

Technical Memorandum

TO: Andy Smith, Washington State Department of Ecology
CC: Eric Huseby, City of Tacoma
FROM: Sierra Mott and Jennifer Wynkoop
DATE: March 20, 2020
RE: **Long-Term Groundwater Monitoring Status Report No. 7**
January 2020 Annual Groundwater Monitoring
Former Sauro's Cleanerama Site
Tacoma, Washington
Project No. 0094048.100.103

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 is implementing a Cleanup Action Plan (CAP; Ecology 2014), which is part of 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 and continuing through July 2017, followed by annual groundwater monitoring until groundwater at the site reaches cleanup goals (the CAP estimates 26 years of annual sampling). After completion of semiannual monitoring, winter was identified as the appropriate sampling timeframe because higher volatile organic compound (VOC) concentrations generally occur during the winter (LAI 2017). The City received approval from Ecology (Coleman 2018), and commenced the annual sampling in January 2018.

This technical memorandum summarizes the seventh groundwater monitoring event under the CAP, conducted on January 20 and 21, 2020. 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 2020 sampling event, groundwater samples were collected in accordance with the Sampling and Analysis Plan (LAI 2013) and the sample matrix presented 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 are 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 Eurofins 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 was electronically submitted to Ecology's Environmental Information Management system. 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 packages for the most recent sampling event (January 2020) are 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 2020 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 0.2 $\mu\text{g/L}$.

- 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 2020 results indicate concentrations above cleanup levels for all four constituents except for cDCE and 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 270 µg/L to 470 µg/L and concentrations of TCE ranged from 100 µg/L to 130 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 (42 µg/L and 37 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 (19 µg/L) continues to exceed the applicable cleanup level. However, the concentration of PCE at adjacent well MW-2 (0.97 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 0.46 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, and LAI-MW1 is located downgradient and partially cross-gradient 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, and although an anomalous spike occurred during January 2017, concentrations subsequently decreased. VOC concentration trends at the 42.5-foot depth vary by constituent. PCE, TCE, and cDCE showed relatively stable or decreasing trends from 2013 through 2017. In 2018, an anomalous spike

occurred for these three constituents, but concentrations have since been declining. VC was detected historically, but has not been detected since July 2017.

- Data trends in the mid-plume region are generally declining.
 - Concentrations at MW-13 show decreasing trends for all four VOCs through July 2017, but concentrations have been increasing since then. MW-13 is located down-gradient of the source area and RNS-MW6.
 - At LAI-MW2, peak concentrations of PCE, TCE and cDCE occurred in 2016, somewhat later than other upgradient wells. Since 2016, concentrations of these three constituents have been declining. Concentrations of VC at LAI-MW2 were higher between 2010 and 2012, but have been generally decreasing since then.
 - LAI-MW3 exhibits similar trends to LAI-MW2 in terms of the PCE, TCE and cDCE trends; however, VC at this well has not been detected since 2017.

South-Southeast Plume Segment

- At RNS-MW2, only PCE exceeded the applicable cleanup level in 2020. 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 2020. VC concentrations at this well fluctuate, with no apparent trend, but have been less than 0.5 µg/L since 2013.

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 the most 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 2020 sampling event are summarized below.

- Ferrous iron was detected in both wells at concentrations of 4.8 milligrams per liter (mg/L) at LAI-MW4 and 3.6 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 3.0 mg/L at LAI-MW4 and 14 mg/L at LAI-MW5.
- ORP readings were negative at both wells.
- TOC concentrations were somewhat elevated at both wells (concentrations of 3.4 mg/L and 6.3 mg/L at LAI-MW4 and LAI-MW5, respectively).

At the remaining seven wells, results indicate some capacity for reductive dechlorination. Ferrous iron was detected at all wells where it was sampled, TOC is present at all wells, and nitrate and nitrite are low or not detected. Additionally, VOC concentrations at most wells appear to be declining. January 2020 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 2021.

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 Cleanerama 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.



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Senior Project Scientist



Jennifer Wynkoop
Principal Scientist

KMG/SMM/JWW/kjg

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References

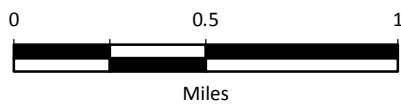
- Coleman, M. 2018. "Re: Draft Sauro's Long-Term Groundwater Monitoring Status Report No. 4." From Marv Coleman, Toxics Cleanup Program, Washington State Department of Ecology, to Sierra Mott, Senior Project Scientist, Landau Associates, Inc. January 22.
- Ecology. 2014. Draft: Cleanup Action Plan, Former 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 2020)
- 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 2020 Laboratory Data Package



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



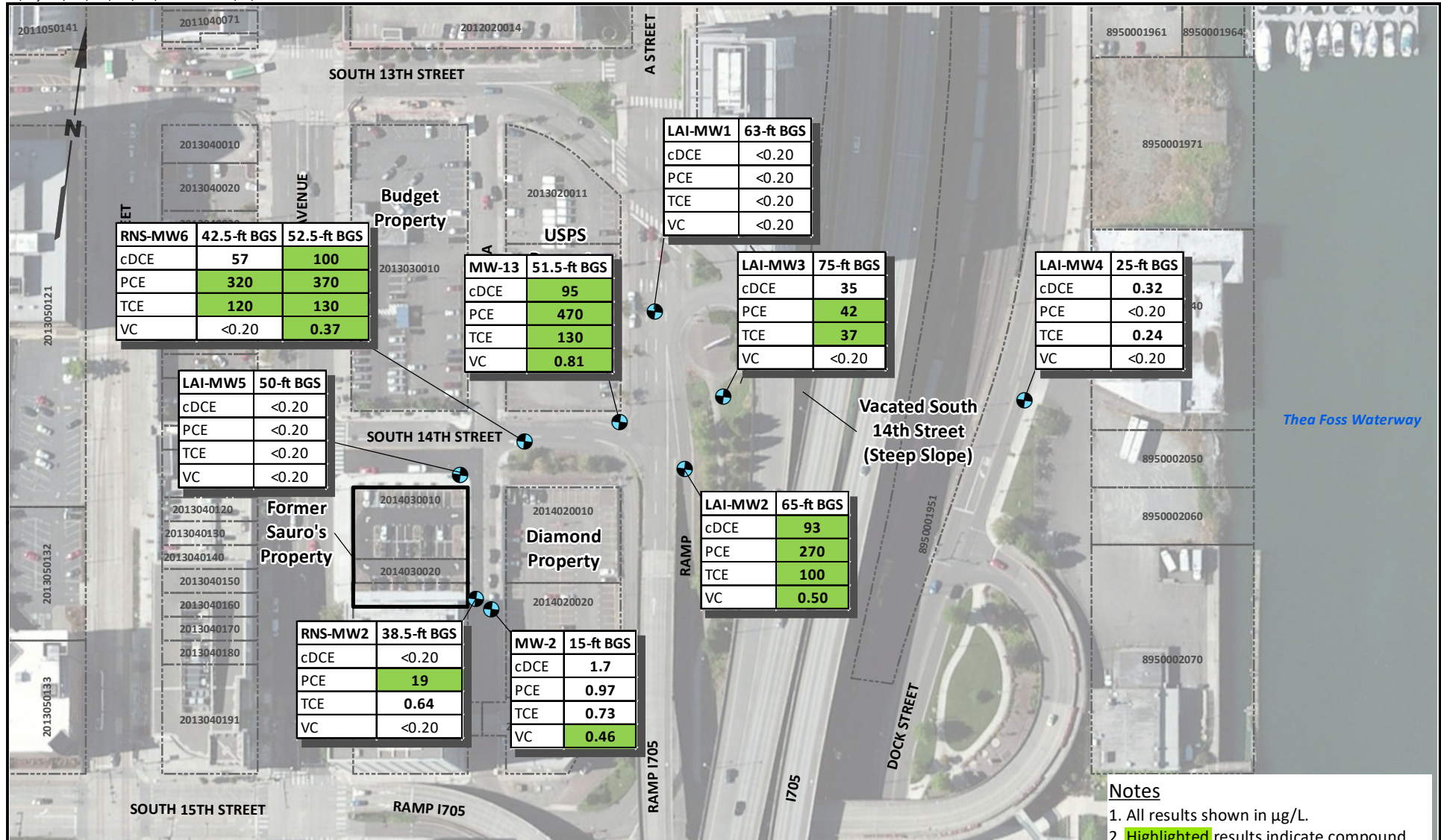
Data Source: Esri 2012



Sauro's Cleanerama
Tacoma, Washington

Vicinity Map

Figure
1



Legend

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

Scale in Feet: 0, 150, 300

Notes

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

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 = milliliters

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 1/20/2020 580-92218-5 N	LAI-MW2 1/20/2020 580-92218-4 N	LAI-MW3 1/20/2020 580-92218-6 N	LAI-MW4 1/20/2020 580-92218-2 N	LAI-MW4 1/20/2020 580-92218-3 FD	LAI-MW5 1/20/2020 580-92218-9 N	MW-2 1/20/2020 580-92218-8 N	MW-13 1/21/2020 580-92224-1 N	RNS-MW2 1/20/2020 580-92218-7 N	RNS-MW6-42.5 1/20/2020 580-92218-10 N	RNS-MW6-52.5 1/20/2020 580-92218-11 N
Volatile Organic Compounds (µg/L; SW-846 8260C)												
cis-1,2-Dichloroethene	70 ^a	0.20 UJ	93 J	35 J	0.32 J	0.33 J	0.20 UJ	1.7 J	95	0.20 UJ	57 J	100 J
Tetrachloroethene	5	0.20 UJ	270 J	42 J	0.20 UJ	0.20 UJ	0.20 UJ	0.97 J	470	19 J	320 J	370 J
Trichloroethene	5	0.20 UJ	100 J	37 J	0.24 J	0.24 J	0.20 UJ	0.73 J	130	0.64 J	120 J	130 J
Vinyl Chloride	0.2	0.20 UJ	0.50 J	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.46 J	0.81	0.20 UJ	0.20 UJ	0.37 J

Notes:

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

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

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 1/20/2020 580-92218-5 N	LAI-MW2 1/20/2020 580-92218-4 N	LAI-MW3 1/20/2020 580-92218-6 N	LAI-MW4 1/20/2020 580-92218-2 N	LAI-MW4 1/20/2020 580-92218-3 FD	LAI-MW5 1/20/2020 580-92218-9 N	MW-2 1/20/2020 580-92218-8 N	MW-13 1/21/2020 580-92224-1 N	RNS-MW2 1/20/2020 580-92218-7 N
	Natural Attenuation Parameters (mg/L; EPA 300.0/SM 4500-S2-D/SM 5310B)								
Chloride	45 J	14 J	22 J	53 J	54 J	110 J	52 J	17	150 J
Nitrogen, Nitrate (as N)	1.2 J	0.20 UJ	0.64 J	0.20 UJ	0.20 UJ	0.20 UJ	1.3 J	0.65	2.9 J
Nitrogen, Nitrite	0.40 UJ	0.40 UJ	0.40 UJ	0.40 UJ	0.40 UJ	0.40 UJ	0.40 UJ	0.40 U	0.40 UJ
Sulfate	20 J	17 J	22 J	2.5 J	2.4 J	2.0 J	79 J	29	26 J
Sulfide, Total	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.050 UJ	0.24 J	0.21 J	0.37	0.050 UJ
Total Organic Carbon (TOC)	1.7 J	1.1 J	1.5 J	3.4 J	3.5 J	6.3 J	2.5 J	1.2	1.1 J
Dissolved Gases (mg/L; RSK-175)									
Acetylene	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 U	0.0050 UJ
Ethane	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 U	0.0050 UJ
Ethene	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 UJ	0.0050 U	0.0050 UJ
Methane	0.019 J	0.0098 J	0.0050 UJ	3.0 J	3.2 J	14 J	0.60 J	0.0062	0.0050 UJ
Field Parameters									
Dissolved Oxygen (mg/L)	1.06	1.47	2.29	5.70	5.78	1.71	0.89	4.92	5.61
Oxidation Reduction Potential (mV)	87.6	91.4	24.6	-9.85	-7.3	-69.7	-32.9	139.3	114.2
Ferrous Iron (mg/L)	0.4	0.4	0.6	4.8	4.8	3.6	--(a)	1.8	0.2

Notes:

(a) Well went dry.

Bold text indicates detected analyte.

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

J = The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

Abbreviations and Acronyms:

