 580-83199-10 N	RNS-MW6-52.5 1/9/2019 580-83199-11 N
Volatile Organic Compounds (µg/L; SW-846 8260C)												
cis-1,2-Dichloroethene	70 ^a	0.20 U	78	34	0.65	0.58	0.20 U	1.5	59	0.20 U	93	77
Tetrachloroethene	5	0.20 U	320	78	0.20 U	0.20 U	0.20 U	0.42	370	22	800	590
Trichloroethene	5	0.20 U	95	33	0.20 U	0.20 U	0.20 U	0.40	84	0.54	190	130
Vinyl Chloride	0.2	0.20 U	0.58	0.20 U	0.20 U	0.20 U	0.20 U	0.36	0.51	0.20 U	0.20 U	0.24

Notes:

U = The compound was not detected at the reported concentration.

Bold = detected analyte

Green highlighting = compound detected at concentrations above cleanup criteria.

^a Cis-1,2-Dichloroethene does not have a MTCA Method A CUL for groundwater; therefore, the Federal/State primary MCL value of 70 µg/L is used as the CUL.

Abbreviations and Acronyms:

µg/L = micrograms per liter

CUL = cleanup level

FD = field duplicate

ID = identification

MCL = maximum contaminant levels

MTCA = Model Toxics Control Act

N = primary sample

Table 4
Monitored Natural Attenuation Parameters
Former Sauro's Cleanerama Site – Tacoma, Washington

Analyte	Sampling Location, Sampling Date, Laboratory Sample ID, Sample Type									
	LAI-MW1 1/9/2019 580-83199-2 N	LAI-MW2 1/9/2019 580-83199-3 N	LAI-MW3 1/9/2019 580-83199-4 N	LAI-MW4 1/9/2019 580-83199-5 N	LAI-MW4 1/9/2019 580-83199-12 FD	LAI-MW5 1/9/2019 580-83199-6 N	MW-2 1/9/2019 580-83199-7 N	MW-13 1/9/2019 580-83199-8 N	RNS-MW2 1/9/2019 580-83199-9 N	RNS-MW6-52.5 1/9/2019 580-83199-11 N
	Natural Attenuation Parameters (mg/L; EPA 300.0/SM 4500-S2-D/SM 5310B)									
Chloride	52	14 J	22	40	40	57	60	16	100	28
Nitrogen, Nitrate (as N)	1.8	0.20 U	0.70	0.20 U	0.20 U	0.20 U	1.3	0.76	2.9	0.78
Nitrogen, Nitrite	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U	0.40 U
Sulfate	22	20 J	23	4.3	4.3	4.3	42	31	25	29
Sulfide, Total	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U	0.050 U
Total Organic Carbon (TOC)	1.3	1.2	1.3	2.6	2.7	6.2	2.6	1.3	1.1	1.7
Dissolved Gases (mg/L; RSK-175)										
Acetylene	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Ethane	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0051
Ethene	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U	0.0050 U
Methane	0.0050 U	0.0065	0.0050 U	2.1	1.9	5.4	0.57	0.0050 U	0.0050 U	0.018
Field Parameters										
Dissolved Oxygen (mg/L)	1.65	2.46	3.18	2.95	2.88	2.41	1.42	3.30	5.64	1.74
Oxidation Reduction Potential (mV)	165.0	86.8	130.0	-40.0	-40.3	-23.1	24.5	168.6	145.9	173.0
Iron (mg/L)	0.5	1.0	0.5	4.5	4.5	7.0	1.0	1.0	1.5	1.0

Notes:

Bold text indicates detected analyte.

U = The compound was not detected at the reported concentration.

Abbreviations and Acronyms:

EPA = US Environmental Protection Agency

FD = field duplicate

ID = identification

mg/L = milligrams per liter

mV = millivolt

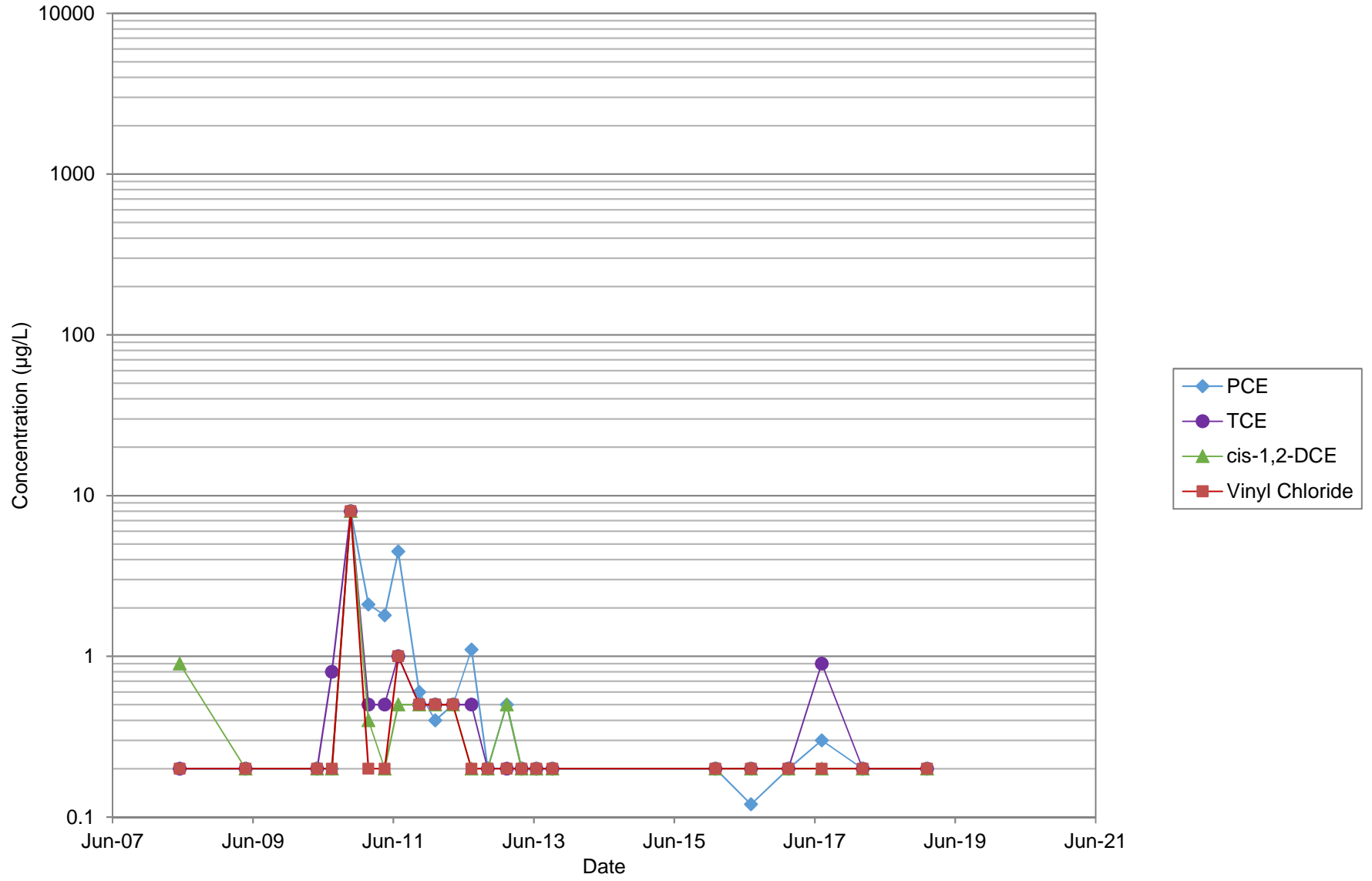
N = primary sample

Constituents of Concern Concentration Time Series Plots

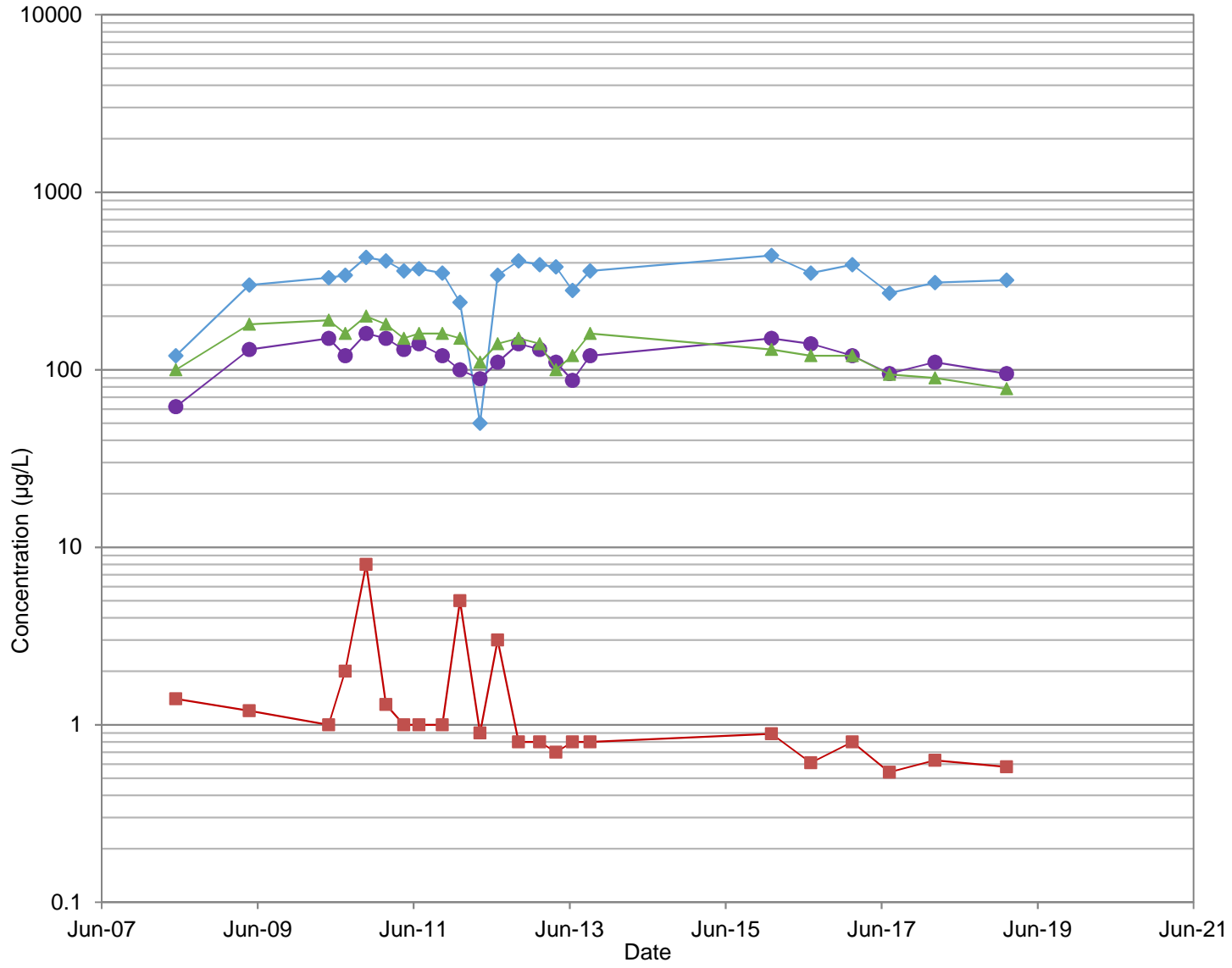
Note:

The analytical laboratory erroneously reported down to the method detection limit in January and July 2016.