EPA = US Environmental Protection Agency

FD = field duplicate

ID = identification

mg/L = milligrams per liter

mV = millivolt

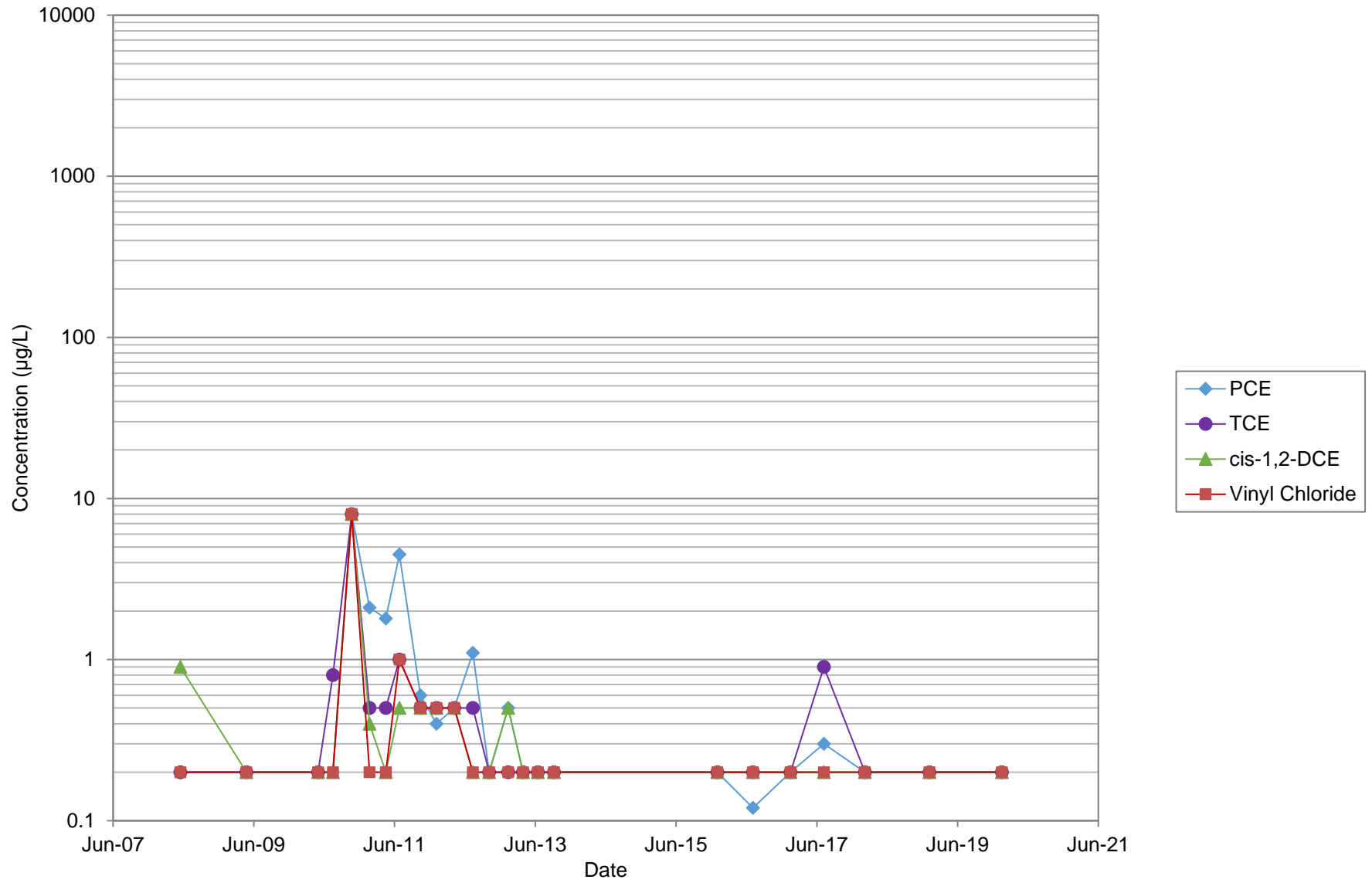
N = primary sample

Constituents of Concern Concentration Time Series Plots

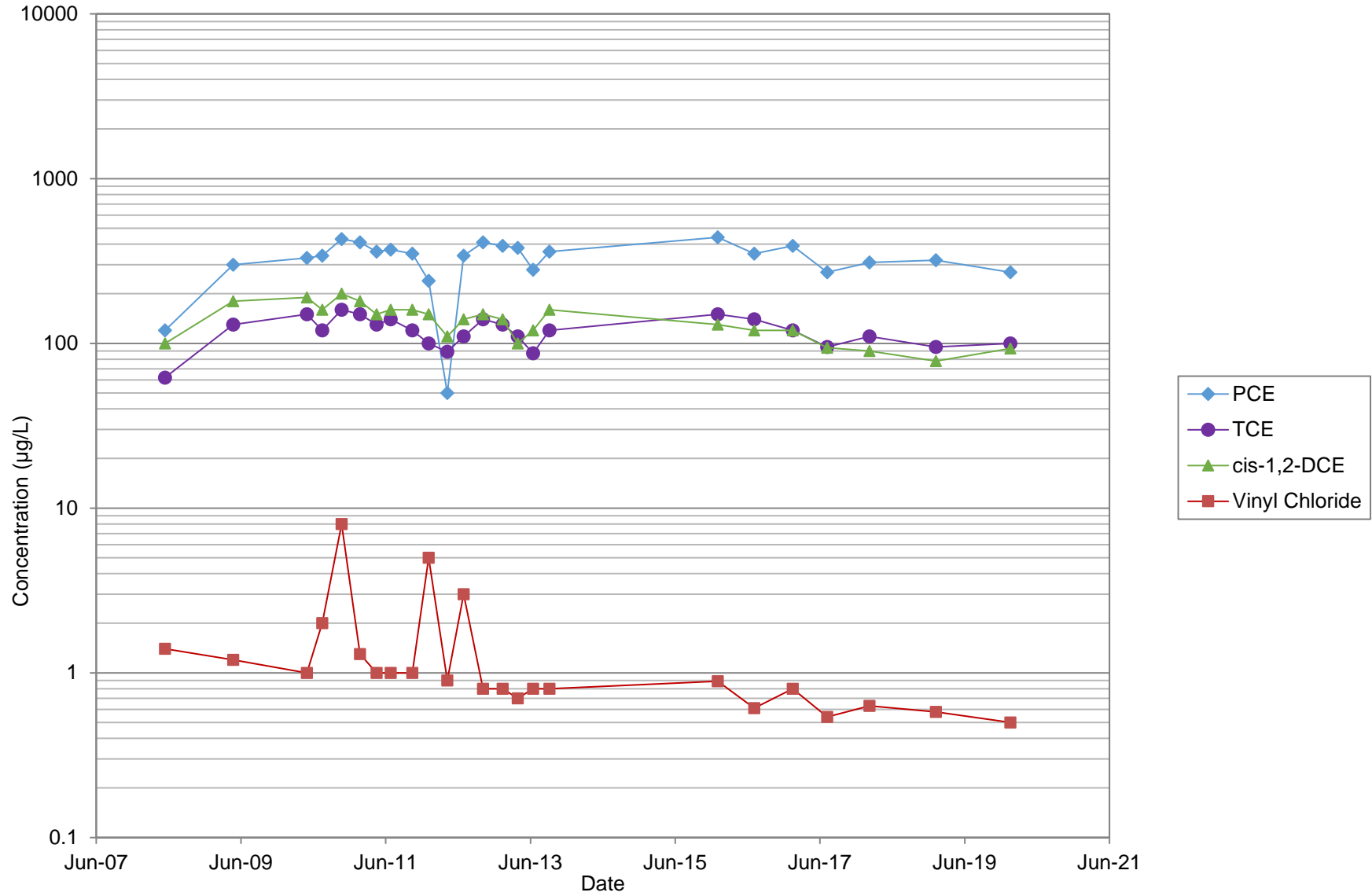
Note:

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

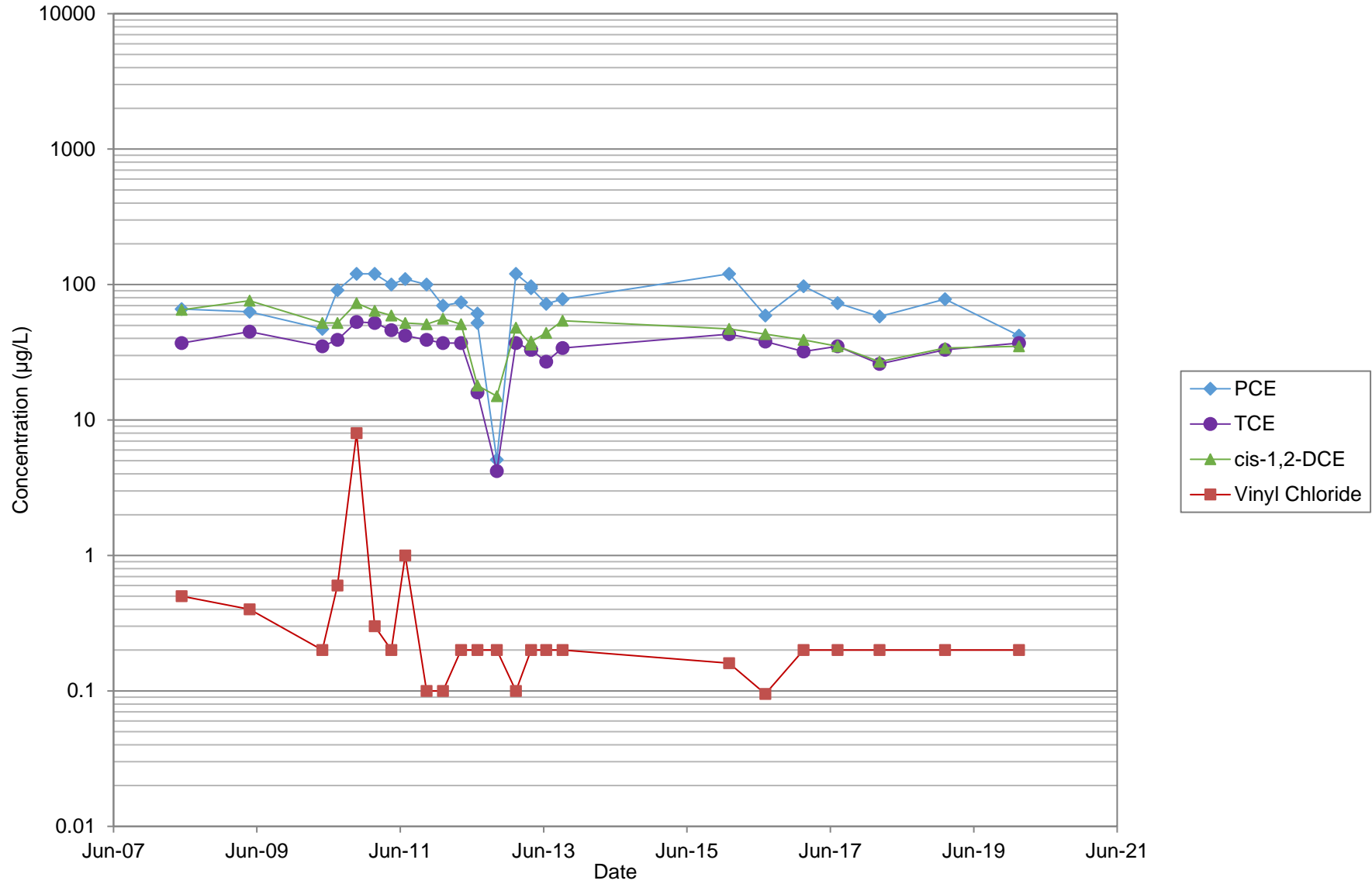
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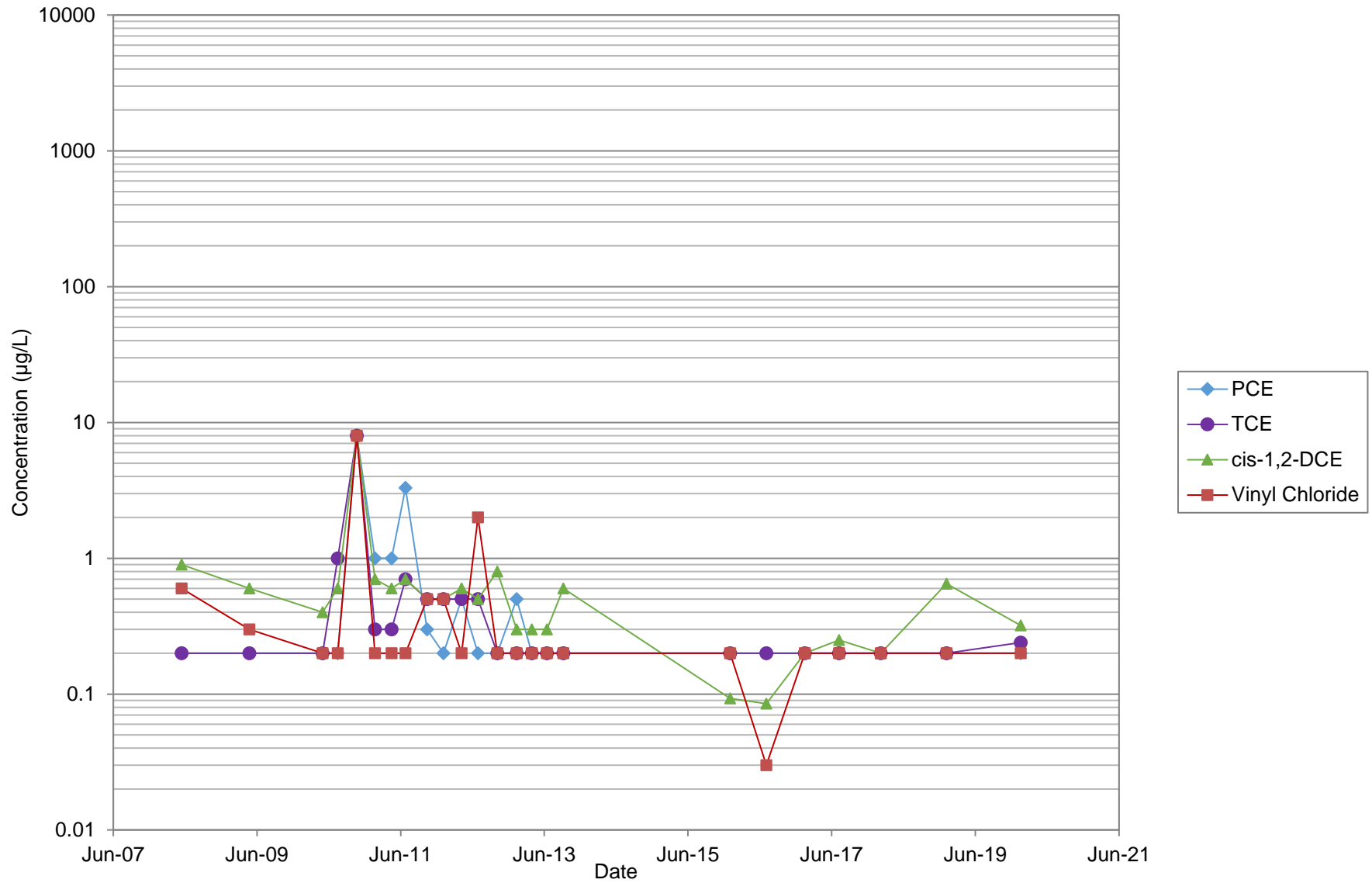
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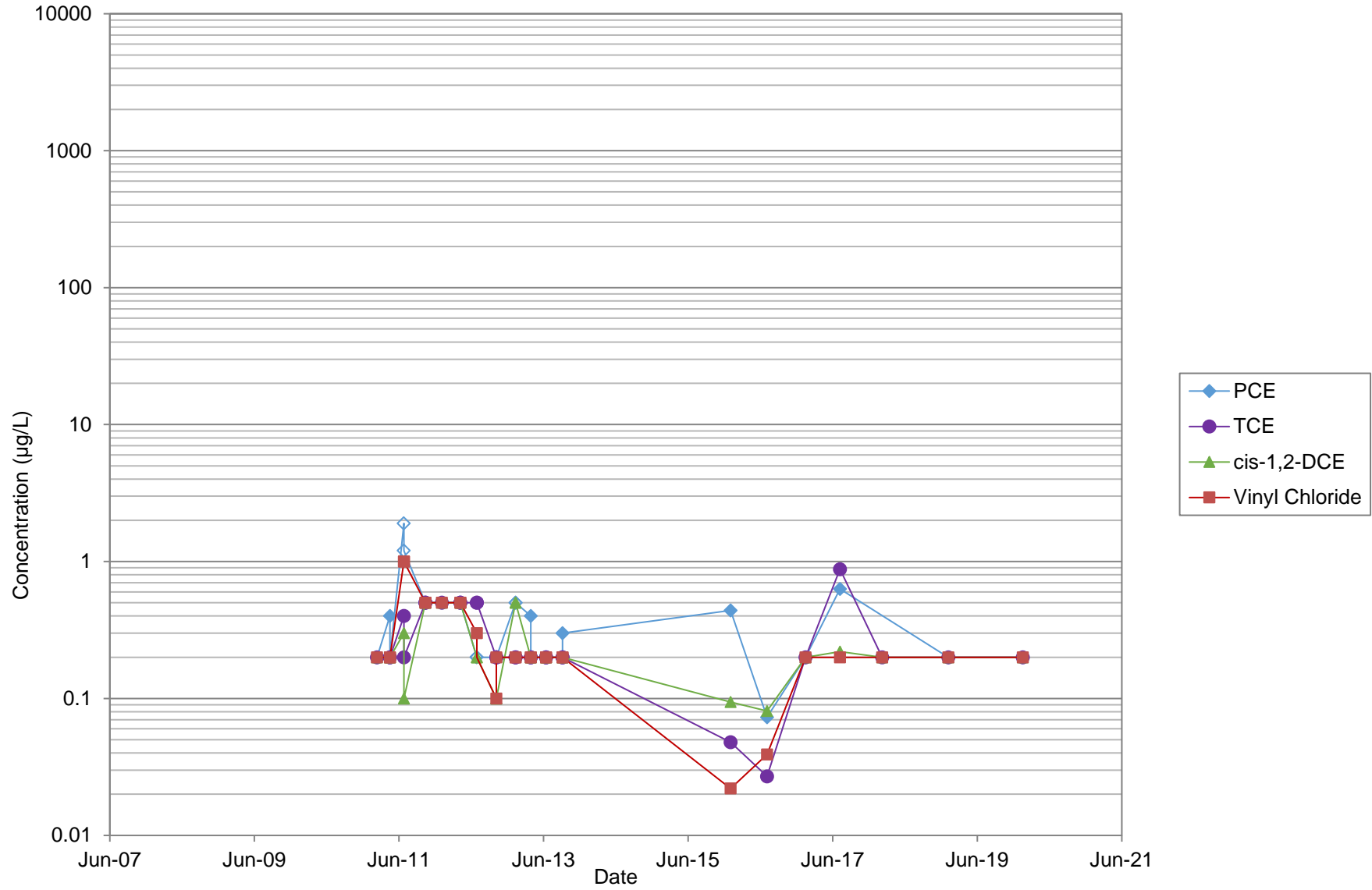
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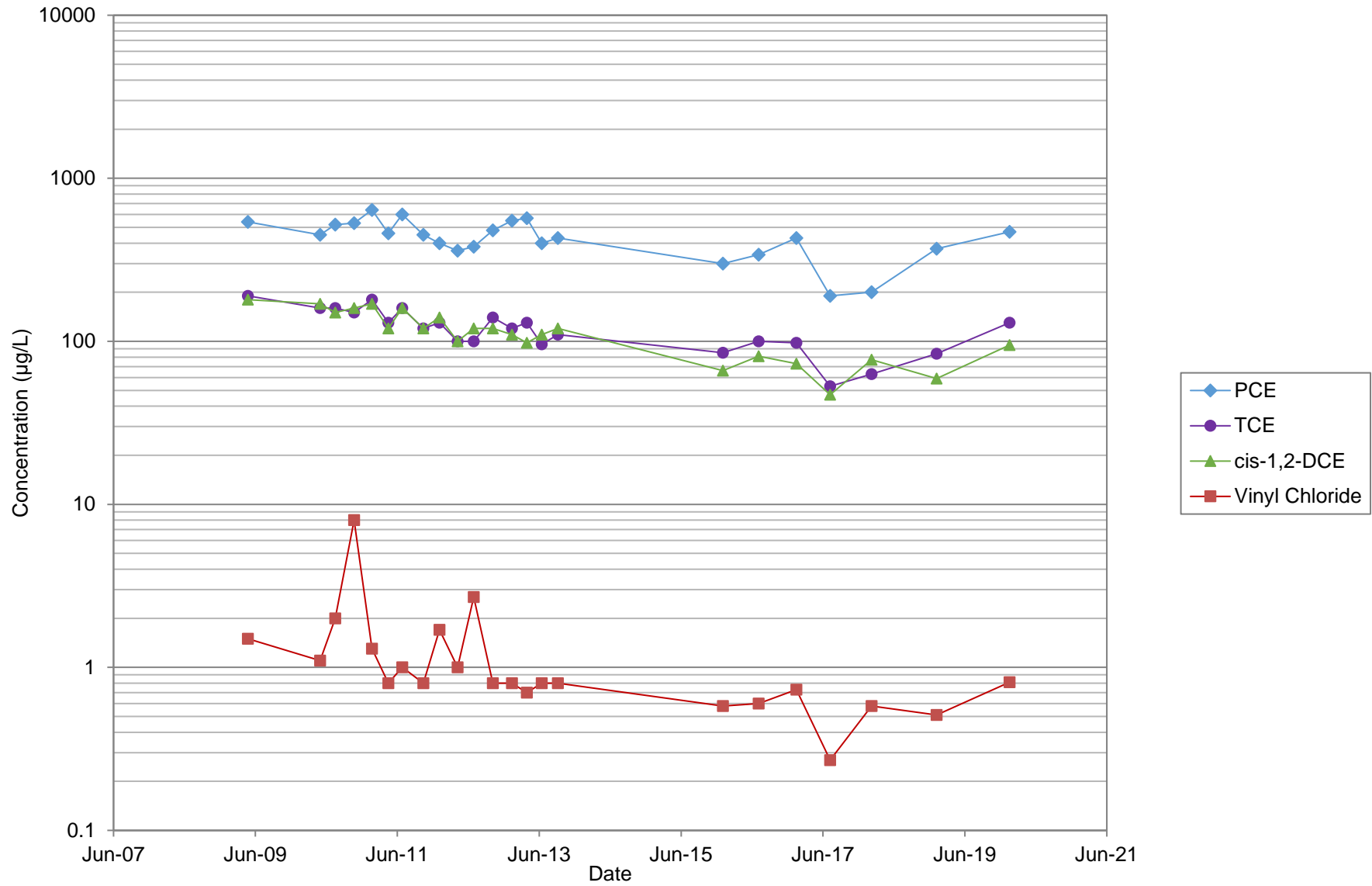
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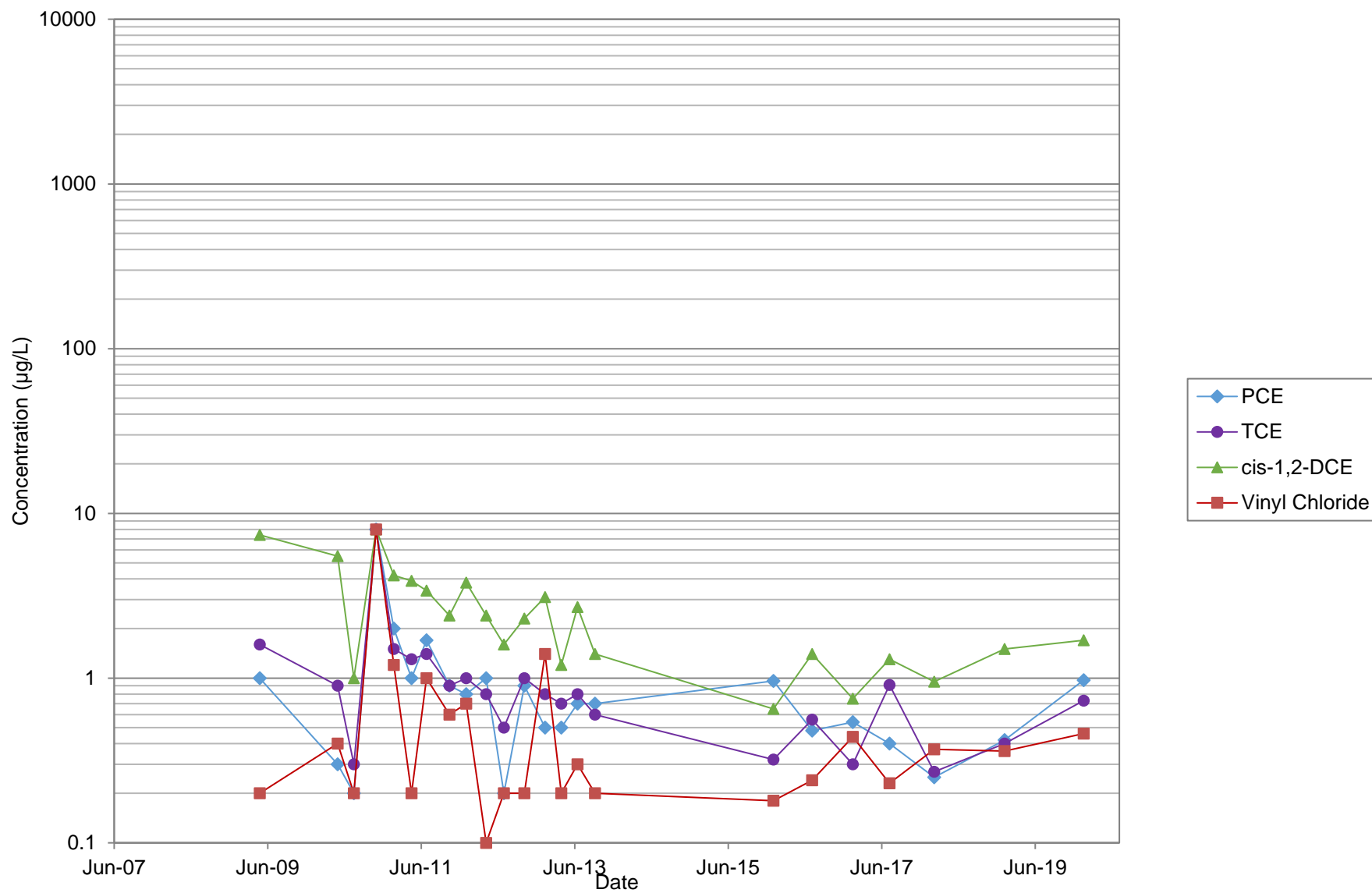
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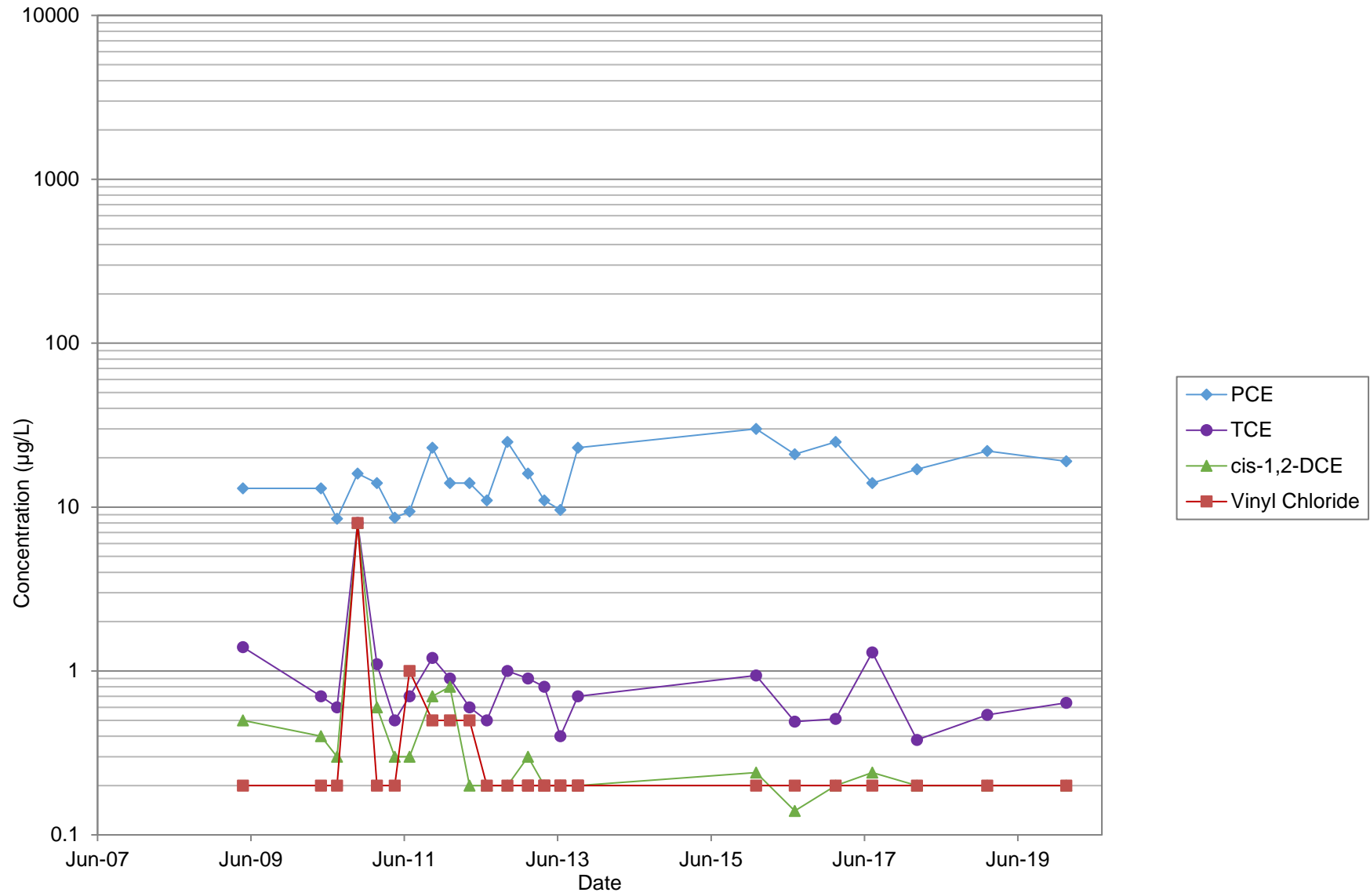
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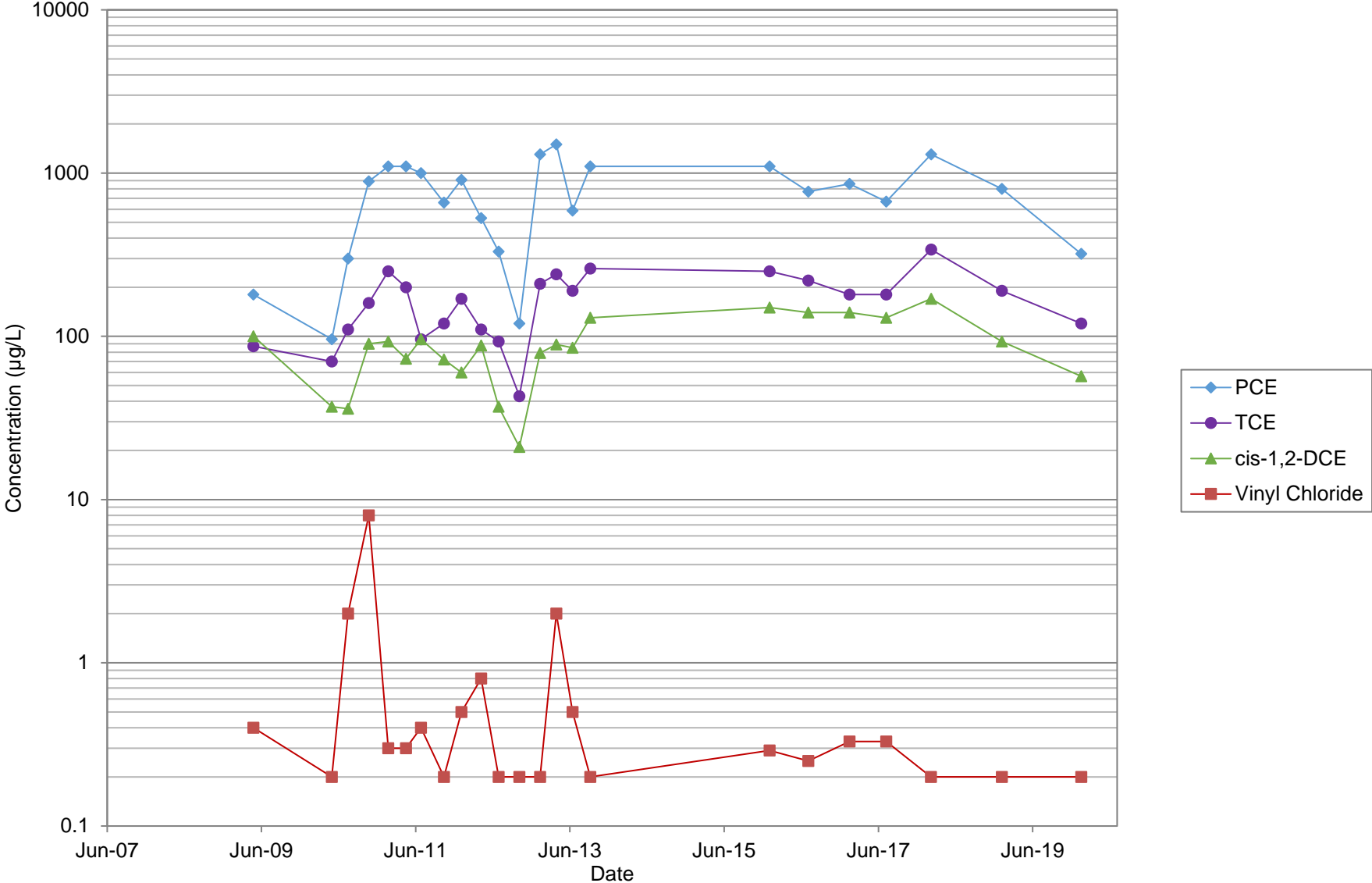
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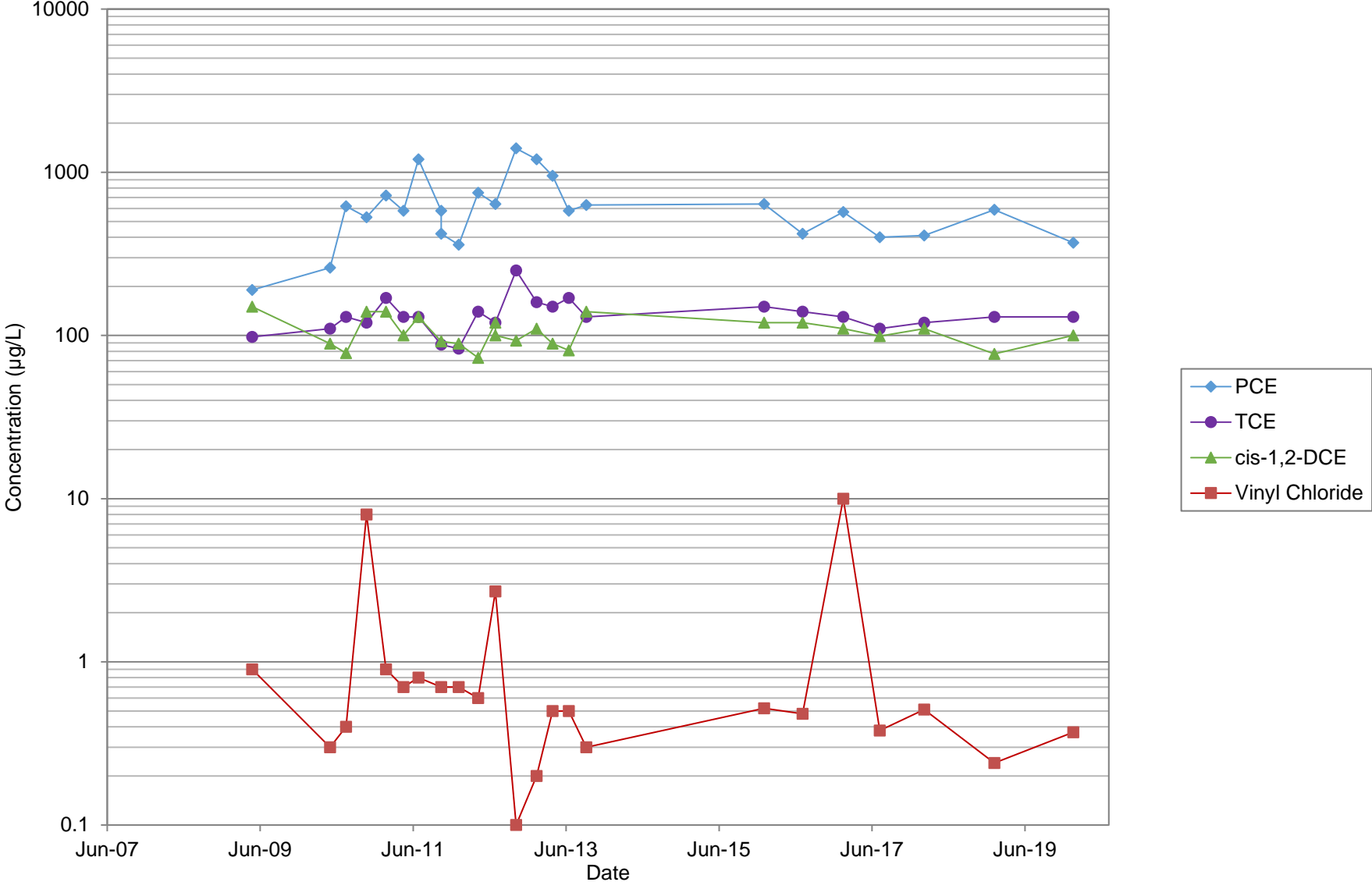
RNS-MW2