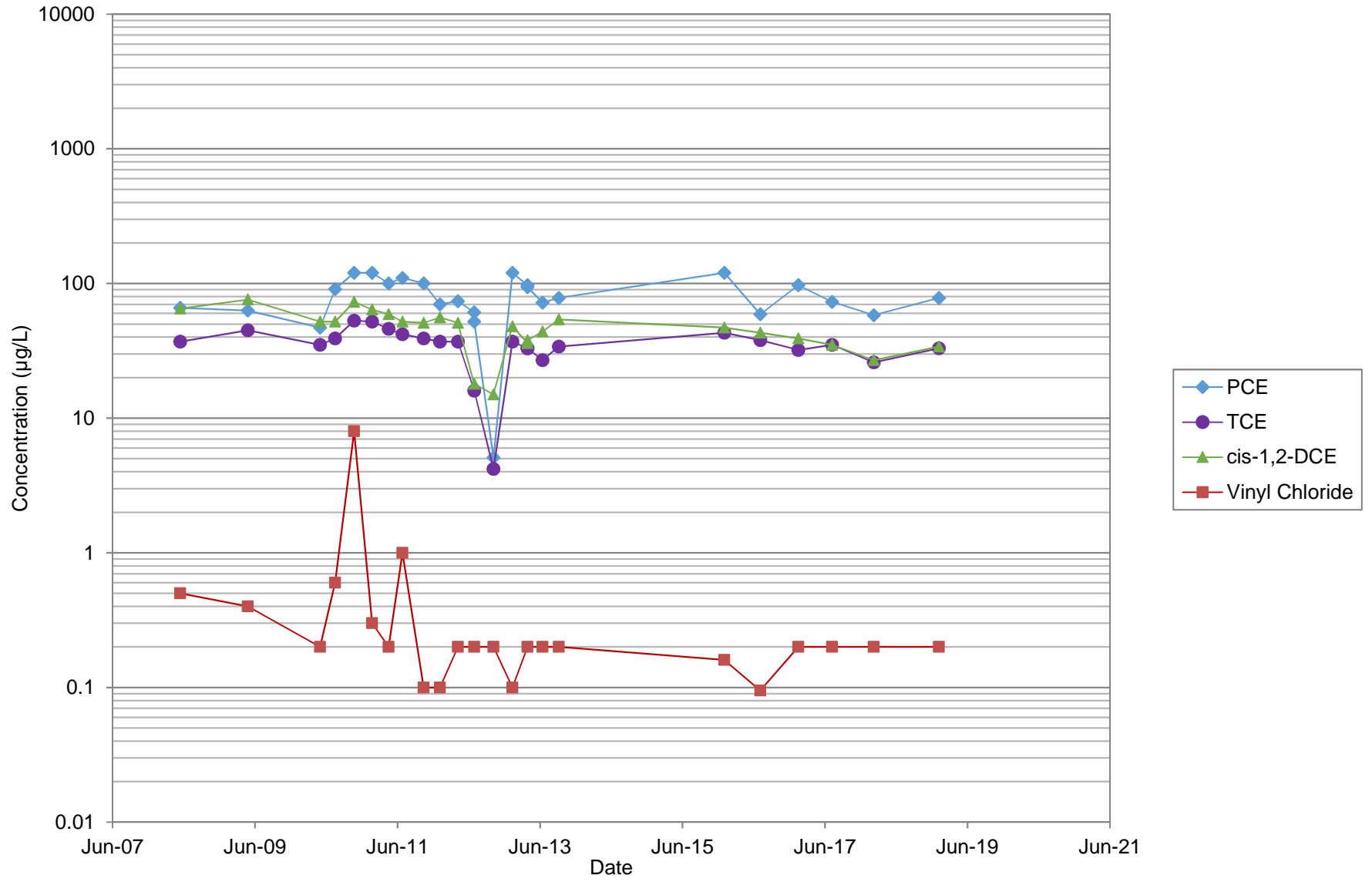
LAI-MW1



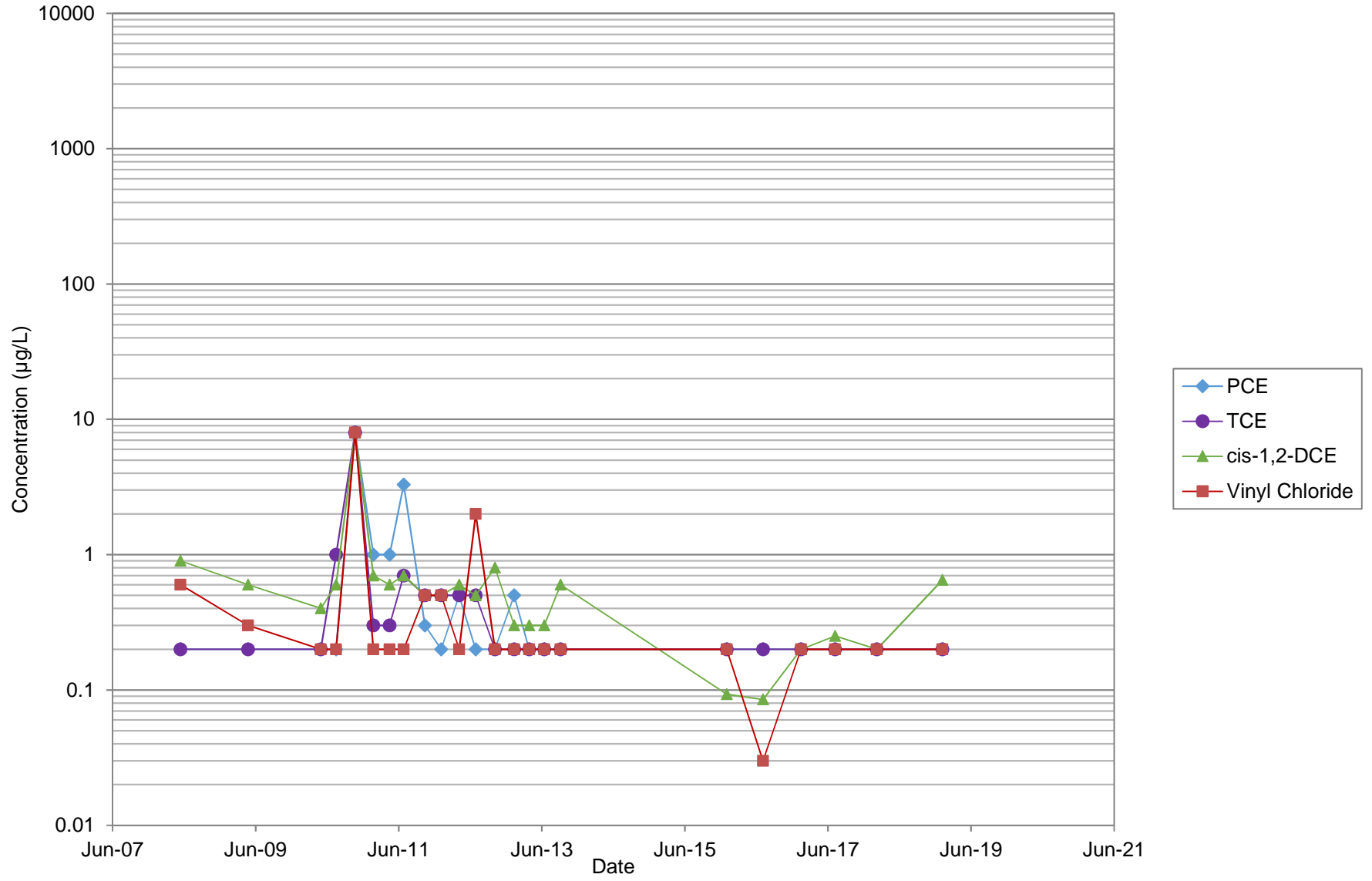
LAI-MW2



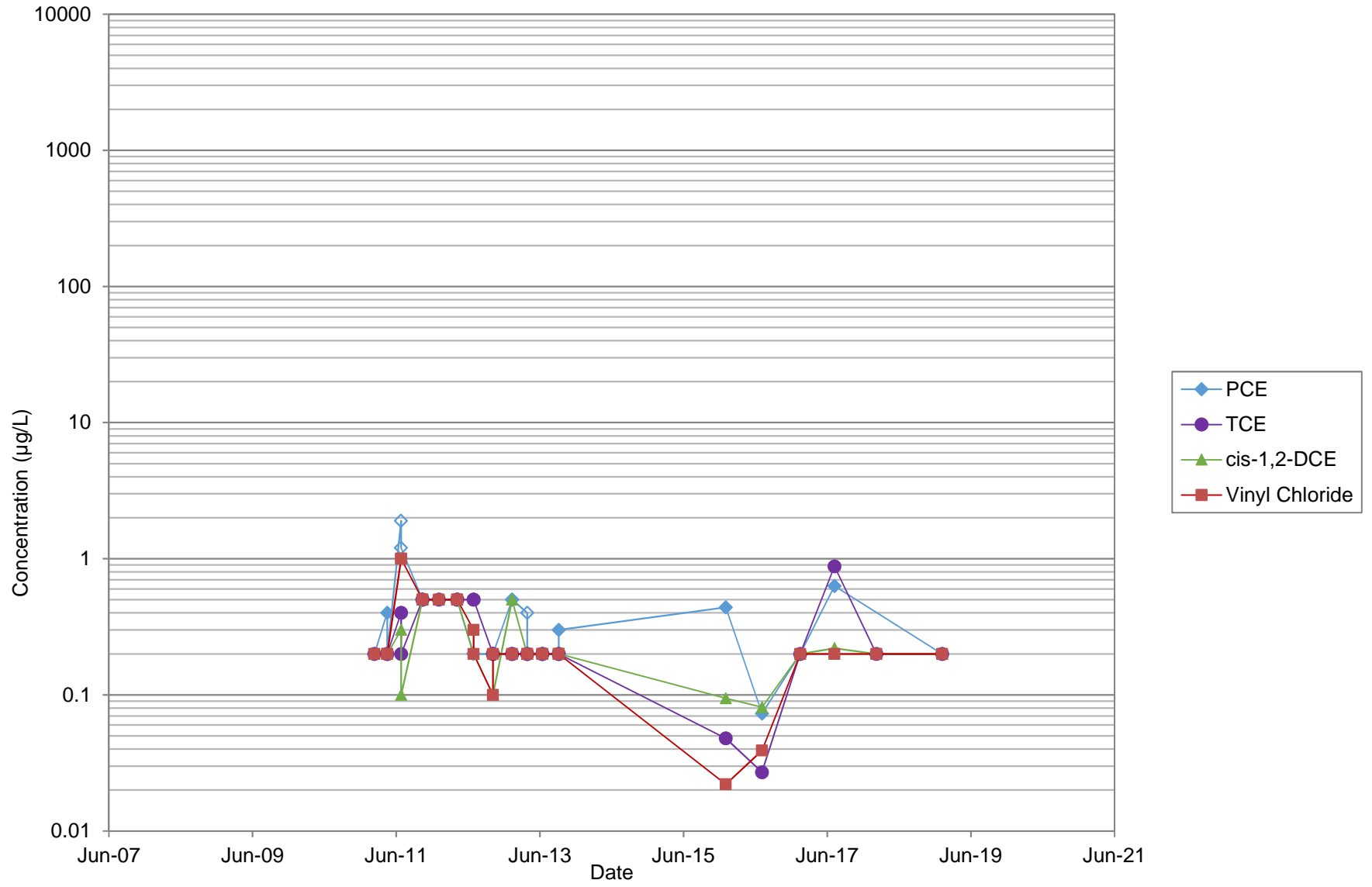
LAI-MW3



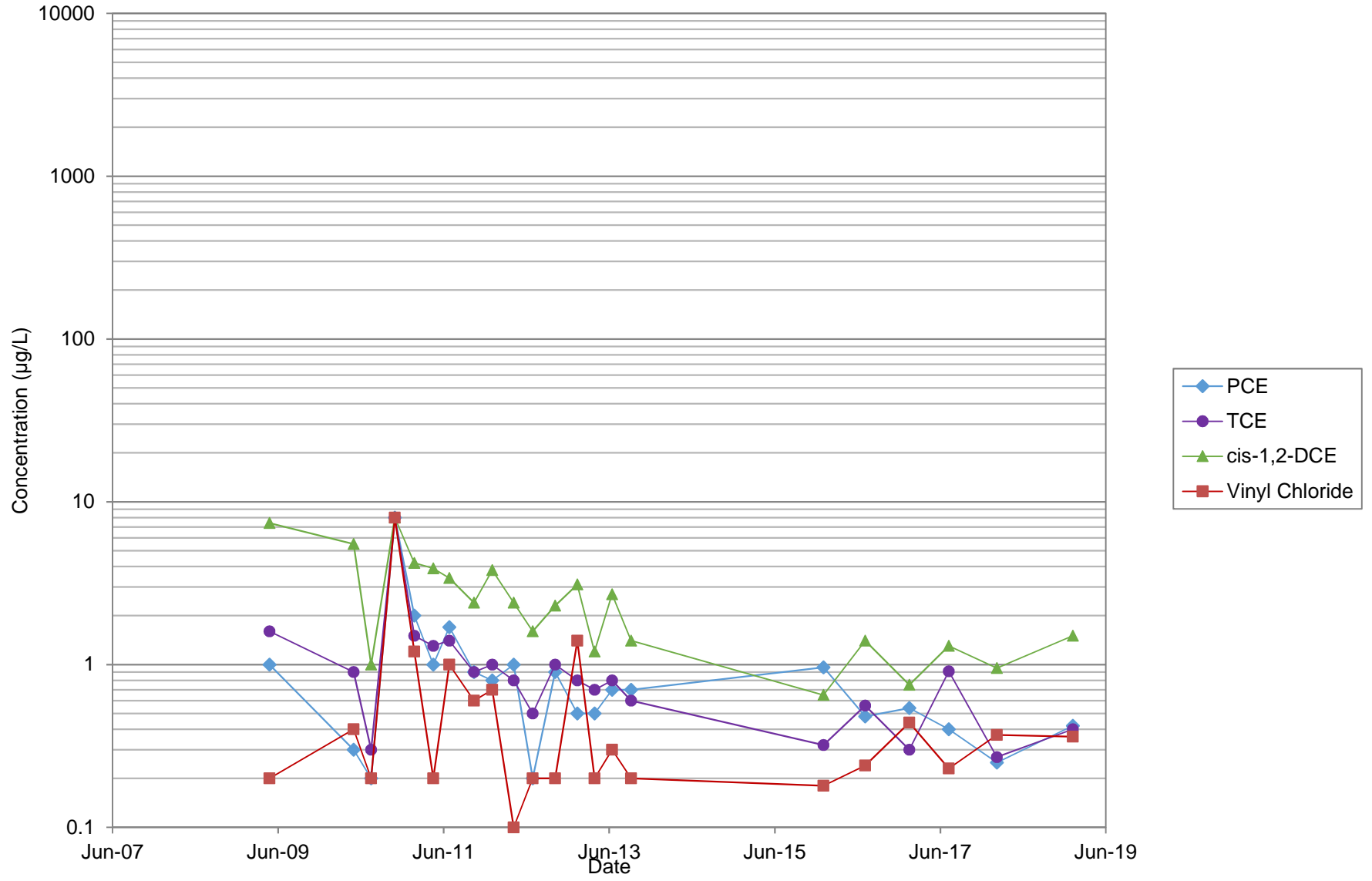
LAI-MW4



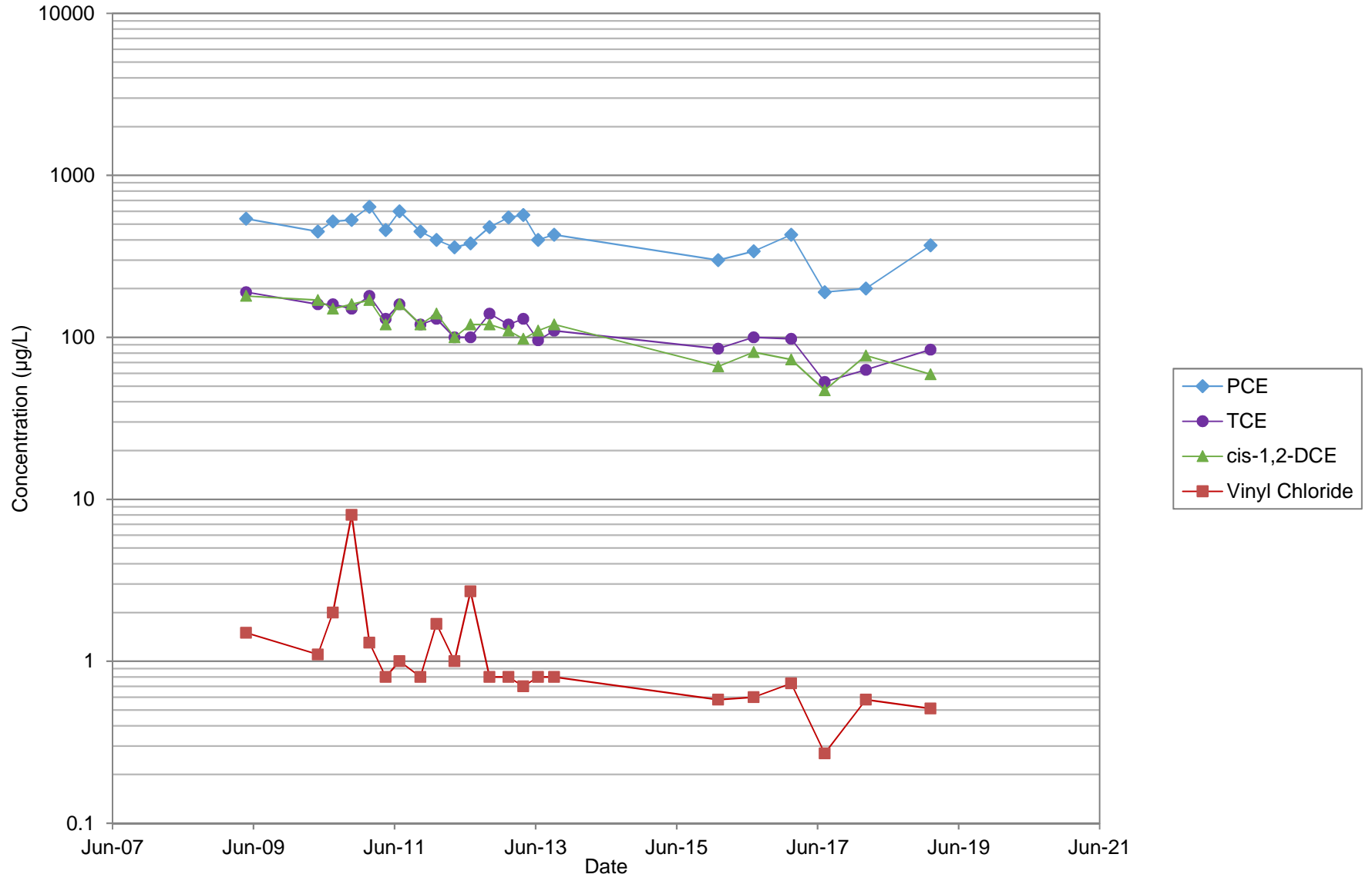
LAI-MW5



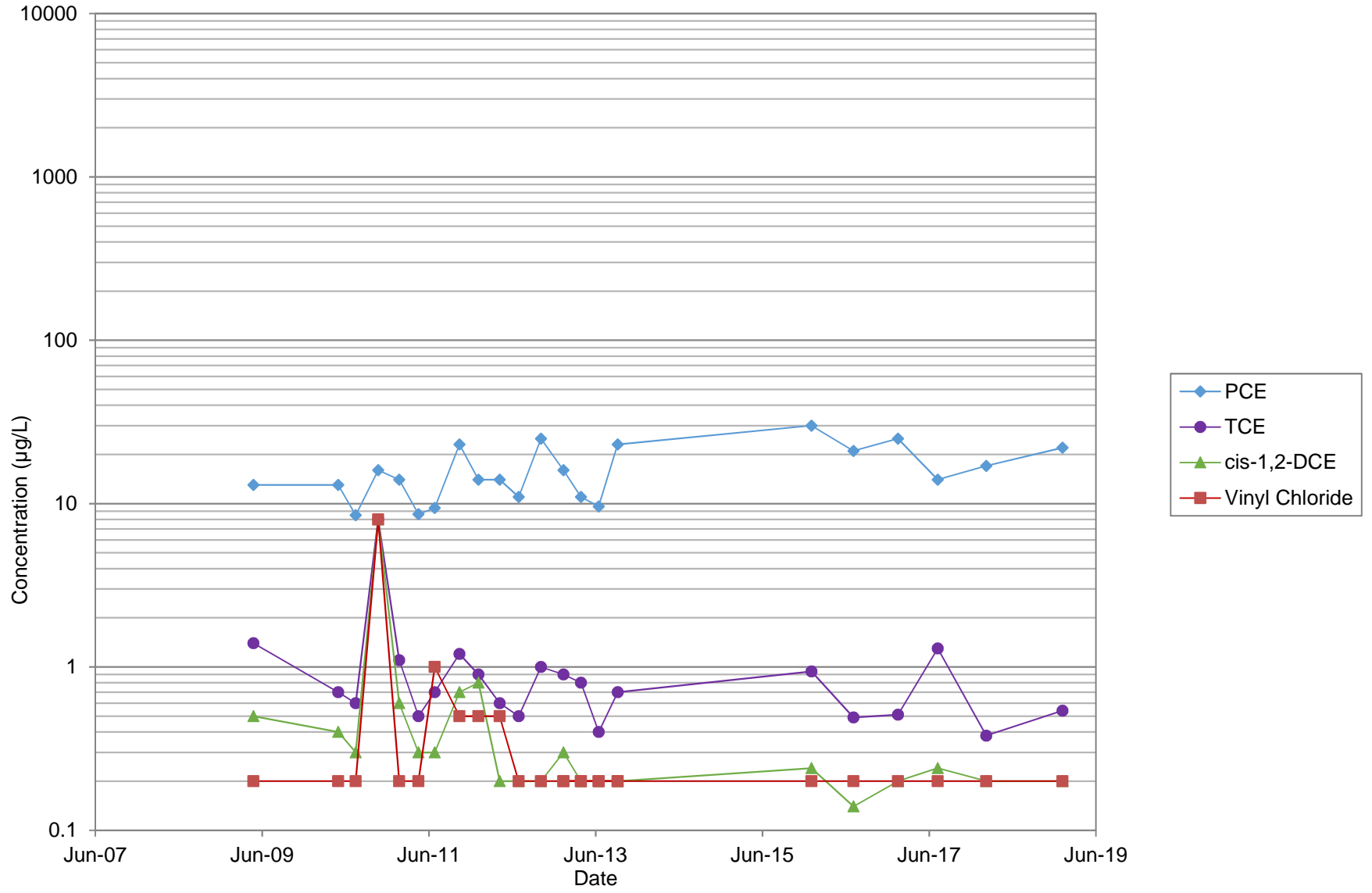
MW-2



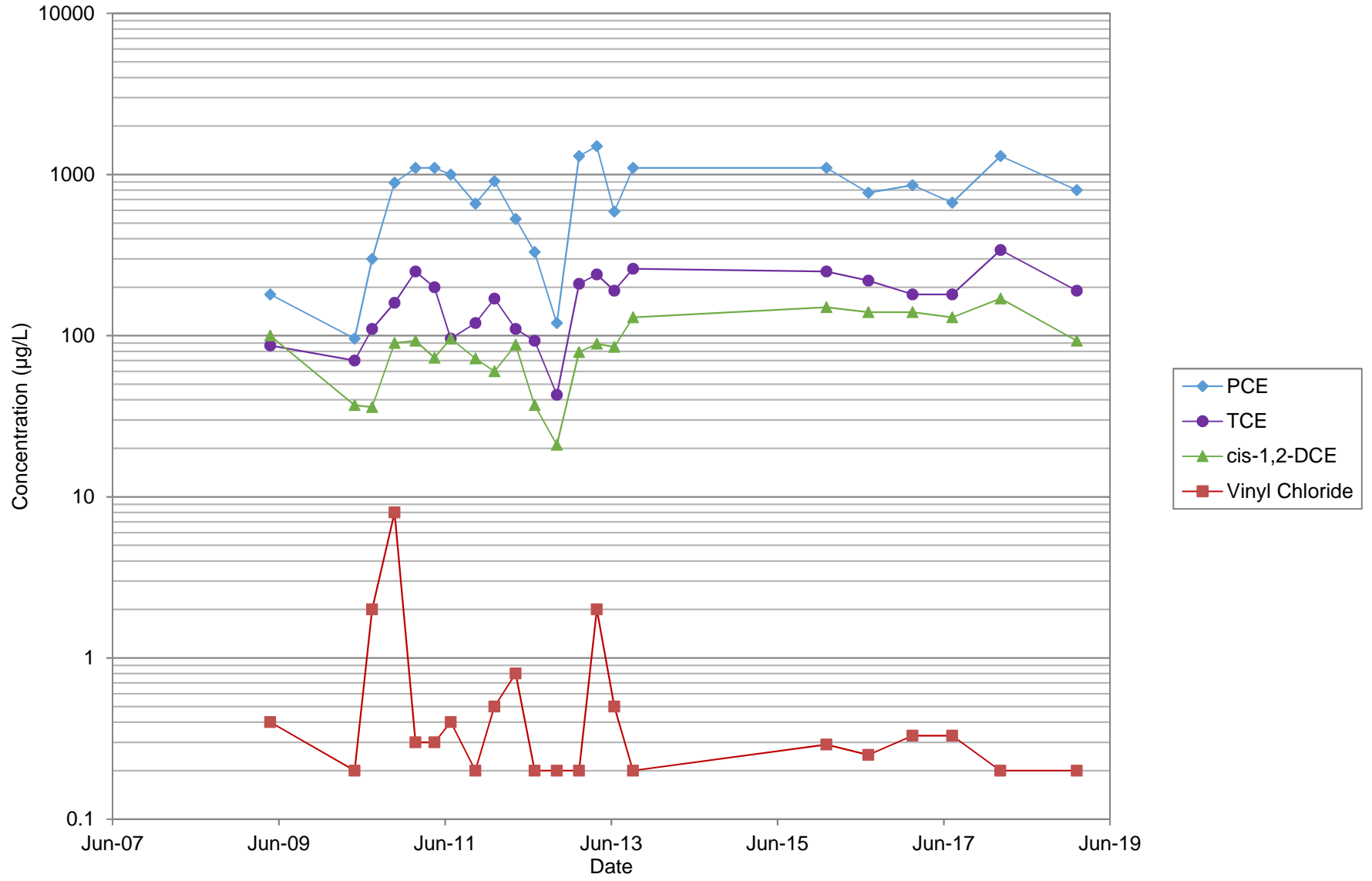
MW-13



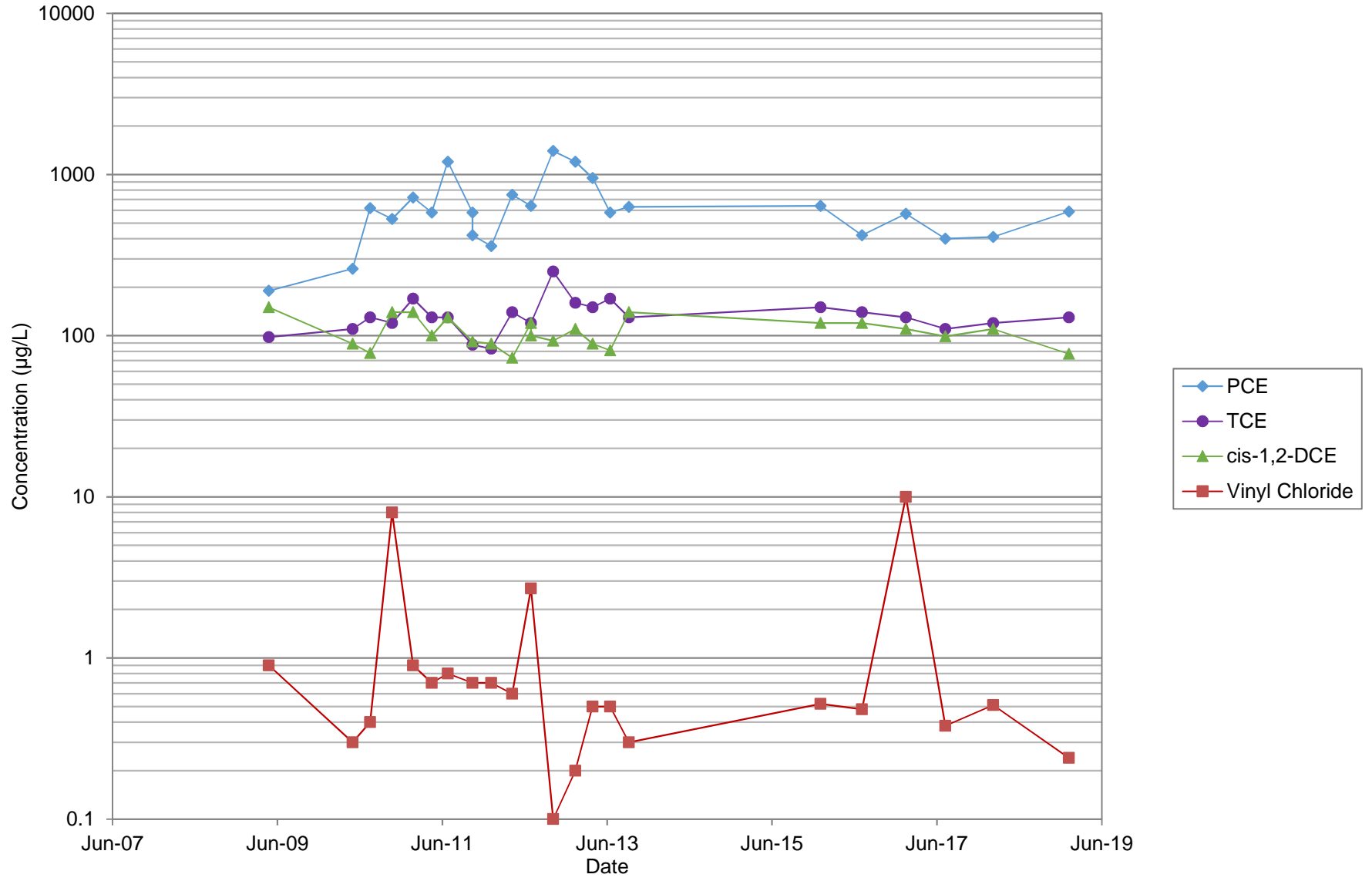
RNS-MW2



RNS-MW6-42.5



RNS-MW6-52.5



January 2019 Laboratory Data Package

TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.

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

TestAmerica Job ID: 580-83199-1

Client Project/Site: Sauro's - Groundwater Monitoring
Revision: 1

For:

Landau & Associates, Inc.
2107 South C Street
Tacoma, Washington 98402

Attn: Sierra Mott



Authorized for release by:
2/6/2019 1:17:59 PM

Kristine Allen, Manager of Project Management
(253)248-4970
kristine.allen@testamericainc.com

Designee for

Sheri Cruz, Project Manager I
(253)922-2310
sheri.cruz@testamericainc.com

The test results in this report meet all 2003 NELAC and 2009 TNI requirements for accredited parameters, exceptions are noted in this report. This report may not be reproduced except in full, and with written approval from the laboratory. For questions please contact the Project Manager at the e-mail address or telephone number listed on this page.

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.



LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11



Table of Contents

Cover Page	1
Table of Contents	2
Case Narrative	3
Definitions	4
Sample Summary	5
Chain of Custody	6
Receipt Checklists	11
Client Sample Results	13
QC Sample Results	25
Chronicle	31
Certification Summary	35

Case Narrative

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Job ID: 580-83199-1

Laboratory: TestAmerica Seattle

Narrative

Job Narrative 580-83199-1

Comments

Report was revised 2-6-19 to correct the omission of the % recovery and RPD results for the MSD for method 300.0.

No additional comments.

Receipt

The samples were received on 1/9/2019 5:03 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperatures of the 2 coolers at receipt time were 2.6° C and 5.1° C.

GC/MS VOA