RNS-MW6-42.5



RNS-MW6-52.5



January 2020 Laboratory Data Package

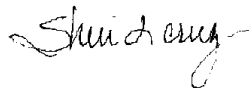
ANALYTICAL REPORT

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

Laboratory Job ID: 580-92218-1
Client Project/Site: Sauro's - Groundwater Monitoring

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

Attn: Sierra Mott



Authorized for release by:
2/3/2020 3:29:51 PM

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

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

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



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Case Narrative

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

Job ID: 580-92218-1

Job ID: 580-92218-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-92218-1

Comments

No additional comments.

Receipt

The samples were received on 1/21/2020 8:45 AM; the samples arrived in good condition. The temperature of the cooler at receipt was 10.8° C.

Receipt Exceptions

The following samples were received at the laboratory outside the required temperature criteria: Trip Blank-20200120 (580-92218-1), LAI-MW4-20200120 (580-92218-2), Dup1-20200120 (580-92218-3), LAI-MW2-20200120 (580-92218-4), LAI-MW1-20200120 (580-92218-5), LAI-MW3-20200120 (580-92218-6), RNS-MW2-20200120 (580-92218-7), MW2-20200120 (580-92218-8), LAI-MW5-20200120 (580-92218-9), RNS-MW6-42.5-20200120 (580-92218-10) and RNS-MW6-52.5-20200120 (580-92218-11). There were three 1 gallon bags full of ice in the cooler which was full of sample containers.

GC/MS VOA

Method 8260C: The following samples were diluted to bring the concentration of target analytes within the calibration range: LAI-MW2-20200120 (580-92218-4), LAI-MW3-20200120 (580-92218-6), RNS-MW6-42.5-20200120 (580-92218-10) and RNS-MW6-52.5-20200120 (580-92218-11). 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

Method 300.0: The matrix spike / matrix spike duplicate (MS/MSD) recoveries for analytical batch 580-321229 were outside control limits. Sample matrix interference and/or non-homogeneity are suspected because the associated laboratory control sample (LCS) recovery was within acceptance limits.

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

VOA Prep

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

Job ID: 580-92218-1

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.
α	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

Job ID: 580-92218-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-92218-1	Trip Blank-20200120	Water	01/20/20 00:01	01/21/20 08:45	
580-92218-2	LAI-MW4-20200120	Water	01/20/20 09:02	01/21/20 08:45	
580-92218-3	Dup1-20200120	Water	01/20/20 09:03	01/21/20 08:45	
580-92218-4	LAI-MW2-20200120	Water	01/20/20 10:40	01/21/20 08:45	
580-92218-5	LAI-MW1-20200120	Water	01/20/20 12:05	01/21/20 08:45	
580-92218-6	LAI-MW3-20200120	Water	01/20/20 13:05	01/21/20 08:45	
580-92218-7	RNS-MW2-20200120	Water	01/20/20 14:52	01/21/20 08:45	
580-92218-8	MW2-20200120	Water	01/20/20 14:40	01/21/20 08:45	
580-92218-9	LAI-MW5-20200120	Water	01/20/20 15:56	01/21/20 08:45	
580-92218-10	RNS-MW6-42.5-20200120	Water	01/20/20 16:52	01/21/20 08:45	
580-92218-11	RNS-MW6-52.5-20200120	Water	01/20/20 17:36	01/21/20 08:45	



Chain-of-Custody Record

Seattle/Edmonds (425) 778-0907 Spokane (509) 327-9737 Date 1/20/20
 Tacoma (253) 926-2493 Portland (503) 542-1080 Page 1 of 1
 Turnaround Time: Standard
 Accelerated _____

Project Name Saunds Project No. 0094048.100.103
 Project Location/Event Tacoma WA / Jan. 2020
 Sampler's Name KAM/JEC
 Project Contact Sierra Mott
 Send Results To Dani Jorgensen, Sierra Mott

Testing Parameters: 92218
 Special Handling Requirements: _____
 Shipment Method: _____
 Stored on ice: Yes / No

VOCs 8260C
 AMEE
 Chloride / Sulfate 3000
 Nitrate / Nitrite 3000
 Sulfate km
 Sulfide km
 TDC SM5310B

Sample I.D.	Date	Time	Matrix	No. of Containers	VOCs	AMEE	Chloride / Sulfate	Nitrate / Nitrite	Sulfate	Sulfide	TDC
-1 Trip Blank - 20200120	—	—	Ag	3	X	X	X	X	X	X	X
-2 LA1-MW4-20200120	1/20/20	902	Ag	9	X	X	X	X	X	X	X
-3 Dupl-20200120	1/20/20	903	Ag	9	X	X	X	X	X	X	X
LA1-MW2-20200120	1/20/20	1040	Ag	9	X	X	X	X	X	X	X
-5 LA1-MW1-20200120	1/20/20	1205	Ag	9	X	X	X	X	X	X	X
LA1-MW3-20200120	1/20/20	1305	Ag	9	X	X	X	X	X	X	X
-7 RNS-MW2-20200120	1/20/20	1452	Ag	9	X	X	X	X	X	X	X
MW2-20200120	1/20/20	1440	Ag	9	X	X	X	X	X	X	X
-9 LA1-MW5-20200120	1/20/20	1556	Ag	9	X	X	X	X	X	X	X
MW3-20200120	1/20/20	1556	Ag	9	X	X	X	X	X	X	X
RNS-MW6-42.5-20200120	1/20/20	1652	Ag	3	X	X	X	X	X	X	X
-11 RNS-MW6-52.5-20200120	1/20/20	1736	Ag	9	X	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: 7 Cor: 10.8 ° Unc: 11.1 °
 Cooler Desc: LB
 Packing: Sub B FedEx: _____
 Cust. Seal: Yes No UPS: _____
 Blue Ice: Wet, Dry, None Lab Cour: _____
 Other: CO



580-92218 Chain of Custody

Relinquished by
 Signature: [Signature]
 Printed Name: Nesika Cavannah
 Company: Landau Associates
 Date: 1/21/20 Time: 8:15

Received by
 Signature: [Signature]
 Printed Name: Ken Hobbs
 Company: JAES
 Date: 1-21-20 Time: 0945

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

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

Eurofins TestAmerica, Seattle

5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 253-922-5047

Chain of Custody Record



Environment Testing
TestAmerica

Client Information (Sub Contract Lab)		Sampler:		Lab PM: Cruz, Sheri L		Carrier Tracking No(s):		COC No: 580-73968.1															
Client Contact: Shipping/Receiving		Phone:		E-Mail: sheri.cruz@testamericainc.com		State of Origin: Washington		Page: Page 1 of 1															
Company: TestAmerica Laboratories, Inc.		Accreditations Required (See note): State Program - Washington		Job #: 580-92218-1		<table border="1"> <tr> <th colspan="2">Analysis Requested</th> <th rowspan="5">Total Number of containers</th> </tr> <tr> <td>Field Filtered Sample (Yes or No)</td> <td>Perform MS/MSD (Yes or No)</td> </tr> <tr> <td>SM4500_S2_D1 Sulfide</td> <td>RSK_175/(MOD) Local Method</td> </tr> <tr> <td></td> <td></td> </tr> <tr> <td></td> <td></td> </tr> </table>				Analysis Requested		Total Number of containers	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	SM4500_S2_D1 Sulfide	RSK_175/(MOD) Local Method							
Analysis Requested		Total Number of containers																					
Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)																						
SM4500_S2_D1 Sulfide	RSK_175/(MOD) Local Method																						
Address: 4955 Yarrow Street,		Due Date Requested: 1/31/2020		TAT Requested (days):		Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify)																	
City: Arvada		PO #:		WO #:		Other:																	
State, Zip: CO, 80002		Project #: 58009425		SSOW#:		Special Instructions/Note:																	
Phone: 303-736-0100(Tel) 303-431-7171(Fax)		Sample Identification - Client ID (Lab ID)		Sample Date		Sample Time		Sample Type (C=comp, G=grab)		Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)		Field Filtered Sample (Yes or No)		Perform MS/MSD (Yes or No)		SM4500_S2_D1 Sulfide		RSK_175/(MOD) Local Method		Total Number of containers		Special Instructions/Note:	
Email: 303-736-0100(Tel) 303-431-7171(Fax)		Project Name: Sauro's - Groundwater Monitoring		Site:		Preservation Code:																	
		LAI-MW4-20200120 (580-92218-2)		1/20/20		09:02 Pacific		Water		Water		X		X									
		Dup1-20200120 (580-92218-3)		1/20/20		09:03 Pacific		Water		Water		X		X									
		LAI-MW2-20200120 (580-92218-4)		1/20/20		10:40 Pacific		Water		Water		X		X									
		LAI-MW1-20200120 (580-92218-5)		1/20/20		12:05 Pacific		Water		Water		X		X									
		LAI-MW3-20200120 (580-92218-6)		1/20/20		13:05 Pacific		Water		Water		X		X									
		RNS-MW2-20200120 (580-92218-7)		1/20/20		14:52 Pacific		Water		Water		X		X									
		MW2-20200120 (580-92218-8)		1/20/20		14:40 Pacific		Water		Water		X		X									
		LAI-MW5-20200120 (580-92218-9)		1/20/20		15:56 Pacific		Water		Water		X		X									
		RNS-MW6-52.5-20200120 (580-92218-11)		1/20/20		17:36 Pacific		Water		Water		X		X									

Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica places the ownership of method, analyte & accreditation compliance upon our 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.