Method(s) 8260C: The BFB tune report associated with analytical batch 293092 of m/z 176 failing ; Ion Abundance Criteria show greater than 95% but less than 101% of m/z 174 and % Relative Abundance show 74.2 (94.8)*. This value meets method criteria and is the result of a rounding/significant figure precision error. The data have been reported. (BFB 580-293092/2)

Method(s) 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: LAI-MW2-20190109 (580-83199-3), LAI-MW3-20190109 (580-83199-4), MW13-20190109 (580-83199-8), RNS-MW6-42.5-20190109 (580-83199-10) and RNS-MW6-52.5-20190109 (580-83199-11). Elevated reporting limits (RLs) are provided.

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

GC VOA

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

General Chemistry

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

Definitions/Glossary

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Qualifiers

General Chemistry

Qualifier	Qualifier Description
F1	MS and/or MSD Recovery is outside acceptance limits.

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
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)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
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)

Sample Summary

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
580-83199-1	TripBlank-20190109	Water	01/09/19 00:01	01/09/19 17:03
580-83199-2	LAI-MW1-20190109	Water	01/09/19 11:25	01/09/19 17:03
580-83199-3	LAI-MW2-20190109	Water	01/09/19 10:02	01/09/19 17:03
580-83199-4	LAI-MW3-20190109	Water	01/09/19 12:21	01/09/19 17:03
580-83199-5	LAI-MW4-20190109	Water	01/09/19 08:37	01/09/19 17:03
580-83199-6	LAI-MW5-20190109	Water	01/09/19 16:35	01/09/19 17:03
580-83199-7	MW2-20190109	Water	01/09/19 14:15	01/09/19 17:03
580-83199-8	MW13-20190109	Water	01/09/19 13:14	01/09/19 17:03
580-83199-9	RNS-MW2-20190109	Water	01/09/19 14:36	01/09/19 17:03
580-83199-10	RNS-MW6-42.5-20190109	Water	01/09/19 15:15	01/09/19 17:03
580-83199-11	RNS-MW6-52.5-20190109	Water	01/09/19 15:42	01/09/19 17:03
580-83199-12	Dup1-20190109	Water	01/09/19 08:40	01/09/19 17:03





Chain-of-Custody Record

Seattle/Edmonds (425) 778-0907 Spokane (509) 327-9737
 Tacoma (253) 926-2493 Portland (503) 542-1080

Date 1/9/2019
Page 1 of 1

Turnaround Time:
 Standard
 Accelerated

Project Name Sauros Project No. 0094048.100.102
 Project Location/Event Tacoma, WA/Jan. 2019
 Sampler's Name Katie Gauglitz + Kelsey Maeh
 Project Contact Sierra Mott
 Send Results To Dani Jorgensen, Sierra Mott

WCs 8260C
 AMEE RSK-175
 Chloride/Sulfate 300.0
 Nitrate/Nitrite 300
 Sulfide SM4500
 TOC SM 5310B

Testing Parameters

83199

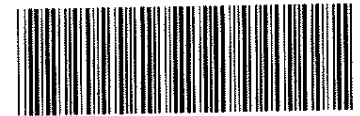
Special Handling Requirements: _____
 Shipment Method: _____
 Stored on ice: Yes / No

Sample I.D.	Date	Time	Matrix	No. of Containers	WCs 8260C	AMEE RSK-175	Chloride/Sulfate 300.0	Nitrate/Nitrite 300	Sulfide SM4500	TOC SM 5310B
-1 Trip Blank - 20190109	---	---	Ag	3	X	X	X	X	X	X
LAI-MW1-20190109	1/9/19	1125		9	X	X	X	X	X	X
-3 LAI-MW2-20190109		1002		9	X	X	X	X	X	X
LAI-MW3-20190109		1221		9	X	X	X	X	X	X
-5 LAI-MW4-20190109		837		9	X	X	X	X	X	X
LAI-MW5-20190109		1635		9	X	X	X	X	X	X
-7 MW2-20190109		1415		9	X	X	X	X	X	X
MW13-20190109		1314		9	X	X	X	X	X	X
-9 PNS-MW2-20190109		1436		9	X	X	X	X	X	X
PNS-MW6-42.5-20190109		1575		3	X	X	X	X	X	X
-11 PNS-MW6-52.5-20190109		1542		9	X	X	X	X	X	X
Dup1-20190109		840		9	X	X	X	X	X	X

Observations/Comments
 Allow water samples to settle, collect aliquot from clear portion
 NWTPH-Dx - Acid wash cleanup
 - Silica gel cleanup
 Dissolved metal samples were field filtered
 Other _____

Therm. ID: A2 Cor: 5.1 ° Unc: 5.3 °
 Cooler Dsc: Lg Blue
 Packing: bu6 FedEx: _____
 Cust. Seal: Yes No * UPS: _____
 Blue Ice: Wet, Dry, None Other: Clidra

Therm. ID: A2 Cor: 2.6 ° Unc: 2.8 °
 Cooler Dsc: Lg Blue
 Packing: bu6 FedEx: _____
 Cust. Seal: Yes No * UPS: _____
 Blue Ice: Wet, Dry, None Other: _____



580-83199 Chain of Custody

Relinquished by Kelsey Maeh
 Signature _____
 Printed Name Kelsey Maeh
 Company Landau Associates
 Date 1/9/2019 Time 1703

Received by Tom Blankinship
 Signature _____
 Printed Name Blankinship
 Company TA-Sea
 Date 1/9/19 Time 1703

Relinquished by _____
 Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____

Received by _____
 Signature _____
 Printed Name _____
 Company _____
 Date _____ Time _____



COOLER RECEIPT FORM

Cooler Received/Opened On 1/11/2019 @ 9:40

Time Samples Removed From Cooler 1715 Time Samples Placed In Storage 1712 (2 Hour Window)