Possible Hazard Identification		Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)	
Unconfirmed		<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months	
Deliverable Requested: I, II, III, IV, Other (specify)		Primary Deliverable Rank: 2	
Special Instructions/QC Requirements:			

Empty Kit Relinquished by:		Date:		Time:		Method of Shipment:	
Relinquished by: <i>Kenny Hills</i>		Date/Time: 1-21-20		Company: TBez		Received by: <i>Julius Juli</i>	
Relinquished by:		Date/Time:		Company:		Received by:	
Relinquished by:		Date/Time:		Company:		Received by:	

Custody Seals Intact: Δ Yes Δ No	Custody Seal No.:	Cooler Temperature(s) °C and Other Remarks: -0.4°C to 0.9 JLR JLC 1-22-20
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2/3/2020



Eurofins TestAmerica, Seattle

5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 253-922-5047

Chain of Custody Record



Environment Testing
TestAmerica

Client Information (Sub Contract Lab)		Sampler:		Lab PM: Cruz, Sheri L		Carrier Tracking No(s):		COC No: 580-74081.1			
Client Contact: Shipping/Receiving		Phone:		E-Mail: sheri.cruz@testamericainc.com		State of Origin: Washington		Page: Page 1 of 1			
Company: TestAmerica Laboratories, Inc.				Accreditations Required (See note): State Program - Washington				Job #: 580-92218-1			
Address: 3355 McLemore Drive, City: Pensacola State, Zip: FL, 32514 Phone: 850-474-1001(Tel) 850-478-2671(Fax) Email:		Due Date Requested: 1/31/2020 TAT Requested (days):		Analysis Requested						Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:	
Project Name: Sauro's - Groundwater Monitoring Site:		Project #: 58009425 SSOW#:									
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers	Special Instructions/Note:		
				Preservation Code:		X	X	1			
LAI-MW4-20200120 (580-92218-2)		1/20/20	09:02 Pacific	Water	Water	X	X	1			
Dup1-20200120 (580-92218-3)		1/20/20	09:03 Pacific	Water	Water	X	X	1			
LAI-MW2-20200120 (580-92218-4)		1/20/20	10:40 Pacific	Water	Water	X	X	1			
LAI-MW1-20200120 (580-92218-5)		1/20/20	12:05 Pacific	Water	Water	X	X	1			
LAI-MW3-20200120 (580-92218-6)		1/20/20	13:05 Pacific	Water	Water	X	X	1			
RNS-MW2-20200120 (580-92218-7)		1/20/20	14:52 Pacific	Water	Water	X	X	1			
MW2-20200120 (580-92218-8)		1/20/20	14:40 Pacific	Water	Water	X	X	1			
LAI-MW5-20200120 (580-92218-9)		1/20/20	15:56 Pacific	Water	Water	X	X	1			
RNS-MW6-52.5-20200120 (580-92218-11)		1/20/20	17:36 Pacific	Water	Water	X	X	1			
Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.											
Possible Hazard Identification					Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)						
Unconfirmed					<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months						
Deliverable Requested: I, II, III, IV, Other (specify)			Primary Deliverable Rank: 2		Special Instructions/QC Requirements:						
Empty Kit Relinquished by:			Date:		Time:		Method of Shipment:				
Relinquished by: <i>Tom Blunt</i>		Date/Time: 1/23/20		Company: TA-Sea		Received by:		Date/Time: Company:			
Relinquished by:		Date/Time:		Company:		Received by:		Date/Time: Company:			
Relinquished by:		Date/Time:		Company:		Received by: <i>Shirley</i>		Date/Time: 1-24-20 0907 Company: TA-PEN			
Custody Seals Intact: <input type="checkbox"/> Yes <input type="checkbox"/> No		Custody Seal No.:			Cooler Temperature(s) °C and Other Remarks: 0.7°C 1R-8						

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Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-92218-1

Login Number: 92218

List Source: Eurofins TestAmerica, Seattle

List Number: 1

Creator: Blankinship, Tom X

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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.	False	Refer to Job Narrative for details.
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 <math><6\text{mm}</math> (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: 580-92218-1

Login Number: 92218
List Number: 2
Creator: Lubin, Julius C

List Source: Eurofins TestAmerica, Denver
List Creation: 01/22/20 05:18 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	

Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-92218-1

Login Number: 92218
List Number: 3
Creator: Conrady, Hank W

List Source: Eurofins TestAmerica, Pensacola
List Creation: 01/24/20 06:20 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.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7°C IR-8
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").	N/A	
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

Job ID: 580-92218-1

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

Client Sample ID: Trip Blank-20200120

Date Collected: 01/20/20 00:01

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 13:44	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 13:44	1
Trichloroethene	ND		0.20		ug/L			01/22/20 13:44	1
Tetrachloroethene	ND		0.20		ug/L			01/22/20 13:44	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120		01/22/20 13:44	1
Toluene-d8 (Surr)	101		80 - 120		01/22/20 13:44	1
1,2-Dichloroethane-d4 (Surr)	99		80 - 120		01/22/20 13:44	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/22/20 13:44	1
Dibromofluoromethane (Surr)	102		80 - 120		01/22/20 13:44	1

Client Sample ID: LAI-MW4-20200120

Date Collected: 01/20/20 09:02

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 16:23	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120		01/22/20 16:23	1
Toluene-d8 (Surr)	100		80 - 120		01/22/20 16:23	1
1,2-Dichloroethane-d4 (Surr)	91		80 - 120		01/22/20 16:23	1
4-Bromofluorobenzene (Surr)	104		80 - 120		01/22/20 16:23	1
Dibromofluoromethane (Surr)	96		80 - 120		01/22/20 16:23	1

Client Sample ID: Dup1-20200120

Date Collected: 01/20/20 09:03

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 16:49	1
Tetrachloroethene	ND		0.20		ug/L			01/22/20 16:49	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		80 - 120		01/22/20 16:49	1
Toluene-d8 (Surr)	100		80 - 120		01/22/20 16:49	1
1,2-Dichloroethane-d4 (Surr)	90		80 - 120		01/22/20 16:49	1
4-Bromofluorobenzene (Surr)	105		80 - 120		01/22/20 16:49	1
Dibromofluoromethane (Surr)	95		80 - 120		01/22/20 16:49	1

Client Sample ID: LAI-MW2-20200120

Date Collected: 01/20/20 10:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.50		0.20		ug/L			01/22/20 17:16	1
cis-1,2-Dichloroethene	93		0.20		ug/L			01/22/20 17:16	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120		01/22/20 17:16	1
Toluene-d8 (Surr)	98		80 - 120		01/22/20 17:16	1
1,2-Dichloroethane-d4 (Surr)	88		80 - 120		01/22/20 17:16	1
4-Bromofluorobenzene (Surr)	106		80 - 120		01/22/20 17:16	1

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: LAI-MW2-20200120

Date Collected: 01/20/20 10:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-4

Matrix: Water

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Dibromofluoromethane (Surr)	95		80 - 120		01/22/20 17:16	1

Client Sample ID: LAI-MW1-20200120

Date Collected: 01/20/20 12:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 17:42	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 17:42	1
Trichloroethene	ND		0.20		ug/L			01/22/20 17:42	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120		01/22/20 17:42	1
Toluene-d8 (Surr)	99		80 - 120		01/22/20 17:42	1
1,2-Dichloroethane-d4 (Surr)	92		80 - 120		01/22/20 17:42	1
4-Bromofluorobenzene (Surr)	104		80 - 120		01/22/20 17:42	1
Dibromofluoromethane (Surr)	97		80 - 120		01/22/20 17:42	1

Client Sample ID: LAI-MW3-20200120

Date Collected: 01/20/20 13:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 18:09	1
cis-1,2-Dichloroethene	35		0.20		ug/L			01/22/20 18:09	1
Trichloroethene	37		0.20		ug/L			01/22/20 18:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		80 - 120		01/22/20 18:09	1
Toluene-d8 (Surr)	97		80 - 120		01/22/20 18:09	1
1,2-Dichloroethane-d4 (Surr)	93		80 - 120		01/22/20 18:09	1
4-Bromofluorobenzene (Surr)	104		80 - 120		01/22/20 18:09	1
Dibromofluoromethane (Surr)	98		80 - 120		01/22/20 18:09	1

Client Sample ID: RNS-MW2-20200120

Date Collected: 01/20/20 14:52

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 18:35	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 18:35	1
Tetrachloroethene	19		0.20		ug/L			01/22/20 18:35	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120		01/22/20 18:35	1
Toluene-d8 (Surr)	97		80 - 120		01/22/20 18:35	1
1,2-Dichloroethane-d4 (Surr)	95		80 - 120		01/22/20 18:35	1
4-Bromofluorobenzene (Surr)	103		80 - 120		01/22/20 18:35	1
Dibromofluoromethane (Surr)	98		80 - 120		01/22/20 18:35	1

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: MW2-20200120

Date Collected: 01/20/20 14:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.46		0.20		ug/L			01/22/20 19:01	1
cis-1,2-Dichloroethene	1.7		0.20		ug/L			01/22/20 19:01	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120					01/22/20 19:01	1
Toluene-d8 (Surr)	98		80 - 120					01/22/20 19:01	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 120					01/22/20 19:01	1
4-Bromofluorobenzene (Surr)	104		80 - 120					01/22/20 19:01	1
Dibromofluoromethane (Surr)	98		80 - 120					01/22/20 19:01	1

Client Sample ID: LAI-MW5-20200120

Date Collected: 01/20/20 15:56

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 19:28	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 19:28	1
Trichloroethene	ND		0.20		ug/L			01/22/20 19:28	1
Tetrachloroethene	ND		0.20		ug/L			01/22/20 19:28	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120					01/22/20 19:28	1
Toluene-d8 (Surr)	99		80 - 120					01/22/20 19:28	1
1,2-Dichloroethane-d4 (Surr)	96		80 - 120					01/22/20 19:28	1
4-Bromofluorobenzene (Surr)	102		80 - 120					01/22/20 19:28	1
Dibromofluoromethane (Surr)	99		80 - 120					01/22/20 19:28	1

Client Sample ID: RNS-MW6-42.5-20200120

Date Collected: 01/20/20 16:52

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-10

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 19:54	1
cis-1,2-Dichloroethene	57		0.20		ug/L			01/22/20 19:54	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		80 - 120					01/22/20 19:54	1
Toluene-d8 (Surr)	96		80 - 120					01/22/20 19:54	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 120					01/22/20 19:54	1
4-Bromofluorobenzene (Surr)	104		80 - 120					01/22/20 19:54	1
Dibromofluoromethane (Surr)	99		80 - 120					01/22/20 19:54	1

Client Sample ID: RNS-MW6-52.5-20200120

Date Collected: 01/20/20 17:36

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.37		0.20		ug/L			01/22/20 20:21	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	100		80 - 120					01/22/20 20:21	1
Toluene-d8 (Surr)	98		80 - 120					01/22/20 20:21	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 120					01/22/20 20:21	1
4-Bromofluorobenzene (Surr)	102		80 - 120					01/22/20 20:21	1

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: RNS-MW6-52.5-20200120
Date Collected: 01/20/20 17:36
Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-11
Matrix: Water

<i>Surrogate</i>	<i>%Recovery</i>	<i>Qualifier</i>	<i>Limits</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Dil Fac</i>
<i>Dibromofluoromethane (Surr)</i>	<i>101</i>		<i>80 - 120</i>		<i>01/22/20 20:21</i>	<i>1</i>

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: LAI-MW2-20200120

Date Collected: 01/20/20 10:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	100		2.0		ug/L			01/30/20 15:21	10
Tetrachloroethene	270		2.0		ug/L			01/30/20 15:21	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	105		80 - 120					01/30/20 15:21	10
Toluene-d8 (Surr)	98		80 - 120					01/30/20 15:21	10
1,2-Dichloroethane-d4 (Surr)	109		80 - 120					01/30/20 15:21	10
4-Bromofluorobenzene (Surr)	98		80 - 120					01/30/20 15:21	10
Dibromofluoromethane (Surr)	106		80 - 120					01/30/20 15:21	10

Client Sample ID: LAI-MW3-20200120

Date Collected: 01/20/20 13:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	42		1.0		ug/L			01/23/20 14:57	5
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		80 - 120					01/23/20 14:57	5
Toluene-d8 (Surr)	98		80 - 120					01/23/20 14:57	5
1,2-Dichloroethane-d4 (Surr)	99		80 - 120					01/23/20 14:57	5
4-Bromofluorobenzene (Surr)	103		80 - 120					01/23/20 14:57	5
Dibromofluoromethane (Surr)	101		80 - 120					01/23/20 14:57	5