1. Tracking # 6060 (last 4 digits, FedEx) Courier: Fedex
IR Gun ID 17610176 pH Strip Lot NA Chlorine Strip Lot NA
2. Temperature of rep. sample or temp blank when opened: 0.1 Degrees Celsius
3. If Item #2 temperature is 0°C or less, was the representative sample or temp blank frozen? YES NO NA
4. Were custody seals on outside of cooler? YES...NO...NA
If yes, how many and where: 2 sides
5. Were the seals intact, signed, and dated correctly? YES...NO...NA
6. Were custody papers inside cooler? YES...NO...NA

I certify that I opened the cooler and answered questions 1-6 (initial) ACE

7. Were custody seals on containers: YES NO and Intact YES...NO... NA
Were these signed and dated correctly? YES...NO... NA
8. Packing mat'l used? Bubblewrap Plastic bag Peanuts Vermiculite Foam Insert Paper Other None
9. Cooling process: Ice Ice-pack Ice (direct contact) Dry ice Other None
10. Did all containers arrive in good condition (unbroken)? YES...NO...NA
11. Were all container labels complete (#, date, signed, pres., etc)? YES...NO...NA
12. Did all container labels and tags agree with custody papers? YES...NO...NA
- 13a. Were VOA vials received? YES... NO...NA
- b. Was there any observable headspace present in any VOA vial? YES...NO... NA



14. Was there a Trip Blank in this cooler? YES... NO...NA If multiple coolers, sequence # _____

I certify that I unloaded the cooler and answered questions 7-14 (initial) GH

- 15a. On pres'd bottles, did pH test strips suggest preservation reached the correct pH level? YES...NO... NA
- b. Did the bottle labels indicate that the correct preservatives were used? YES...NO...NA
16. Was residual chlorine present? YES...NO... NA

I certify that I checked for chlorine and pH as per SOP and answered questions 15-16 (initial) GH

17. Were custody papers properly filled out (ink, signed, etc)? YES...NO...NA
18. Did you sign the custody papers in the appropriate place? YES...NO...NA
19. Were correct containers used for the analysis requested? YES...NO...NA
20. Was sufficient amount of sample sent in each container? YES...NO...NA

I certify that I entered this project into LIMS and answered questions 17-20 (initial) GH

I certify that I attached a label with the unique LIMS number to each container (initial) GH

21. Were there Non-Conformance issues at login? YES... NO Was a NCM generated? YES... NO...# _____

Client Information (Sub Contract Lab)		Lab P/N: Cruz, Sheri L	COC No: 580-62759-1
Client Contact: Shipping/Receiving		Phone: sheril.cruz@testamericainc.com	Page: Page 1 of 2
Company: TestAmerica Laboratories, Inc		Address: State Program - Washington	Job #: 580-83199-1
Address: 2960 Foster Creighton Drive,		Analysis Requested	
City: Nashville	Due Date Requested: 1/22/2019	Preservation Codes:	
State/Zip: TN, 37204	TAT Requested (days):	A - HCL B - NaOH C - Zn Acetate D - Nitric Acid E - NaHSO4 F - MeOH G - Amchlor H - Ascorbic Acid I - Ice J - DI Water K - EDTA L - EDA Other:	
Phone: 615-726-0177(Tel) 615-726-3404(Fax)	PO #:	M - Hexane N - None O - AshNaO2 P - Na2O4S Q - Na2SO3 R - Na2S2O3 S - H2SO4 T - TSP Dodecahydrate U - Acetone V - MCAA W - pH 4-5 Z - other (specify)	
Email:	WO #:	Total Number of Containers	
Project Name: Sauro's - Groundwater Monitoring	Project #: 58009425	SMS310B / Total Organic Carbon (Average Duplicate)	
Site:	SSOW#:	Field Filtered Sample (Yes or No)	
Sample Identification - Client ID (Lab ID)		Performs (MS/SP/MS or NO)	
Sample ID	Sample Date	Sample Time	Sample Type (C=Comp, G=grab)
LAI-MW1-20190109 (580-83199-2)	1/9/19	11:25 Pacific	Water
LAI-MW2-20190109 (580-83199-3)	1/9/19	10:02 Pacific	Water
LAI-MW3-20190109 (580-83199-4)	1/9/19	12:21 Pacific	Water
LAI-MW4-20190109 (580-83199-5)	1/9/19	08:37 Pacific	Water
LAI-MW5-20190109 (580-83199-6)	1/9/19	16:35 Pacific	Water
MW2-20190109 (580-83199-7)	1/9/19	14:15 Pacific	Water
MW13-20190109 (580-83199-8)	1/9/19	13:14 Pacific	Water
RNS-MW2-20190109 (580-83199-9)	1/9/19	14:36 Pacific	Water
RNS-MW6-52.5-20190109 (580-83199-11)	1/9/19	15:42 Pacific	Water
Special Instructions/Note:			
Loc: 580 83199			
<p>Possible Hazard Identification</p> <p>Unconfirmed</p> <p>Deliverable Requested: I, II, III, IV, Other (specify) _____</p> <p>Primary Deliverable Rank: 2</p> <p>Empty Kit Relinquished by: _____ Date: _____</p> <p>Relinquished by: <i>Tom Blank</i> Date/Time: 1/10/19</p> <p>Relinquished by: _____ Date/Time: _____</p> <p>Relinquished by: _____ Date/Time: _____</p> <p>Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>Custody Seal No.: _____</p>			
<p>Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)</p> <p>Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months</p> <p>Special Instructions/QC Requirements: _____</p> <p>Method of Shipment: _____</p> <p>Received by: <i>hcy</i> Date/Time: 1-11-19/0940</p> <p>Received by: _____ Date/Time: _____</p> <p>Received by: _____ Date/Time: _____</p> <p>Cooler Temperature(s) °C and Other Remarks: 0.1</p>			

Notes: Since laboratory accreditations are subject to change, TestAmerica Laboratories, Inc. places the ownership of method, analyte & accreditation compliance upon out subcontract laboratories. This sample shipment is forwarded under chain-of-custody. If the laboratory does not currently maintain accreditation in the State of Origin listed above for analysis/test/matrix being analyzed, the samples must be shipped back to the TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to TestAmerica Laboratories, Inc. attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to TestAmerica Laboratories, Inc.



Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-83199-1

Login Number: 83199

List Source: TestAmerica Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	True	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
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	
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.	True	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-83199-1

Login Number: 83199
List Number: 2
Creator: Quint, Jessica A

List Source: TestAmerica Denver
List Creation: 01/11/19 01:52 PM

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.	True	
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	
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?	N/A	
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.	N/A	
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").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

Client Sample Results

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS)

Client Sample ID: TripBlank-20190109

Date Collected: 01/09/19 00:01

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 13:23	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/15/19 13:23	1
Trichloroethene	ND		0.20		ug/L			01/15/19 13:23	1
Tetrachloroethene	ND		0.20		ug/L			01/15/19 13:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120		01/15/19 13:23	1
Toluene-d8 (Surr)	101		75 - 125		01/15/19 13:23	1
1,2-Dichloroethane-d4 (Surr)	104		80 - 120		01/15/19 13:23	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/15/19 13:23	1
Dibromofluoromethane (Surr)	97		80 - 120		01/15/19 13:23	1

Client Sample ID: LAI-MW1-20190109

Date Collected: 01/09/19 11:25

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 17:24	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/15/19 17:24	1
Trichloroethene	ND		0.20		ug/L			01/15/19 17:24	1
Tetrachloroethene	ND		0.20		ug/L			01/15/19 17:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	106		80 - 120		01/15/19 17:24	1
Toluene-d8 (Surr)	106		75 - 125		01/15/19 17:24	1
1,2-Dichloroethane-d4 (Surr)	101		80 - 120		01/15/19 17:24	1
4-Bromofluorobenzene (Surr)	94		80 - 120		01/15/19 17:24	1
Dibromofluoromethane (Surr)	99		80 - 120		01/15/19 17:24	1

Client Sample ID: LAI-MW2-20190109

Date Collected: 01/09/19 10:02

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.58		0.20		ug/L			01/15/19 17:50	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	104		80 - 120		01/15/19 17:50	1
Toluene-d8 (Surr)	105		75 - 125		01/15/19 17:50	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 120		01/15/19 17:50	1
4-Bromofluorobenzene (Surr)	95		80 - 120		01/15/19 17:50	1
Dibromofluoromethane (Surr)	96		80 - 120		01/15/19 17:50	1

Client Sample ID: LAI-MW3-20190109

Date Collected: 01/09/19 12:21

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 18:17	1
cis-1,2-Dichloroethene	34		0.20		ug/L			01/15/19 18:17	1
Trichloroethene	33		0.20		ug/L			01/15/19 18:17	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	108		80 - 120		01/15/19 18:17	1

TestAmerica Seattle

Client Sample Results

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: LAI-MW3-20190109

Date Collected: 01/09/19 12:21

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Toluene-d8 (Surr)	104		75 - 125		01/15/19 18:17	1
1,2-Dichloroethane-d4 (Surr)	102		80 - 120		01/15/19 18:17	1
4-Bromofluorobenzene (Surr)	93		80 - 120		01/15/19 18:17	1
Dibromofluoromethane (Surr)	97		80 - 120		01/15/19 18:17	1

Client Sample ID: LAI-MW4-20190109

Date Collected: 01/09/19 08:37

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 18:44	1
cis-1,2-Dichloroethene	0.65		0.20		ug/L			01/15/19 18:44	1
Trichloroethene	ND		0.20		ug/L			01/15/19 18:44	1
Tetrachloroethene	ND		0.20		ug/L			01/15/19 18:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120		01/15/19 18:44	1
Toluene-d8 (Surr)	102		75 - 125		01/15/19 18:44	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		01/15/19 18:44	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/15/19 18:44	1
Dibromofluoromethane (Surr)	97		80 - 120		01/15/19 18:44	1

Client Sample ID: LAI-MW5-20190109

Date Collected: 01/09/19 16:35

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 19:10	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/15/19 19:10	1
Trichloroethene	ND		0.20		ug/L			01/15/19 19:10	1
Tetrachloroethene	ND		0.20		ug/L			01/15/19 19:10	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	106		80 - 120		01/15/19 19:10	1
Toluene-d8 (Surr)	104		75 - 125		01/15/19 19:10	1
1,2-Dichloroethane-d4 (Surr)	103		80 - 120		01/15/19 19:10	1
4-Bromofluorobenzene (Surr)	101		80 - 120		01/15/19 19:10	1
Dibromofluoromethane (Surr)	99		80 - 120		01/15/19 19:10	1

Client Sample ID: MW2-20190109

Date Collected: 01/09/19 14:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.36		0.20		ug/L			01/15/19 19:37	1
cis-1,2-Dichloroethene	1.5		0.20		ug/L			01/15/19 19:37	1
Trichloroethene	0.40		0.20		ug/L			01/15/19 19:37	1
Tetrachloroethene	0.42		0.20		ug/L			01/15/19 19:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120		01/15/19 19:37	1
Toluene-d8 (Surr)	103		75 - 125		01/15/19 19:37	1
1,2-Dichloroethane-d4 (Surr)	103		80 - 120		01/15/19 19:37	1

TestAmerica Seattle

Client Sample Results

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: MW2-20190109

Date Collected: 01/09/19 14:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-7

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene (Surr)	99		80 - 120		01/15/19 19:37	1
Dibromofluoromethane (Surr)	95		80 - 120		01/15/19 19:37	1

Client Sample ID: MW13-20190109

Date Collected: 01/09/19 13:14

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.51		0.20		ug/L			01/15/19 20:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	105		80 - 120		01/15/19 20:04	1
Toluene-d8 (Surr)	105		75 - 125		01/15/19 20:04	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 120		01/15/19 20:04	1
4-Bromofluorobenzene (Surr)	96		80 - 120		01/15/19 20:04	1
Dibromofluoromethane (Surr)	96		80 - 120		01/15/19 20:04	1

Client Sample ID: RNS-MW2-20190109

Date Collected: 01/09/19 14:36

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 20:31	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	109		80 - 120		01/15/19 20:31	1
Toluene-d8 (Surr)	104		75 - 125		01/15/19 20:31	1
1,2-Dichloroethane-d4 (Surr)	101		80 - 120		01/15/19 20:31	1
4-Bromofluorobenzene (Surr)	94		80 - 120		01/15/19 20:31	1
Dibromofluoromethane (Surr)	98		80 - 120		01/15/19 20:31	1

Client Sample ID: RNS-MW6-42.5-20190109

Date Collected: 01/09/19 15:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-10

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 20:57	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	112		80 - 120		01/15/19 20:57	1
Toluene-d8 (Surr)	107		75 - 125		01/15/19 20:57	1
1,2-Dichloroethane-d4 (Surr)	100		80 - 120		01/15/19 20:57	1
4-Bromofluorobenzene (Surr)	92		80 - 120		01/15/19 20:57	1
Dibromofluoromethane (Surr)	97		80 - 120		01/15/19 20:57	1

Client Sample ID: RNS-MW6-52.5-20190109

Date Collected: 01/09/19 15:42

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.24		0.20		ug/L			01/15/19 21:24	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	109		80 - 120		01/15/19 21:24	1
Toluene-d8 (Surr)	107		75 - 125		01/15/19 21:24	1

TestAmerica Seattle

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Client Sample ID: RNS-MW6-52.5-20190109

Date Collected: 01/09/19 15:42

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-11

Matrix: Water

<u>Surrogate</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
1,2-Dichloroethane-d4 (Surr)	100		80 - 120		01/15/19 21:24	1
4-Bromofluorobenzene (Surr)	93		80 - 120		01/15/19 21:24	1
Dibromofluoromethane (Surr)	96		80 - 120		01/15/19 21:24	1

Client Sample ID: Dup1-20190109

Date Collected: 01/09/19 08:40

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-12

Matrix: Water

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>RL</u>	<u>MDL</u>	<u>Unit</u>	<u>D</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Vinyl chloride	ND		0.20		ug/L			01/15/19 21:50	1

<u>Surrogate</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Trifluorotoluene (Surr)	103		80 - 120		01/15/19 21:50	1
Toluene-d8 (Surr)	104		75 - 125		01/15/19 21:50	1
1,2-Dichloroethane-d4 (Surr)	96		80 - 120		01/15/19 21:50	1
4-Bromofluorobenzene (Surr)	100		80 - 120		01/15/19 21:50	1
Dibromofluoromethane (Surr)	95		80 - 120		01/15/19 21:50	1

Client Sample Results

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) - DL

Client Sample ID: LAI-MW2-20190109

Date Collected: 01/09/19 10:02

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	78		10		ug/L			01/16/19 13:36	50
Trichloroethene	95		10		ug/L			01/16/19 13:36	50
Tetrachloroethene	320		10		ug/L			01/16/19 13:36	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	108		80 - 120					01/16/19 13:36	50
Toluene-d8 (Surr)	105		75 - 125					01/16/19 13:36	50
1,2-Dichloroethane-d4 (Surr)	100		80 - 120					01/16/19 13:36	50
4-Bromofluorobenzene (Surr)	101		80 - 120					01/16/19 13:36	50
Dibromofluoromethane (Surr)	95		80 - 120					01/16/19 13:36	50

Client Sample ID: LAI-MW3-20190109

Date Collected: 01/09/19 12:21

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	78		2.0		ug/L			01/16/19 15:23	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	108		80 - 120					01/16/19 15:23	10
Toluene-d8 (Surr)	103		75 - 125					01/16/19 15:23	10
1,2-Dichloroethane-d4 (Surr)	99		80 - 120					01/16/19 15:23	10
4-Bromofluorobenzene (Surr)	97		80 - 120					01/16/19 15:23	10
Dibromofluoromethane (Surr)	96		80 - 120					01/16/19 15:23	10

Client Sample ID: MW13-20190109

Date Collected: 01/09/19 13:14

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	59		10		ug/L			01/16/19 14:02	50
Trichloroethene	84		10		ug/L			01/16/19 14:02	50
Tetrachloroethene	370		10		ug/L			01/16/19 14:02	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	107		80 - 120					01/16/19 14:02	50
Toluene-d8 (Surr)	103		75 - 125					01/16/19 14:02	50
1,2-Dichloroethane-d4 (Surr)	103		80 - 120					01/16/19 14:02	50
4-Bromofluorobenzene (Surr)	99		80 - 120					01/16/19 14:02	50
Dibromofluoromethane (Surr)	97		80 - 120					01/16/19 14:02	50

Client Sample ID: RNS-MW6-42.5-20190109

Date Collected: 01/09/19 15:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-10

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	93		10		ug/L			01/16/19 14:29	50
Trichloroethene	190		10		ug/L			01/16/19 14:29	50
Tetrachloroethene	800		10		ug/L			01/16/19 14:29	50
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	109		80 - 120					01/16/19 14:29	50
Toluene-d8 (Surr)	105		75 - 125					01/16/19 14:29	50
1,2-Dichloroethane-d4 (Surr)	103		80 - 120					01/16/19 14:29	50

TestAmerica Seattle

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) - DL (Continued)

Client Sample ID: RNS-MW6-42.5-20190109

Date Collected: 01/09/19 15:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-10

Matrix: Water

<u>Surrogate</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
4-Bromofluorobenzene (Surr)	99		80 - 120		01/16/19 14:29	50
Dibromofluoromethane (Surr)	96		80 - 120		01/16/19 14:29	50

Client Sample ID: RNS-MW6-52.5-20190109

Date Collected: 01/09/19 15:42

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-11

Matrix: Water

<u>Analyte</u>	<u>Result</u>	<u>Qualifier</u>	<u>RL</u>	<u>MDL</u>	<u>Unit</u>	<u>D</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
cis-1,2-Dichloroethene	77		10		ug/L			01/16/19 14:56	50
Trichloroethene	130		10		ug/L			01/16/19 14:56	50
Tetrachloroethene	590		10		ug/L			01/16/19 14:56	50

<u>Surrogate</u>	<u>%Recovery</u>	<u>Qualifier</u>	<u>Limits</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Dil Fac</u>
Trifluorotoluene (Surr)	108		80 - 120		01/16/19 14:56	50
Toluene-d8 (Surr)	103		75 - 125		01/16/19 14:56	50
1,2-Dichloroethane-d4 (Surr)	102		80 - 120		01/16/19 14:56	50
4-Bromofluorobenzene (Surr)	96		80 - 120		01/16/19 14:56	50
Dibromofluoromethane (Surr)	93		80 - 120		01/16/19 14:56	50

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) - RA

Client Sample ID: RNS-MW2-20190109

Lab Sample ID: 580-83199-9

Date Collected: 01/09/19 14:36

Matrix: Water

Date Received: 01/09/19 17:03

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/16/19 12:42	1
Trichloroethene	0.54		0.20		ug/L			01/16/19 12:42	1
Tetrachloroethene	22		0.20		ug/L			01/16/19 12:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Trifluorotoluene (Surr)</i>	114		80 - 120		01/16/19 12:42	1
<i>Toluene-d8 (Surr)</i>	104		75 - 125		01/16/19 12:42	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	103		80 - 120		01/16/19 12:42	1
<i>4-Bromofluorobenzene (Surr)</i>	94		80 - 120		01/16/19 12:42	1
<i>Dibromofluoromethane (Surr)</i>	96		80 - 120		01/16/19 12:42	1

Client Sample ID: Dup1-20190109

Lab Sample ID: 580-83199-12

Date Collected: 01/09/19 08:40

Matrix: Water

Date Received: 01/09/19 17:03

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.58		0.20		ug/L			01/16/19 13:09	1
Trichloroethene	ND		0.20		ug/L			01/16/19 13:09	1
Tetrachloroethene	ND		0.20		ug/L			01/16/19 13:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
<i>Trifluorotoluene (Surr)</i>	99		80 - 120		01/16/19 13:09	1
<i>Toluene-d8 (Surr)</i>	103		75 - 125		01/16/19 13:09	1
<i>1,2-Dichloroethane-d4 (Surr)</i>	96		80 - 120		01/16/19 13:09	1
<i>4-Bromofluorobenzene (Surr)</i>	104		80 - 120		01/16/19 13:09	1
<i>Dibromofluoromethane (Surr)</i>	90		80 - 120		01/16/19 13:09	1

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: RSK-175 - Dissolved Gases (GC)

Client Sample ID: LAI-MW1-20190109

Date Collected: 01/09/19 11:25

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/22/19 10:45	1
Ethylene	ND		0.0050		mg/L			01/22/19 10:45	1
Ethane	ND		0.0050		mg/L			01/22/19 10:45	1
Acetylene	ND		0.0050		mg/L			01/22/19 10:45	1

Client Sample ID: LAI-MW2-20190109

Date Collected: 01/09/19 10:02

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.0065		0.0050		mg/L			01/22/19 10:59	1
Ethylene	ND		0.0050		mg/L			01/22/19 10:59	1
Ethane	ND		0.0050		mg/L			01/22/19 10:59	1
Acetylene	ND		0.0050		mg/L			01/22/19 10:59	1

Client Sample ID: LAI-MW3-20190109

Date Collected: 01/09/19 12:21

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/22/19 11:13	1
Ethylene	ND		0.0050		mg/L			01/22/19 11:13	1
Ethane	ND		0.0050		mg/L			01/22/19 11:13	1
Acetylene	ND		0.0050		mg/L			01/22/19 11:13	1

Client Sample ID: LAI-MW4-20190109

Date Collected: 01/09/19 08:37

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	2.1		0.0050		mg/L			01/22/19 11:28	1
Ethylene	ND		0.0050		mg/L			01/22/19 11:28	1
Ethane	ND		0.0050		mg/L			01/22/19 11:28	1
Acetylene	ND		0.0050		mg/L			01/22/19 11:28	1

Client Sample ID: LAI-MW5-20190109

Date Collected: 01/09/19 16:35

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene	ND		0.0050		mg/L			01/22/19 11:41	1
Ethane	ND		0.0050		mg/L			01/22/19 11:41	1
Acetylene	ND		0.0050		mg/L			01/22/19 11:41	1

Client Sample ID: MW2-20190109

Date Collected: 01/09/19 14:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.57		0.0050		mg/L			01/22/19 11:55	1
Ethylene	ND		0.0050		mg/L			01/22/19 11:55	1
Ethane	ND		0.0050		mg/L			01/22/19 11:55	1
Acetylene	ND		0.0050		mg/L			01/22/19 11:55	1

TestAmerica Seattle

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: RSK-175 - Dissolved Gases (GC)

Client Sample ID: MW13-20190109

Date Collected: 01/09/19 13:14

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/22/19 12:10	1
Ethylene	ND		0.0050		mg/L			01/22/19 12:10	1
Ethane	ND		0.0050		mg/L			01/22/19 12:10	1
Acetylene	ND		0.0050		mg/L			01/22/19 12:10	1

Client Sample ID: RNS-MW2-20190109

Date Collected: 01/09/19 14:36

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/22/19 12:24	1
Ethylene	ND		0.0050		mg/L			01/22/19 12:24	1
Ethane	ND		0.0050		mg/L			01/22/19 12:24	1
Acetylene	ND		0.0050		mg/L			01/22/19 12:24	1

Client Sample ID: RNS-MW6-52.5-20190109

Date Collected: 01/09/19 15:42

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.018		0.0050		mg/L			01/22/19 15:49	1
Ethylene	ND		0.0050		mg/L			01/22/19 15:49	1
Ethane	0.0051		0.0050		mg/L			01/22/19 15:49	1
Acetylene	ND		0.0050		mg/L			01/22/19 15:49	1

Client Sample ID: Dup1-20190109

Date Collected: 01/09/19 08:40

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-12

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	1.9		0.0050		mg/L			01/22/19 16:22	1
Ethylene	ND		0.0050		mg/L			01/22/19 16:22	1
Ethane	ND		0.0050		mg/L			01/22/19 16:22	1
Acetylene	ND		0.0050		mg/L			01/22/19 16:22	1

Client Sample Results

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: RSK-175 - Dissolved Gases (GC) - DL

Client Sample ID: LAI-MW5-20190109

Date Collected: 01/09/19 16:35

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	5.4		0.015		mg/L			01/22/19 15:36	3

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

General Chemistry

Client Sample ID: LAI-MW1-20190109

Date Collected: 01/09/19 11:25

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	52		0.90		mg/L			01/10/19 12:19	1
Nitrite as N	ND		0.40		mg/L			01/10/19 12:19	1
Nitrate as N	1.8		0.20		mg/L			01/10/19 12:19	1
Sulfate	22		1.2		mg/L			01/10/19 12:19	1
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1
Total Organic Carbon	1.3		1.0		mg/L			01/12/19 17:22	1

Client Sample ID: LAI-MW2-20190109

Date Collected: 01/09/19 10:02

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14	F1	0.90		mg/L			01/10/19 12:31	1
Nitrite as N	ND	F1	0.40		mg/L			01/10/19 12:31	1
Nitrate as N	ND	F1	0.20		mg/L			01/10/19 12:31	1
Sulfate	20	F1	1.2		mg/L			01/10/19 12:31	1
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1
Total Organic Carbon	1.2		1.0		mg/L			01/12/19 18:05	1