Client Sample ID: RNS-MW6-42.5-20200120

Date Collected: 01/20/20 16:52

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-10

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	120		2.0		ug/L			01/23/20 16:16	10
Tetrachloroethene	320		2.0		ug/L			01/23/20 16:16	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120					01/23/20 16:16	10
Toluene-d8 (Surr)	99		80 - 120					01/23/20 16:16	10
1,2-Dichloroethane-d4 (Surr)	98		80 - 120					01/23/20 16:16	10
4-Bromofluorobenzene (Surr)	100		80 - 120					01/23/20 16:16	10
Dibromofluoromethane (Surr)	100		80 - 120					01/23/20 16:16	10

Client Sample ID: RNS-MW6-52.5-20200120

Date Collected: 01/20/20 17:36

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	100		2.0		ug/L			01/23/20 16:42	10
Trichloroethene	130		2.0		ug/L			01/23/20 16:42	10
Tetrachloroethene	370		2.0		ug/L			01/23/20 16:42	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	110		80 - 120					01/23/20 16:42	10
Toluene-d8 (Surr)	100		80 - 120					01/23/20 16:42	10
1,2-Dichloroethane-d4 (Surr)	96		80 - 120					01/23/20 16:42	10
4-Bromofluorobenzene (Surr)	97		80 - 120					01/23/20 16:42	10
Dibromofluoromethane (Surr)	98		80 - 120					01/23/20 16:42	10

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: LAI-MW4-20200120

Date Collected: 01/20/20 09:02

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.32		0.20		ug/L			01/23/20 12:45	1
Trichloroethene	0.24		0.20		ug/L			01/23/20 12:45	1
Tetrachloroethene	ND		0.20		ug/L			01/23/20 12:45	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	99		80 - 120		01/23/20 12:45	1
Toluene-d8 (Surr)	101		80 - 120		01/23/20 12:45	1
1,2-Dichloroethane-d4 (Surr)	92		80 - 120		01/23/20 12:45	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/23/20 12:45	1
Dibromofluoromethane (Surr)	95		80 - 120		01/23/20 12:45	1

Client Sample ID: Dup1-20200120

Date Collected: 01/20/20 09:03

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.33		0.20		ug/L			01/23/20 13:11	1
Trichloroethene	0.24		0.20		ug/L			01/23/20 13:11	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120		01/23/20 13:11	1
Toluene-d8 (Surr)	102		80 - 120		01/23/20 13:11	1
1,2-Dichloroethane-d4 (Surr)	92		80 - 120		01/23/20 13:11	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/23/20 13:11	1
Dibromofluoromethane (Surr)	95		80 - 120		01/23/20 13:11	1

Client Sample ID: LAI-MW1-20200120

Date Collected: 01/20/20 12:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Tetrachloroethene	ND		0.20		ug/L			01/23/20 13:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		80 - 120		01/23/20 13:37	1
Toluene-d8 (Surr)	99		80 - 120		01/23/20 13:37	1
1,2-Dichloroethane-d4 (Surr)	97		80 - 120		01/23/20 13:37	1
4-Bromofluorobenzene (Surr)	104		80 - 120		01/23/20 13:37	1
Dibromofluoromethane (Surr)	99		80 - 120		01/23/20 13:37	1

Client Sample ID: RNS-MW2-20200120

Date Collected: 01/20/20 14:52

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.64		0.20		ug/L			01/23/20 14:30	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	96		80 - 120		01/23/20 14:30	1
Toluene-d8 (Surr)	96		80 - 120		01/23/20 14:30	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		01/23/20 14:30	1
4-Bromofluorobenzene (Surr)	104		80 - 120		01/23/20 14:30	1
Dibromofluoromethane (Surr)	98		80 - 120		01/23/20 14:30	1

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: MW2-20200120

Lab Sample ID: 580-92218-8

Date Collected: 01/20/20 14:40

Matrix: Water

Date Received: 01/21/20 08:45

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.73		0.20		ug/L			01/23/20 14:04	1
Tetrachloroethene	0.97		0.20		ug/L			01/23/20 14:04	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	98		80 - 120		01/23/20 14:04	1
Toluene-d8 (Surr)	97		80 - 120		01/23/20 14:04	1
1,2-Dichloroethane-d4 (Surr)	96		80 - 120		01/23/20 14:04	1
4-Bromofluorobenzene (Surr)	105		80 - 120		01/23/20 14:04	1
Dibromofluoromethane (Surr)	98		80 - 120		01/23/20 14:04	1

Client Sample Results

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

Job ID: 580-92218-1

Method: RSK-175 - Dissolved Gases (GC)

Client Sample ID: LAI-MW4-20200120

Date Collected: 01/20/20 09:02

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	3.0		0.0050		mg/L			01/23/20 14:59	1
Ethylene	ND		0.0050		mg/L			01/23/20 14:59	1
Ethane	ND		0.0050		mg/L			01/23/20 14:59	1
Acetylene	ND		0.0050		mg/L			01/23/20 14:59	1

Client Sample ID: Dup1-20200120

Date Collected: 01/20/20 09:03

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	3.2		0.0050		mg/L			01/23/20 15:12	1
Ethylene	ND		0.0050		mg/L			01/23/20 15:12	1
Ethane	ND		0.0050		mg/L			01/23/20 15:12	1
Acetylene	ND		0.0050		mg/L			01/23/20 15:12	1

Client Sample ID: LAI-MW2-20200120

Date Collected: 01/20/20 10:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.0098		0.0050		mg/L			01/23/20 15:25	1
Ethylene	ND		0.0050		mg/L			01/23/20 15:25	1
Ethane	ND		0.0050		mg/L			01/23/20 15:25	1
Acetylene	ND		0.0050		mg/L			01/23/20 15:25	1

Client Sample ID: LAI-MW1-20200120

Date Collected: 01/20/20 12:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.019		0.0050		mg/L			01/23/20 15:52	1
Ethylene	ND		0.0050		mg/L			01/23/20 15:52	1
Ethane	ND		0.0050		mg/L			01/23/20 15:52	1
Acetylene	ND		0.0050		mg/L			01/23/20 15:52	1

Client Sample ID: LAI-MW3-20200120

Date Collected: 01/20/20 13:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/23/20 16:19	1
Ethylene	ND		0.0050		mg/L			01/23/20 16:19	1
Ethane	ND		0.0050		mg/L			01/23/20 16:19	1
Acetylene	ND		0.0050		mg/L			01/23/20 16:19	1

Client Sample ID: RNS-MW2-20200120

Date Collected: 01/20/20 14:52

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	ND		0.0050		mg/L			01/23/20 16:32	1
Ethylene	ND		0.0050		mg/L			01/23/20 16:32	1
Ethane	ND		0.0050		mg/L			01/23/20 16:32	1
Acetylene	ND		0.0050		mg/L			01/23/20 16:32	1

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

Method: RSK-175 - Dissolved Gases (GC)

Client Sample ID: MW2-20200120

Date Collected: 01/20/20 14:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.60		0.0050		mg/L			01/23/20 16:46	1
Ethylene	ND		0.0050		mg/L			01/23/20 16:46	1
Ethane	ND		0.0050		mg/L			01/23/20 16:46	1
Acetylene	ND		0.0050		mg/L			01/23/20 16:46	1

Client Sample ID: LAI-MW5-20200120

Date Collected: 01/20/20 15:56

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Ethylene	ND		0.0050		mg/L			01/23/20 16:59	1
Ethane	ND		0.0050		mg/L			01/23/20 16:59	1
Acetylene	ND		0.0050		mg/L			01/23/20 16:59	1

Client Sample ID: RNS-MW6-52.5-20200120

Date Collected: 01/20/20 17:36

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.043		0.0050		mg/L			01/23/20 17:13	1
Ethylene	ND		0.0050		mg/L			01/23/20 17:13	1
Ethane	0.0054		0.0050		mg/L			01/23/20 17:13	1
Acetylene	ND		0.0050		mg/L			01/23/20 17:13	1

Client Sample Results

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

Job ID: 580-92218-1

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

Client Sample ID: LAI-MW5-20200120

Date Collected: 01/20/20 15:56

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	14		0.015		mg/L			01/24/20 14:02	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

Job ID: 580-92218-1

General Chemistry

Client Sample ID: LAI-MW4-20200120

Date Collected: 01/20/20 09:02

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	53		0.90		mg/L			01/21/20 16:20	1
Nitrite as N	ND		0.40		mg/L			01/21/20 16:20	1
Nitrate as N	ND		0.20		mg/L			01/21/20 16:20	1
Sulfate	2.5		1.2		mg/L			01/21/20 16:20	1
Sulfide	ND		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	3.4		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: Dup1-20200120

Date Collected: 01/20/20 09:03

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-3

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	54		0.90		mg/L			01/21/20 16:32	1
Nitrite as N	ND		0.40		mg/L			01/21/20 16:32	1
Nitrate as N	ND		0.20		mg/L			01/21/20 16:32	1
Sulfate	2.4		1.2		mg/L			01/21/20 16:32	1
Sulfide	ND		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	3.5		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: LAI-MW2-20200120

Date Collected: 01/20/20 10:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-4

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	14		0.90		mg/L			01/21/20 16:44	1
Nitrite as N	ND		0.40		mg/L			01/21/20 16:44	1
Nitrate as N	ND		0.20		mg/L			01/21/20 16:44	1
Sulfate	17		1.2		mg/L			01/21/20 16:44	1
Sulfide	ND		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	1.1		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: LAI-MW1-20200120

Date Collected: 01/20/20 12:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-5

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	45		0.90		mg/L			01/21/20 16:55	1
Nitrite as N	ND		0.40		mg/L			01/21/20 16:55	1
Nitrate as N	1.2		0.20		mg/L			01/21/20 16:55	1
Sulfate	20		1.2		mg/L			01/21/20 16:55	1
Sulfide	ND		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	1.7		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: LAI-MW3-20200120

Date Collected: 01/20/20 13:05

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-6

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	22	F1	0.90		mg/L			01/21/20 17:07	1
Nitrite as N	ND		0.40		mg/L			01/21/20 17:07	1
Nitrate as N	0.64		0.20		mg/L			01/21/20 17:07	1
Sulfate	22	F1	1.2		mg/L			01/21/20 17:07	1
Sulfide	ND		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	1.5		1.0		mg/L			01/25/20 12:21	1

Eurofins TestAmerica, Seattle

Client Sample Results

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

Job ID: 580-92218-1

General Chemistry

Client Sample ID: RNS-MW2-20200120

Date Collected: 01/20/20 14:52

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-7

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	150		1.8		mg/L			01/23/20 10:20	2
Nitrite as N	ND		0.40		mg/L			01/21/20 18:06	1
Nitrate as N	2.9		0.20		mg/L			01/21/20 18:06	1
Sulfate	26		1.2		mg/L			01/21/20 18:06	1
Sulfide	ND		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	1.1		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: MW2-20200120

Date Collected: 01/20/20 14:40

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-8

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	52		0.90		mg/L			01/21/20 18:17	1
Nitrite as N	ND		0.40		mg/L			01/21/20 18:17	1
Nitrate as N	1.3		0.20		mg/L			01/21/20 18:17	1
Sulfate	79		1.2		mg/L			01/21/20 18:17	1
Sulfide	0.21		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	2.5		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: LAI-MW5-20200120

Date Collected: 01/20/20 15:56

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-9

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	110		1.8		mg/L			01/23/20 10:32	2
Nitrite as N	ND		0.40		mg/L			01/21/20 18:29	1
Nitrate as N	ND		0.20		mg/L			01/21/20 18:29	1
Sulfate	2.0		1.2		mg/L			01/21/20 18:29	1
Sulfide	0.24		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	6.3		1.0		mg/L			01/25/20 12:21	1

Client Sample ID: RNS-MW6-52.5-20200120

Date Collected: 01/20/20 17:36

Date Received: 01/21/20 08:45

Lab Sample ID: 580-92218-11

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	31		0.90		mg/L			01/21/20 18:41	1
Nitrite as N	ND		0.40		mg/L			01/21/20 18:41	1
Nitrate as N	0.63		0.20		mg/L			01/21/20 18:41	1
Sulfate	25		1.2		mg/L			01/21/20 18:41	1
Sulfide	1.2		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	1.8		1.0		mg/L			01/25/20 12:21	1

QC Sample Results

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

Job ID: 580-92218-1

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

Lab Sample ID: MB 580-321148/8
Matrix: Water
Analysis Batch: 321148

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			01/22/20 12:51	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 12:51	1
Trichloroethene	ND		0.20		ug/L			01/22/20 12:51	1
Tetrachloroethene	ND		0.20		ug/L			01/22/20 12:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120		01/22/20 12:51	1
Toluene-d8 (Surr)	99		80 - 120		01/22/20 12:51	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		01/22/20 12:51	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/22/20 12:51	1
Dibromofluoromethane (Surr)	98		80 - 120		01/22/20 12:51	1

Lab Sample ID: LCS 580-321148/5
Matrix: Water
Analysis Batch: 321148

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	6.23		ug/L		125	52 - 128
cis-1,2-Dichloroethene	5.00	5.78		ug/L		116	72 - 130
Trichloroethene	5.00	5.56		ug/L		111	72 - 136
Tetrachloroethene	5.00	5.49		ug/L		110	75 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	96		80 - 120
Toluene-d8 (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	96		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120

Lab Sample ID: LCSD 580-321148/6
Matrix: Water
Analysis Batch: 321148

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	6.27		ug/L		125	52 - 128	1	21
cis-1,2-Dichloroethene	5.00	5.82		ug/L		116	72 - 130	1	20
Trichloroethene	5.00	5.55		ug/L		111	72 - 136	0	14
Tetrachloroethene	5.00	5.48		ug/L		110	75 - 131	0	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	97		80 - 120
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

QC Sample Results

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

Job ID: 580-92218-1

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

Lab Sample ID: MB 580-321202/8
Matrix: Water
Analysis Batch: 321202

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Vinyl chloride	ND		0.20		ug/L			01/23/20 12:18	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/23/20 12:18	1
Trichloroethene	ND		0.20		ug/L			01/23/20 12:18	1
Tetrachloroethene	ND		0.20		ug/L			01/23/20 12:18	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Trifluorotoluene (Surr)	100		80 - 120		01/23/20 12:18	1
Toluene-d8 (Surr)	100		80 - 120		01/23/20 12:18	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		01/23/20 12:18	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/23/20 12:18	1
Dibromofluoromethane (Surr)	102		80 - 120		01/23/20 12:18	1