Client Sample ID: LAI-MW3-20190109

Date Collected: 01/09/19 12:21

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	22		0.90		mg/L			01/10/19 13:06	1
Nitrite as N	ND		0.40		mg/L			01/10/19 13:06	1
Nitrate as N	0.70		0.20		mg/L			01/10/19 13:06	1
Sulfate	23		1.2		mg/L			01/10/19 13:06	1
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1
Total Organic Carbon	1.3		1.0		mg/L			01/12/19 18:20	1

Client Sample ID: LAI-MW4-20190109

Date Collected: 01/09/19 08:37

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	40		0.90		mg/L			01/10/19 13:18	1
Nitrite as N	ND		0.40		mg/L			01/10/19 13:18	1
Nitrate as N	ND		0.20		mg/L			01/10/19 13:18	1
Sulfate	4.3		1.2		mg/L			01/10/19 13:18	1
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1
Total Organic Carbon	2.6		1.0		mg/L			01/12/19 18:34	1

Client Sample ID: LAI-MW5-20190109

Date Collected: 01/09/19 16:35

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	57		0.90		mg/L			01/10/19 13:30	1
Nitrite as N	ND		0.40		mg/L			01/10/19 13:30	1
Nitrate as N	ND		0.20		mg/L			01/10/19 13:30	1
Sulfate	4.3		1.2		mg/L			01/10/19 13:30	1
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1
Total Organic Carbon	6.2		1.0		mg/L			01/12/19 18:47	1

TestAmerica Seattle

Client Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

General Chemistry

Client Sample ID: MW2-20190109

Date Collected: 01/09/19 14:15

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	60		0.90		mg/L			01/10/19 14:05	1
Nitrite as N	ND		0.40		mg/L			01/10/19 14:05	1
Nitrate as N	1.3		0.20		mg/L			01/10/19 14:05	1
Sulfate	42		1.2		mg/L			01/10/19 14:05	1
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1
Total Organic Carbon	2.6		1.0		mg/L			01/12/19 19:01	1

Client Sample ID: MW13-20190109

Date Collected: 01/09/19 13:14

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	16		0.90		mg/L			01/10/19 14:16	1
Nitrite as N	ND		0.40		mg/L			01/10/19 14:16	1
Nitrate as N	0.76		0.20		mg/L			01/10/19 14:16	1
Sulfate	31		1.2		mg/L			01/10/19 14:16	1
Sulfide	ND		0.050		mg/L			01/16/19 09:39	1
Total Organic Carbon	1.3		1.0		mg/L			01/12/19 19:16	1

Client Sample ID: RNS-MW2-20190109

Date Collected: 01/09/19 14:36

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	100		0.90		mg/L			01/10/19 14:28	1
Nitrite as N	ND		0.40		mg/L			01/10/19 14:28	1
Nitrate as N	2.9		0.20		mg/L			01/10/19 14:28	1
Sulfate	25		1.2		mg/L			01/10/19 14:28	1
Sulfide	ND		0.050		mg/L			01/16/19 09:39	1
Total Organic Carbon	1.1		1.0		mg/L			01/12/19 19:34	1

Client Sample ID: RNS-MW6-52.5-20190109

Date Collected: 01/09/19 15:42

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	28		0.90		mg/L			01/10/19 14:52	1
Nitrite as N	ND		0.40		mg/L			01/10/19 14:52	1
Nitrate as N	0.78		0.20		mg/L			01/10/19 14:52	1
Sulfate	29		1.2		mg/L			01/10/19 14:52	1
Sulfide	ND		0.050		mg/L			01/16/19 09:39	1
Total Organic Carbon	1.7		1.0		mg/L			01/12/19 19:49	1

Client Sample ID: Dup1-20190109

Date Collected: 01/09/19 08:40

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-12

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	40		0.90		mg/L			01/10/19 15:03	1
Nitrite as N	ND		0.40		mg/L			01/10/19 15:03	1
Nitrate as N	ND		0.20		mg/L			01/10/19 15:03	1
Sulfate	4.3		1.2		mg/L			01/10/19 15:03	1
Sulfide	ND		0.050		mg/L			01/16/19 09:39	1
Total Organic Carbon	2.7		1.0		mg/L			01/12/19 20:03	1

TestAmerica Seattle

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 580-293092/7

Matrix: Water

Analysis Batch: 293092

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/15/19 12:57	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/15/19 12:57	1
Trichloroethene	ND		0.20		ug/L			01/15/19 12:57	1
Tetrachloroethene	ND		0.20		ug/L			01/15/19 12:57	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	107		80 - 120		01/15/19 12:57	1
Toluene-d8 (Surr)	102		75 - 125		01/15/19 12:57	1
1,2-Dichloroethane-d4 (Surr)	103		80 - 120		01/15/19 12:57	1
4-Bromofluorobenzene (Surr)	99		80 - 120		01/15/19 12:57	1
Dibromofluoromethane (Surr)	98		80 - 120		01/15/19 12:57	1

Lab Sample ID: LCS 580-293092/4

Matrix: Water

Analysis Batch: 293092

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	5.00	4.71		ug/L		94	59 - 140
cis-1,2-Dichloroethene	5.00	5.16		ug/L		103	79 - 130
Trichloroethene	5.00	5.09		ug/L		102	72 - 136
Tetrachloroethene	5.00	5.12		ug/L		102	75 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	90		80 - 120
Toluene-d8 (Surr)	95		75 - 125
1,2-Dichloroethane-d4 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	107		80 - 120
Dibromofluoromethane (Surr)	96		80 - 120

Lab Sample ID: LCSD 580-293092/5

Matrix: Water

Analysis Batch: 293092

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	5.00	4.62		ug/L		92	59 - 140	2	30
cis-1,2-Dichloroethene	5.00	5.18		ug/L		104	79 - 130	0	20
Trichloroethene	5.00	5.11		ug/L		102	72 - 136	0	20
Tetrachloroethene	5.00	5.28		ug/L		106	75 - 131	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	94		80 - 120
Toluene-d8 (Surr)	95		75 - 125
1,2-Dichloroethane-d4 (Surr)	100		80 - 120
4-Bromofluorobenzene (Surr)	105		80 - 120
Dibromofluoromethane (Surr)	98		80 - 120

TestAmerica Seattle

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 8260C - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 580-293159/7

Matrix: Water

Analysis Batch: 293159

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/16/19 12:16	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/16/19 12:16	1
Trichloroethene	ND		0.20		ug/L			01/16/19 12:16	1
Tetrachloroethene	ND		0.20		ug/L			01/16/19 12:16	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	112		80 - 120		01/16/19 12:16	1
Toluene-d8 (Surr)	105		75 - 125		01/16/19 12:16	1
1,2-Dichloroethane-d4 (Surr)	102		80 - 120		01/16/19 12:16	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/16/19 12:16	1
Dibromofluoromethane (Surr)	96		80 - 120		01/16/19 12:16	1

Lab Sample ID: LCS 580-293159/4

Matrix: Water

Analysis Batch: 293159

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Vinyl chloride	5.00	4.44		ug/L		89	59 - 140
cis-1,2-Dichloroethene	5.00	4.64		ug/L		93	79 - 130
Trichloroethene	5.00	4.45		ug/L		89	72 - 136
Tetrachloroethene	5.00	4.88		ug/L		98	75 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	99		80 - 120
Toluene-d8 (Surr)	97		75 - 125
1,2-Dichloroethane-d4 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	94		80 - 120

Lab Sample ID: LCSD 580-293159/5

Matrix: Water

Analysis Batch: 293159

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Vinyl chloride	5.00	4.23		ug/L		85	59 - 140	5	30
cis-1,2-Dichloroethene	5.00	4.54		ug/L		91	79 - 130	2	20
Trichloroethene	5.00	4.40		ug/L		88	72 - 136	1	20
Tetrachloroethene	5.00	4.76		ug/L		95	75 - 131	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	97		80 - 120
Toluene-d8 (Surr)	97		75 - 125
1,2-Dichloroethane-d4 (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	92		80 - 120

TestAmerica Seattle

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 280-444970/5
Matrix: Water
Analysis Batch: 444970

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/22/19 10:04	1
Ethylene	ND		0.0050		mg/L			01/22/19 10:04	1
Ethane	ND		0.0050		mg/L			01/22/19 10:04	1
Acetylene	ND		0.0050		mg/L			01/22/19 10:04	1

Lab Sample ID: LCS 280-444970/3
Matrix: Water
Analysis Batch: 444970

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.0730	0.0750		mg/L		103	75 - 125
Ethylene	0.128	0.136		mg/L		106	75 - 125
Ethane	0.137	0.147		mg/L		108	75 - 125
Acetylene	0.119	0.126		mg/L		106	75 - 125

Lab Sample ID: MB 280-445018/4
Matrix: Water
Analysis Batch: 445018

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/22/19 15:22	1
Ethylene	ND		0.0050		mg/L			01/22/19 15:22	1
Ethane	ND		0.0050		mg/L			01/22/19 15:22	1
Acetylene	ND		0.0050		mg/L			01/22/19 15:22	1

Lab Sample ID: LCS 280-445018/2
Matrix: Water
Analysis Batch: 445018

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Methane	0.0730	0.0712		mg/L		97	75 - 125
Ethylene	0.128	0.132		mg/L		103	75 - 125
Ethane	0.137	0.139		mg/L		102	75 - 125
Acetylene	0.119	0.117		mg/L		99	75 - 125

Lab Sample ID: LCSD 280-445018/3
Matrix: Water
Analysis Batch: 445018

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Methane	0.0730	0.0721		mg/L		99	75 - 125	1	20
Ethylene	0.128	0.133		mg/L		104	75 - 125	1	20
Ethane	0.137	0.140		mg/L		103	75 - 125	1	20
Acetylene	0.119	0.119		mg/L		100	75 - 125	2	20

TestAmerica Seattle

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: RSK-175 - Dissolved Gases (GC) (Continued)

Lab Sample ID: 580-83199-11 DU

Matrix: Water

Analysis Batch: 445018

Client Sample ID: RNS-MW6-52.5-20190109

Prep Type: Total/NA

Analyte	Sample	Sample	DU		Unit	D	RPD	Limit
	Result	Qualifier	Result	Qualifier				
Methane	0.018		0.0195		mg/L		6	20
Ethylene	ND		ND		mg/L		NC	20
Ethane	0.0051		0.00540		mg/L		6	20
Acetylene	ND		ND		mg/L		NC	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-292942/3

Matrix: Water

Analysis Batch: 292942

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Nitrite as N	ND		0.40		mg/L			01/10/19 11:44	1
Nitrate as N	ND		0.20		mg/L			01/10/19 11:44	1

Lab Sample ID: LCS 580-292942/4

Matrix: Water

Analysis Batch: 292942

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS		Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Nitrite as N	5.00	5.14		mg/L		103	90 - 110
Nitrate as N	5.00	5.36		mg/L		107	90 - 110

Lab Sample ID: LCSD 580-292942/5

Matrix: Water

Analysis Batch: 292942

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD		Unit	D	%Rec	%Rec. Limits	RPD	Limit
		Result	Qualifier						
Nitrite as N	5.00	5.16		mg/L		103	90 - 110	0	15
Nitrate as N	5.00	5.35		mg/L		107	90 - 110	0	15

Lab Sample ID: 580-83199-3 MS

Matrix: Water

Analysis Batch: 292942

Client Sample ID: LAI-MW2-20190109

Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MS		Unit	D	%Rec	%Rec. Limits
	Result	Qualifier		Result	Qualifier				
Nitrite as N	ND	F1	5.00	5.64	F1	mg/L		113	90 - 110
Nitrate as N	ND	F1	5.00	5.92	F1	mg/L		115	90 - 110

Lab Sample ID: 580-83199-3 MSD

Matrix: Water

Analysis Batch: 292942

Client Sample ID: LAI-MW2-20190109

Prep Type: Total/NA

Analyte	Sample	Sample	Spike Added	MSD		Unit	D	%Rec	%Rec. Limits	RPD	Limit
	Result	Qualifier		Result	Qualifier						
Nitrite as N	ND	F1	5.00	5.70	F1	mg/L		114	90 - 110	1	15
Nitrate as N	ND	F1	5.00	5.98	F1	mg/L		117	90 - 110	1	15

TestAmerica Seattle

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 580-292944/3
Matrix: Water
Analysis Batch: 292944

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	ND		0.90		mg/L			01/10/19 11:44	1
Sulfate	ND		1.2		mg/L			01/10/19 11:44	1

Lab Sample ID: LCS 580-292944/4
Matrix: Water
Analysis Batch: 292944

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	50.0	53.2		mg/L		106	90 - 110
Sulfate	50.0	53.1		mg/L		106	90 - 110

Lab Sample ID: LCSD 580-292944/5
Matrix: Water
Analysis Batch: 292944

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	50.0	53.4		mg/L		107	90 - 110	0	15
Sulfate	50.0	53.1		mg/L		106	90 - 110	0	15

Lab Sample ID: 580-83199-3 MS
Matrix: Water
Analysis Batch: 292944

Client Sample ID: LAI-MW2-20190109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	14	F1	50.0	72.0	F1	mg/L		116	90 - 110
Sulfate	20	F1	50.0	77.9	F1	mg/L		115	90 - 110

Lab Sample ID: 580-83199-3 MSD
Matrix: Water
Analysis Batch: 292944

Client Sample ID: LAI-MW2-20190109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	14	F1	50.0	72.7	F1	mg/L		118	90 - 110	1	15
Sulfate	20	F1	50.0	78.7	F1	mg/L		117	90 - 110	1	15

Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 280-444386/11
Matrix: Water
Analysis Batch: 444386

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfide	ND		0.050		mg/L			01/16/19 09:36	1

TestAmerica Seattle

QC Sample Results

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Method: SM 4500 S2 D - Sulfide, Total (Continued)

Lab Sample ID: LCS 280-444386/9
Matrix: Water
Analysis Batch: 444386

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.536	0.576		mg/L		107	81 - 122

Lab Sample ID: LCSD 280-444386/10
Matrix: Water
Analysis Batch: 444386

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfide	0.536	0.565		mg/L		105	81 - 122	2	10

Method: SM 5310B - Organic Carbon, Total (TOC)

Lab Sample ID: MB 490-569597/3
Matrix: Water
Analysis Batch: 569597

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Total Organic Carbon	ND		1.0		mg/L			01/12/19 16:11	1

Lab Sample ID: LCS 490-569597/6
Matrix: Water
Analysis Batch: 569597

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	10.0	9.60		mg/L		96	90 - 110

Lab Sample ID: LCSD 490-569597/7
Matrix: Water
Analysis Batch: 569597

Client Sample ID: Lab Control Sample Dup
Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	10.0	9.51		mg/L		95	90 - 110	1	20

Lab Sample ID: 580-83199-2 MS
Matrix: Water
Analysis Batch: 569597

Client Sample ID: LAI-MW1-20190109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.3		20.0	19.8		mg/L		92	74 - 134

Lab Sample ID: 580-83199-2 MSD
Matrix: Water
Analysis Batch: 569597

Client Sample ID: LAI-MW1-20190109
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Total Organic Carbon	1.3		20.0	19.7		mg/L		92	74 - 134	0	20

TestAmerica Seattle

Lab Chronicle

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Client Sample ID: TripBlank-20190109

Date Collected: 01/09/19 00:01

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-1

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 13:23	TL1	TAL SEA

Client Sample ID: LAI-MW1-20190109

Date Collected: 01/09/19 11:25

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-2

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 17:24	TL1	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 10:45	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 12:19	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 12:19	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:36	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 17:22	VRP	TAL NSH

Client Sample ID: LAI-MW2-20190109

Date Collected: 01/09/19 10:02

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-3

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 17:50	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	50	293159	01/16/19 13:36	CJ	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 10:59	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 12:31	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 12:31	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:36	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 18:05	VRP	TAL NSH

Client Sample ID: LAI-MW3-20190109

Date Collected: 01/09/19 12:21

Date Received: 01/09/19 17:03

Lab Sample ID: 580-83199-4

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 18:17	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	293159	01/16/19 15:23	CJ	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 11:13	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 13:06	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 13:06	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:36	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 18:20	VRP	TAL NSH

TestAmerica Seattle

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Client Sample ID: LAI-MW4-20190109

Lab Sample ID: 580-83199-5

Date Collected: 01/09/19 08:37

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 18:44	TL1	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 11:28	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 13:18	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 13:18	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:36	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 18:34	VRP	TAL NSH

Client Sample ID: LAI-MW5-20190109

Lab Sample ID: 580-83199-6

Date Collected: 01/09/19 16:35

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 19:10	TL1	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 11:41	JLW	TAL DEN
Total/NA	Analysis	RSK-175	DL	3	445018	01/22/19 15:36	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 13:30	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 13:30	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:36	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 18:47	VRP	TAL NSH

Client Sample ID: MW2-20190109

Lab Sample ID: 580-83199-7

Date Collected: 01/09/19 14:15

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 19:37	TL1	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 11:55	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 14:05	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 14:05	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:36	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 19:01	VRP	TAL NSH

Client Sample ID: MW13-20190109

Lab Sample ID: 580-83199-8

Date Collected: 01/09/19 13:14

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 20:04	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	50	293159	01/16/19 14:02	CJ	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 12:10	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 14:16	EMM	TAL SEA

TestAmerica Seattle

Lab Chronicle

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	292944	01/10/19 14:16	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:39	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 19:16	VRP	TAL NSH

Client Sample ID: RNS-MW2-20190109

Lab Sample ID: 580-83199-9

Date Collected: 01/09/19 14:36

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 20:31	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	293159	01/16/19 12:42	CJ	TAL SEA
Total/NA	Analysis	RSK-175		1	444970	01/22/19 12:24	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 14:28	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 14:28	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:39	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 19:34	VRP	TAL NSH

Client Sample ID: RNS-MW6-42.5-20190109

Lab Sample ID: 580-83199-10

Date Collected: 01/09/19 15:15

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 20:57	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	50	293159	01/16/19 14:29	CJ	TAL SEA

Client Sample ID: RNS-MW6-52.5-20190109

Lab Sample ID: 580-83199-11

Date Collected: 01/09/19 15:42

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 21:24	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	50	293159	01/16/19 14:56	CJ	TAL SEA
Total/NA	Analysis	RSK-175		1	445018	01/22/19 15:49	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 14:52	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 14:52	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:39	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 19:49	VRP	TAL NSH

Client Sample ID: Dup1-20190109

Lab Sample ID: 580-83199-12

Date Collected: 01/09/19 08:40

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	293092	01/15/19 21:50	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	293159	01/16/19 13:09	CJ	TAL SEA

TestAmerica Seattle

Lab Chronicle

Client: Landau & Associates, Inc.
Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Client Sample ID: Dup1-20190109

Lab Sample ID: 580-83199-12

Date Collected: 01/09/19 08:40

Matrix: Water

Date Received: 01/09/19 17:03

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	RSK-175		1	445018	01/22/19 16:22	JLW	TAL DEN
Total/NA	Analysis	300.0		1	292942	01/10/19 15:03	EMM	TAL SEA
Total/NA	Analysis	300.0		1	292944	01/10/19 15:03	EMM	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	444386	01/16/19 09:39	RK	TAL DEN
Total/NA	Analysis	SM 5310B		1	569597	01/12/19 20:03	VRP	TAL NSH

Laboratory References:

TAL DEN = TestAmerica Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100

TAL NSH = TestAmerica Nashville, 2960 Foster Creighton Drive, Nashville, TN 37204, TEL (615)726-0177

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

Accreditation/Certification Summary

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Laboratory: TestAmerica Seattle

Unless otherwise noted, all analytes for this laboratory were covered under each accreditation/certification below.

Authority	Program	EPA Region	Identification Number	Expiration Date
Washington	State Program	10	C553	02-17-19

The following analytes are included in this report, but the laboratory is not certified by the governing authority. This list may include analytes for which the agency does not offer certification.

Analysis Method	Prep Method	Matrix	Analyte

Laboratory: TestAmerica Denver

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	DoD ELAP		2907.01	10-31-19
A2LA	ISO/IEC 17025		2907.01	10-31-19
Alabama	State Program	4	40730	09-30-12 *
Alaska (UST)	State Program	10	UST-30	02-28-19
Arizona	State Program	9	AZ0713	12-20-19
Arkansas DEQ	State Program	6	88-0687	06-01-19
California	State Program	9	2513	01-18-19 *
Connecticut	State Program	1	PH-0686	09-30-20
Florida	NELAP	4	E87667	06-30-19
Georgia	State Program	4	N/A	01-08-20
Illinois	NELAP	5	200017	04-30-19
Iowa	State Program	7	370	12-01-20
Kansas	NELAP	7	E-10166	04-30-19
Louisiana	NELAP	6	02096	06-30-19
Maine	State Program	1	CO0002	03-03-19
Minnesota	NELAP	5	8-999-405	12-31-19
Nevada	State Program	9	CO0026	07-31-19
New Hampshire	NELAP	1	205310	04-28-19
New Jersey	NELAP	2	CO004	06-30-19
New York	NELAP	2	11964	04-01-19
North Carolina (WW/SW)	State Program	4	358	12-31-19
North Dakota	State Program	8	R-034	01-08-20
Oklahoma	State Program	6	8614	08-31-19
Oregon	NELAP	10	4025	01-08-20
Pennsylvania	NELAP	3	68-00664	07-31-19
South Carolina	State Program	4	72002001	01-08-19 *
Texas	NELAP	6	T104704183-18-15	09-30-19
US Fish & Wildlife	Federal			07-31-19
USDA	Federal			03-26-21
Utah	NELAP	8	CO00026	07-31-19
Virginia	NELAP	3	460232	06-14-19
Washington	State Program	10	C583	08-03-19
West Virginia DEP	State Program	3	354	11-30-19
Wisconsin	State Program	5	999615430	08-31-19 *
Wyoming (UST)	A2LA	8	2907.01	10-31-19

Laboratory: TestAmerica Nashville

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

* Accreditation/Certification renewal pending - accreditation/certification considered valid.

Accreditation/Certification Summary

Client: Landau & Associates, Inc.
 Project/Site: Sauro's - Groundwater Monitoring

TestAmerica Job ID: 580-83199-1

Laboratory: TestAmerica Nashville (Continued)

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
A2LA	ISO/IEC 17025		0453.07	12-31-19
Alaska (UST)	State Program	10	UST-087	06-30-19
Arizona	State Program	9	AZ0473	05-05-19
Arkansas DEQ	State Program	6	88-0737	04-25-19
California	State Program	9	2938	06-30-19 *
Connecticut	State Program	1	PH-0220	12-31-19
Florida	NELAP	4	E87358	06-30-19
Georgia	State Program	4	NA: NELAP & A2LA	12-31-19
Illinois	NELAP	5	200010	12-09-18 *
Iowa	State Program	7	131	04-01-20
Kansas	NELAP	7	E-10229	10-31-19
Kentucky (UST)	State Program	4	19	06-30-19
Kentucky (WW)	State Program	4	90038	12-31-19
Louisiana	NELAP	6	30613	06-30-19
Maine	State Program	1	TN00032	11-03-19
Maryland	State Program	3	316	03-31-19
Massachusetts	State Program	1	M-TN032	06-30-19
Minnesota	NELAP	5	047-999-345	12-31-19
Mississippi	State Program	4	N/A	06-30-19
Montana (UST)	State Program	8	NA	02-24-20
Nevada	State Program	9	TN00032	07-31-19
New Hampshire	NELAP	1	2963	10-09-19
New Jersey	NELAP	2	TN965	06-30-19
New York	NELAP	2	11342	03-31-19
North Carolina (WW/SW)	State Program	4	387	12-31-19
North Dakota	State Program	8	R-146	06-30-19
Ohio VAP	State Program	5	CL0033	07-06-19
Oklahoma	State Program	6	9412	08-31-19
Oregon	NELAP	10	TN200001	04-26-19
Pennsylvania	NELAP	3	68-00585	07-31-19
Rhode Island	State Program	1	LAO00268	12-30-19
South Carolina	State Program	4	84009 (001)	02-28-19
Tennessee	State Program	4	2008	02-23-20
Texas	NELAP	6	T104704077	08-31-19
USDA	Federal		P330-13-00306	12-01-19
Utah	NELAP	8	TN00032	07-31-19
Virginia	NELAP	3	460152	06-14-19
Washington	State Program	10	C789	07-19-19
West Virginia DEP	State Program	3	219	02-28-19
Wisconsin	State Program	5	998020430	08-31-19
Wyoming (UST)	A2LA	8	453.07	12-31-19

* Accreditation/Certification renewal pending - accreditation/certification considered valid.