Lab Sample ID: LCS 580-321202/5
Matrix: Water
Analysis Batch: 321202

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
cis-1,2-Dichloroethene	5.00	5.87		ug/L		117	72 - 130
Trichloroethene	5.00	5.61		ug/L		112	72 - 136
Tetrachloroethene	5.00	5.54		ug/L		111	75 - 131

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	98		80 - 120
Toluene-d8 (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	95		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

Lab Sample ID: LCSD 580-321202/6
Matrix: Water
Analysis Batch: 321202

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

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
cis-1,2-Dichloroethene	5.00	5.83		ug/L		117	72 - 130	1	20
Trichloroethene	5.00	5.60		ug/L		112	72 - 136	0	14
Tetrachloroethene	5.00	5.46		ug/L		109	75 - 131	1	20

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	97		80 - 120
Toluene-d8 (Surr)	99		80 - 120
1,2-Dichloroethane-d4 (Surr)	98		80 - 120
4-Bromofluorobenzene (Surr)	103		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

QC Sample Results

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

Job ID: 580-92218-1

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

Lab Sample ID: MB 580-321686/8
Matrix: Water
Analysis Batch: 321686

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Vinyl chloride	ND		0.20		ug/L			01/30/20 12:53	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/30/20 12:53	1
Trichloroethene	ND		0.20		ug/L			01/30/20 12:53	1
Tetrachloroethene	ND		0.20		ug/L			01/30/20 12:53	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Trifluorotoluene (Surr)	107		80 - 120		01/30/20 12:53	1
Toluene-d8 (Surr)	100		80 - 120		01/30/20 12:53	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 120		01/30/20 12:53	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/30/20 12:53	1
Dibromofluoromethane (Surr)	103		80 - 120		01/30/20 12:53	1

Lab Sample ID: LCS 580-321686/5
Matrix: Water
Analysis Batch: 321686

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Vinyl chloride	5.00	4.90		ug/L		98	52 - 128
cis-1,2-Dichloroethene	5.00	5.32		ug/L		106	72 - 130
Trichloroethene	5.00	4.97		ug/L		99	72 - 136
Tetrachloroethene	5.00	4.88		ug/L		98	75 - 131

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	99		80 - 120
Toluene-d8 (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

Lab Sample ID: LCSD 580-321686/6
Matrix: Water
Analysis Batch: 321686

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

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
Vinyl chloride	5.00	4.76		ug/L		95	52 - 128	3	21
cis-1,2-Dichloroethene	5.00	5.26		ug/L		105	72 - 130	1	20
Trichloroethene	5.00	4.91		ug/L		98	72 - 136	1	14
Tetrachloroethene	5.00	4.74		ug/L		95	75 - 131	3	20

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	97		80 - 120
Toluene-d8 (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

QC Sample Results

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

Job ID: 580-92218-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 280-483796/6
Matrix: Water
Analysis Batch: 483796

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			01/23/20 11:22	1
Ethylene	ND		0.0050		mg/L			01/23/20 11:22	1
Ethane	ND		0.0050		mg/L			01/23/20 11:22	1
Acetylene	ND		0.0050		mg/L			01/23/20 11:22	1

Lab Sample ID: LCS 280-483796/4
Matrix: Water
Analysis Batch: 483796

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	0.0758		mg/L		104	75 - 125
Ethylene	0.128	0.129		mg/L		101	75 - 125
Ethane	0.137	0.140		mg/L		102	75 - 125
Acetylene	0.119	0.127		mg/L		107	75 - 125

Lab Sample ID: LCSD 280-483796/5
Matrix: Water
Analysis Batch: 483796

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	0.0743		mg/L		102	75 - 125	2	20
Ethylene	0.128	0.130		mg/L		102	75 - 125	1	20
Ethane	0.137	0.140		mg/L		102	75 - 125	0	20
Acetylene	0.119	0.134		mg/L		113	75 - 125	5	20

Lab Sample ID: 580-92218-5 DU
Matrix: Water
Analysis Batch: 483796

Client Sample ID: LAI-MW1-20200120
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Methane	0.019		0.0196		mg/L		3	20
Ethylene	ND		ND		mg/L		NC	20
Ethane	ND		ND		mg/L		NC	20
Acetylene	ND		ND		mg/L		NC	20

Lab Sample ID: MB 280-483911/7
Matrix: Water
Analysis Batch: 483911

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			01/24/20 09:57	1
Ethylene	ND		0.0050		mg/L			01/24/20 09:57	1
Ethane	ND		0.0050		mg/L			01/24/20 09:57	1
Acetylene	ND		0.0050		mg/L			01/24/20 09:57	1

QC Sample Results

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

Job ID: 580-92218-1

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

Lab Sample ID: LCS 280-483911/5
Matrix: Water
Analysis Batch: 483911

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	0.0726		mg/L		99	75 - 125
Ethylene	0.128	0.126		mg/L		99	75 - 125
Ethane	0.137	0.137		mg/L		100	75 - 125
Acetylene	0.119	0.133		mg/L		112	75 - 125

Lab Sample ID: LCSD 280-483911/6
Matrix: Water
Analysis Batch: 483911

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	0.0663		mg/L		91	75 - 125	9	20
Ethylene	0.128	0.119		mg/L		93	75 - 125	6	20
Ethane	0.137	0.126		mg/L		92	75 - 125	9	20
Acetylene	0.119	0.136		mg/L		115	75 - 125	2	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-321224/3
Matrix: Water
Analysis Batch: 321224

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	ND		0.40		mg/L			01/21/20 15:33	1
Nitrate as N	ND		0.20		mg/L			01/21/20 15:33	1

Lab Sample ID: LCS 580-321224/4
Matrix: Water
Analysis Batch: 321224

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	5.00	5.02		mg/L		100	90 - 110
Nitrate as N	5.00	5.03		mg/L		101	90 - 110

Lab Sample ID: LCSD 580-321224/5
Matrix: Water
Analysis Batch: 321224

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
Nitrite as N	5.00	5.04		mg/L		101	90 - 110	0	15
Nitrate as N	5.00	5.03		mg/L		101	90 - 110	0	15

Lab Sample ID: 580-92218-6 MS
Matrix: Water
Analysis Batch: 321224

Client Sample ID: LAI-MW3-20200120
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	ND		5.00	5.30		mg/L		106	90 - 110
Nitrate as N	0.64		5.00	5.91		mg/L		106	90 - 110

Eurofins TestAmerica, Seattle

QC Sample Results

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

Job ID: 580-92218-1

Method: 300.0 - Anions, Ion Chromatography (Continued)

Lab Sample ID: 580-92218-6 MSD
Matrix: Water
Analysis Batch: 321224

Client Sample ID: LAI-MW3-20200120
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Nitrite as N	ND		5.00	5.34		mg/L		107	90 - 110	1	15
Nitrate as N	0.64		5.00	5.92		mg/L		106	90 - 110	0	15

Lab Sample ID: MB 580-321229/3
Matrix: Water
Analysis Batch: 321229

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			01/21/20 15:33	1
Sulfate	ND		1.2		mg/L			01/21/20 15:33	1

Lab Sample ID: LCS 580-321229/4
Matrix: Water
Analysis Batch: 321229

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	51.8		mg/L		104	90 - 110
Sulfate	50.0	52.7		mg/L		105	90 - 110

Lab Sample ID: LCSD 580-321229/5
Matrix: Water
Analysis Batch: 321229

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	51.8		mg/L		104	90 - 110	0	15
Sulfate	50.0	50.9		mg/L		102	90 - 110	4	15

Lab Sample ID: 580-92218-6 MS
Matrix: Water
Analysis Batch: 321229

Client Sample ID: LAI-MW3-20200120
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Chloride	22	F1	50.0	77.4		mg/L		110	90 - 110
Sulfate	22	F1	50.0	79.0	F1	mg/L		114	90 - 110

Lab Sample ID: 580-92218-6 MSD
Matrix: Water
Analysis Batch: 321229

Client Sample ID: LAI-MW3-20200120
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Chloride	22	F1	50.0	79.4	F1	mg/L		114	90 - 110	2	15
Sulfate	22	F1	50.0	78.8	F1	mg/L		113	90 - 110	0	15

QC Sample Results

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

Job ID: 580-92218-1

Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 280-484003/10
 Matrix: Water
 Analysis Batch: 484003

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			01/25/20 14:22	1

Lab Sample ID: LCS 280-484003/9
 Matrix: Water
 Analysis Batch: 484003

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.466	0.494		mg/L		106	81 - 122

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

Lab Sample ID: MB 400-475493/3
 Matrix: Water
 Analysis Batch: 475493

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			01/25/20 12:21	1

Lab Sample ID: LCS 400-475493/5
 Matrix: Water
 Analysis Batch: 475493

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	20.0	19.3		mg/L		97	85 - 115

Lab Sample ID: MRL 400-475493/2
 Matrix: Water
 Analysis Batch: 475493

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.00	ND		mg/L		92	50 - 150

Lab Chronicle

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

Job ID: 580-92218-1

Client Sample ID: Trip Blank-20200120

Lab Sample ID: 580-92218-1

Date Collected: 01/20/20 00:01

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 13:44	TL1	TAL SEA

Client Sample ID: LAI-MW4-20200120

Lab Sample ID: 580-92218-2

Date Collected: 01/20/20 09:02

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 16:23	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	321202	01/23/20 12:45	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 14:59	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 16:20	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 16:20	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: Dup1-20200120

Lab Sample ID: 580-92218-3

Date Collected: 01/20/20 09:03

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 16:49	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	321202	01/23/20 13:11	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 15:12	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 16:32	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 16:32	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: LAI-MW2-20200120

Lab Sample ID: 580-92218-4

Date Collected: 01/20/20 10:40

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 17:16	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	321686	01/30/20 15:21	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 15:25	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 16:44	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 16:44	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Lab Chronicle

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

Job ID: 580-92218-1

Client Sample ID: LAI-MW1-20200120

Lab Sample ID: 580-92218-5

Date Collected: 01/20/20 12:05

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 17:42	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	321202	01/23/20 13:37	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 15:52	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 16:55	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 16:55	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: LAI-MW3-20200120

Lab Sample ID: 580-92218-6

Date Collected: 01/20/20 13:05

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 18:09	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	5	321202	01/23/20 14:57	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 16:19	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 17:07	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 17:07	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: RNS-MW2-20200120

Lab Sample ID: 580-92218-7

Date Collected: 01/20/20 14:52

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 18:35	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	321202	01/23/20 14:30	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 16:32	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 18:06	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 18:06	AAC	TAL SEA
Total/NA	Analysis	300.0		2	321229	01/23/20 10:20	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: MW2-20200120

Lab Sample ID: 580-92218-8

Date Collected: 01/20/20 14:40

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 19:01	TL1	TAL SEA
Total/NA	Analysis	8260C	RA	1	321202	01/23/20 14:04	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 16:46	CAS	TAL DEN

Eurofins TestAmerica, Seattle

Lab Chronicle

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

Job ID: 580-92218-1

Client Sample ID: MW2-20200120

Lab Sample ID: 580-92218-8

Date Collected: 01/20/20 14:40

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	300.0		1	321224	01/21/20 18:17	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 18:17	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: LAI-MW5-20200120

Lab Sample ID: 580-92218-9

Date Collected: 01/20/20 15:56

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 19:28	TL1	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 16:59	CAS	TAL DEN
Total/NA	Analysis	RSK-175	DL	3	483911	01/24/20 14:02	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 18:29	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 18:29	AAC	TAL SEA
Total/NA	Analysis	300.0		2	321229	01/23/20 10:32	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: RNS-MW6-42.5-20200120

Lab Sample ID: 580-92218-10

Date Collected: 01/20/20 16:52

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 19:54	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	321202	01/23/20 16:16	DCV	TAL SEA

Client Sample ID: RNS-MW6-52.5-20200120

Lab Sample ID: 580-92218-11

Date Collected: 01/20/20 17:36

Matrix: Water

Date Received: 01/21/20 08:45

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 20:21	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	321202	01/23/20 16:42	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 17:13	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 18:41	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 18:41	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
 TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001
 TAL SEA = Eurofins TestAmerica, Seattle, 5755 8th Street East, Tacoma, WA 98424, TEL (253)922-2310

Eurofins TestAmerica, Seattle

Accreditation/Certification Summary

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

Job ID: 580-92218-1

Laboratory: Eurofins TestAmerica, Seattle

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

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-17-20
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
300.0		Water	Chloride
300.0		Water	Nitrate as N
300.0		Water	Nitrite as N
300.0		Water	Sulfate

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21
A2LA	ISO/IEC 17025	2907.01	10-31-21
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	01-08-20 *
Arizona	State	AZ0713	12-20-20
Arkansas DEQ	State	19-047-0	06-01-20
California	State	2513	01-08-21
Connecticut	State	PH-0686	09-30-20
Florida	NELAP	E87667-57	06-30-20
Illinois	NELAP	2000172019-1	04-30-20
Iowa	State	IA#370	12-01-20
Kansas	NELAP	E-10166	04-30-20
Louisiana	NELAP	30785	06-30-20
Maine	State	2019011 (231)	03-03-21
Minnesota	NELAP	1788752	12-31-20
Nevada	State	CO000262020-1	07-31-20
New Hampshire	NELAP	205319	04-28-20
New Jersey	NELAP	190002	06-30-20
New York	NELAP	59923	04-01-20
North Carolina (WW/SW)	State	358	12-31-20
North Dakota	State	R-034	01-08-20 *
Oklahoma	State	2018-006	08-31-20
Oregon	NELAP	4025-011	01-08-21
Pennsylvania	NELAP	013	08-01-20
South Carolina	State	72002001	01-08-20 *
Texas	NELAP	T104704183-19-17	09-30-20
US Fish & Wildlife	Federal		07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal		03-26-21
USDA	US Federal Programs	P330-18-00099	03-26-21
Utah	NELAP	CO000262019-11	07-31-20
Virginia	NELAP	10490	06-14-20
Washington	State	C583-19	08-05-20
West Virginia DEP	State	354	11-30-20
Wisconsin	State	999615430	08-31-20
Wyoming (UST)	A2LA	2907.01	10-31-21

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

Accreditation/Certification Summary

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

Job ID: 580-92218-1

Laboratory: Eurofins TestAmerica, Pensacola

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

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	07-01-20
ANAB	ISO/IEC 17025	L2471	02-22-20
Arizona	State	AZ0710	01-13-21
Arkansas DEQ	State	88-0689	09-01-20
California	State	2510	07-01-20
Florida	NELAP	E81010	06-30-20
Georgia	State	E81010(FL)	06-30-20
Illinois	NELAP	004586	10-09-19 *
Iowa	State	367	08-01-20
Iowa	State Program	367	08-01-20
Kansas	NELAP	E-10253	08-16-20
Kentucky (UST)	State	53	06-30-20
Kentucky (UST)	State Program	53	06-30-20
Kentucky (WW)	State	KY98030	12-31-20
Louisiana	NELAP	30976	06-30-20
Louisiana	NELAP	30976	06-30-20
Louisiana (DW)	NELAP	LA017	12-31-20
Louisiana (DW)	State	LA017	12-31-20
Maryland	State	233	09-30-20
Massachusetts	State	M-FL094	06-30-20
Michigan	State	9912	05-06-20
Minnesota	NELAP	012-999-481	12-31-20
New Jersey	NELAP	FL006	06-30-20
North Carolina (WW/SW)	State	314	12-31-20
North Carolina (WW/SW)	State Program	314	12-31-20
Oklahoma	State	9810-186	08-31-20
Pennsylvania	NELAP	68-00467	01-31-20
Rhode Island	State	LAO00307	12-30-20
Rhode Island	State Program	LAO00307	12-30-20
South Carolina	State	96026002	06-30-20
South Carolina	State Program	96026	06-30-20
Tennessee	State	TN02907	06-30-20
Texas	NELAP	T104704286	09-30-20
US Fish & Wildlife	Federal	LE058448-0	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-18-00148	05-17-21
USDA	US Federal Programs	P330-18-00148	05-17-21
Virginia	NELAP	460166	06-14-20
Washington	State	C915	05-15-20
West Virginia DEP	State	136	06-30-20

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



ANALYTICAL REPORT

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

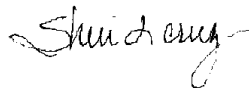
Laboratory Job ID: 580-92224-1

Client Project/Site: Sauro's - Groundwater Monitoring

For:

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

Attn: Sierra Mott



Authorized for release by:
1/31/2020 1:26:07 PM

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

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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.



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Case Narrative

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

Job ID: 580-92224-1

Job ID: 580-92224-1

Laboratory: Eurofins TestAmerica, Seattle

Narrative

Job Narrative 580-92224-1

Comments

No additional comments.

Receipt

The samples were received on 1/21/2020 12:39 PM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.6° C.

GC/MS VOA

Method 8260C: The following sample was diluted to bring the concentration of target analytes within the calibration range: MW13-20200121 (580-92224-1). 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

Methods 415.1, SM 5310B: The method blank for analytical batch 400-475493 contained TOC Result 2 above the method detection limit. This target analyte concentration was less than the reporting limit (RL); therefore, re-extraction and/or re-analysis of samples was not performed.

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

VOA Prep

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

Job ID: 580-92224-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	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

Job ID: 580-92224-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received	Asset ID
580-92224-1	MW13-20200121	Water	01/21/20 12:02	01/21/20 12:39	
580-92224-2	TripBlank-20200121	Water	01/21/20 00:01	01/21/20 12:39	

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



Chain-of-Custody Record

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

Date 1/21/2020
 Page 1 of 1

Turnaround Time:
 Standard
 Accelerated

Project Name Sauros Project No. 009404B.100.103
 Project Location/Event Tacoma, WA / Jan 2020
 Sampler's Name KAM/JEC
 Project Contact Sierra mott
 Send Results To Dani Jorgensen, Sierra mott

Testing Parameters

VOCs BalbOC
 AMEE RSK-175
 Chloride/Seawater
 Nitrate/Nitrite 300
 Sulfide SMY500
 TDC SM 5310B

Special Handling Requirements:

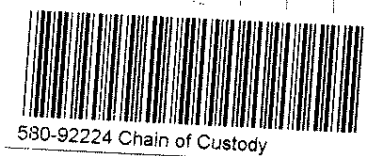
Loc: 580
92224 Instrument Method:
 Stored on ice: Yes / No

Sample I.D.	Date	Time	Matrix	No. of Containers
MW13-20200121	1/21/20	1202	Ag	9
tripBlank-20200121	-	-	Ag	3

Notes/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: A1 Cor: 1.6 ° Unc: 2.1 °
 Cooler Disc: Lg Blue
 Packing: FOO FedEx: _____
 Cust. Seal: Yes No UPS: _____
 Blue Ice, Wet, Dry, None Lab Cour: _____
 Other: Clidre

Relinquished by
 Signature [Signature]
 Printed Name Kelley Mach
 Company Landau Associates
 Date 1/21/2020 Time 1239

Received by
 Signature [Signature]
 Printed Name Blank insurp
 Company TA-Sea
 Date 1/21/20 Time 1239

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

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

Eurofins TestAmerica, Seattle

5755 8th Street East
Tacoma, WA 98424
Phone: 253-922-2310 Fax: 253-922-5047

Chain of Custody Record



Environment Testing
TestAmerica

Client Information (Sub Contract Lab)		Sampler:	Lab PM:	Carrier Tracking No(s):	COC No:			
Client Contact: Shipping/Receiving		Phone:	Cruz, Sheri L		580-74081.1			
Company: TestAmerica Laboratories, Inc.		E-Mail:	sherri.cruz@testamericainc.com	State of Origin: Washington	Page: Page 1 of 1			
Address: 3355 McLemore Drive, City: Pensacola State, Zip: FL, 32514 Phone: 850-474-1001(Tel) 850-478-2671(Fax) Email:		Accreditations Required (See note): State Program - Washington		Job #: 580-92224-1				
Due Date Requested: 1/31/2020		Analysis Requested			Preservation Codes: A - HCL M - Hexane B - NaOH N - None C - Zn Acetate O - AsNaO2 D - Nitric Acid P - Na2O4S E - NaHSO4 Q - Na2SO3 F - MeOH R - Na2S2O3 G - Amchlor S - H2SO4 H - Ascorbic Acid T - TSP Dodecahydrate I - Ice U - Acetone J - DI Water V - MCAA K - EDTA W - pH 4-5 L - EDA Z - other (specify) Other:			
TAT Requested (days):								
Project Name: Sauro's - Groundwater Monitoring		Project #: 58009425		Special Instructions/Note:				
Site:		SSOW#:						
Sample Identification - Client ID (Lab ID)		Sample Date	Sample Time	Sample Type (C=Comp, G=grab)	Matrix (W=water, S=solid, O=waste/oil, BT=Tissue, A=Air)	Field Filtered Sample (Yes or No)	Perform MS/MSD (Yes or No)	Total Number of containers
MW13-20200121 (580-92224-1)		1/21/20	12:02 Pacific		Water		SM5310B	1
Preservation Code:								
<p>Note: Since laboratory accreditations are subject to change, Eurofins TestAmerica 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/tests/matrix being analyzed, the samples must be shipped back to the Eurofins TestAmerica laboratory or other instructions will be provided. Any changes to accreditation status should be brought to Eurofins TestAmerica attention immediately. If all requested accreditations are current to date, return the signed Chain of Custody attesting to said compliance to Eurofins TestAmerica.</p>								
Possible Hazard Identification				Sample Disposal (A fee may be assessed if samples are retained longer than 1 month)				
Unconfirmed				<input type="checkbox"/> Return To Client <input type="checkbox"/> Disposal By Lab <input type="checkbox"/> Archive For _____ Months				
Deliverable Requested: I, II, III, IV, Other (specify)				Primary Deliverable Rank: 2		Special Instructions/QC Requirements:		
Empty Kit Relinquished by:		Date:	Time:	Method of Shipment:				
Relinquished by: Tom Blankens		Date/Time: 1/23/20	Company: TA-Sea	Received by:		Date/Time:	Company:	
Relinquished by:		Date/Time:	Company:	Received by:		Date/Time:	Company:	
Relinquished by:		Date/Time:	Company:	Received by: [Signature]		Date/Time: 1-24-20 0907	Company: JAPEN	
Custody Seals Intact: Δ Yes Δ No		Custody Seal No.:		Cooler Temperature(s) °C and Other Remarks: 0.7°C 1R-8				



Login Sample Receipt Checklist

Client: Landau & Associates, Inc.

Job Number: 580-92224-1

Login Number: 92224

List Number: 1

Creator: Hobbs, Kenneth F

List Source: Eurofins TestAmerica, Seattle

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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?	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 <math><6\text{mm}</math> (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: 580-92224-1

Login Number: 92224
List Number: 2
Creator: Lubin, Julius C

List Source: Eurofins TestAmerica, Denver
List Creation: 01/22/20 05:18 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq 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 <math><6\text{mm}</math> (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: 580-92224-1

Login Number: 92224
List Number: 3
Creator: Conrady, Hank W

List Source: Eurofins TestAmerica, Pensacola
List Creation: 01/24/20 06:20 PM

Question	Answer	Comment
Radioactivity wasn't checked or is \leq background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	0.7°C IR-8
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 <math><6\text{mm}</math> (1/4").	N/A	
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

Job ID: 580-92224-1

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

Client Sample ID: MW13-20200121

Date Collected: 01/21/20 12:02

Date Received: 01/21/20 12:39

Lab Sample ID: 580-92224-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	0.81		0.20		ug/L			01/22/20 15:56	1
cis-1,2-Dichloroethene	95		0.20		ug/L			01/22/20 15:56	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	101		80 - 120					01/22/20 15:56	1
Toluene-d8 (Surr)	99		80 - 120					01/22/20 15:56	1
1,2-Dichloroethane-d4 (Surr)	91		80 - 120					01/22/20 15:56	1
4-Bromofluorobenzene (Surr)	103		80 - 120					01/22/20 15:56	1
Dibromofluoromethane (Surr)	96		80 - 120					01/22/20 15:56	1

Client Sample ID: TripBlank-20200121

Date Collected: 01/21/20 00:01

Date Received: 01/21/20 12:39

Lab Sample ID: 580-92224-2

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Vinyl chloride	ND		0.20		ug/L			01/22/20 13:17	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 13:17	1
Trichloroethene	ND		0.20		ug/L			01/22/20 13:17	1
Tetrachloroethene	ND		0.20		ug/L			01/22/20 13:17	1
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120					01/22/20 13:17	1
Toluene-d8 (Surr)	100		80 - 120					01/22/20 13:17	1
1,2-Dichloroethane-d4 (Surr)	95		80 - 120					01/22/20 13:17	1
4-Bromofluorobenzene (Surr)	101		80 - 120					01/22/20 13:17	1
Dibromofluoromethane (Surr)	99		80 - 120					01/22/20 13:17	1

Client Sample Results

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

Job ID: 580-92224-1

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

Client Sample ID: MW13-20200121

Date Collected: 01/21/20 12:02

Date Received: 01/21/20 12:39

Lab Sample ID: 580-92224-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	130		2.0		ug/L			01/30/20 15:47	10
Tetrachloroethene	470		2.0		ug/L			01/30/20 15:47	10
Surrogate	%Recovery	Qualifier	Limits				Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	106		80 - 120					01/30/20 15:47	10
Toluene-d8 (Surr)	99		80 - 120					01/30/20 15:47	10
1,2-Dichloroethane-d4 (Surr)	109		80 - 120					01/30/20 15:47	10
4-Bromofluorobenzene (Surr)	97		80 - 120					01/30/20 15:47	10
Dibromofluoromethane (Surr)	105		80 - 120					01/30/20 15:47	10

Client Sample Results

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

Job ID: 580-92224-1

Method: RSK-175 - Dissolved Gases (GC)

Client Sample ID: MW13-20200121

Date Collected: 01/21/20 12:02

Date Received: 01/21/20 12:39

Lab Sample ID: 580-92224-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Methane	0.0062		0.0050		mg/L			01/23/20 14:45	1
Ethylene	ND		0.0050		mg/L			01/23/20 14:45	1
Ethane	ND		0.0050		mg/L			01/23/20 14:45	1
Acetylene	ND		0.0050		mg/L			01/23/20 14:45	1

Client Sample Results

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

Job ID: 580-92224-1

General Chemistry

Client Sample ID: MW13-20200121

Date Collected: 01/21/20 12:02

Date Received: 01/21/20 12:39

Lab Sample ID: 580-92224-1

Matrix: Water

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Chloride	17		0.90		mg/L			01/21/20 16:09	1
Nitrite as N	ND		0.40		mg/L			01/21/20 16:09	1
Nitrate as N	0.65		0.20		mg/L			01/21/20 16:09	1
Sulfate	29		1.2		mg/L			01/21/20 16:09	1
Sulfide	0.37		0.050		mg/L			01/25/20 14:22	1
Total Organic Carbon	1.2		1.0		mg/L			01/25/20 12:21	1

QC Sample Results

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

Job ID: 580-92224-1

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

Lab Sample ID: MB 580-321148/8
Matrix: Water
Analysis Batch: 321148

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			01/22/20 12:51	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/22/20 12:51	1
Trichloroethene	ND		0.20		ug/L			01/22/20 12:51	1
Tetrachloroethene	ND		0.20		ug/L			01/22/20 12:51	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
Trifluorotoluene (Surr)	102		80 - 120		01/22/20 12:51	1
Toluene-d8 (Surr)	99		80 - 120		01/22/20 12:51	1
1,2-Dichloroethane-d4 (Surr)	98		80 - 120		01/22/20 12:51	1
4-Bromofluorobenzene (Surr)	102		80 - 120		01/22/20 12:51	1
Dibromofluoromethane (Surr)	98		80 - 120		01/22/20 12:51	1

Lab Sample ID: LCS 580-321148/5
Matrix: Water
Analysis Batch: 321148

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	6.23		ug/L		125	52 - 128
cis-1,2-Dichloroethene	5.00	5.78		ug/L		116	72 - 130
Trichloroethene	5.00	5.56		ug/L		111	72 - 136
Tetrachloroethene	5.00	5.49		ug/L		110	75 - 131

Surrogate	LCS %Recovery	LCS Qualifier	Limits
Trifluorotoluene (Surr)	96		80 - 120
Toluene-d8 (Surr)	100		80 - 120
1,2-Dichloroethane-d4 (Surr)	96		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	100		80 - 120

Lab Sample ID: LCSD 580-321148/6
Matrix: Water
Analysis Batch: 321148

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	6.27		ug/L		125	52 - 128	1	21
cis-1,2-Dichloroethene	5.00	5.82		ug/L		116	72 - 130	1	20
Trichloroethene	5.00	5.55		ug/L		111	72 - 136	0	14
Tetrachloroethene	5.00	5.48		ug/L		110	75 - 131	0	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
Trifluorotoluene (Surr)	97		80 - 120
Toluene-d8 (Surr)	101		80 - 120
1,2-Dichloroethane-d4 (Surr)	97		80 - 120
4-Bromofluorobenzene (Surr)	104		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

QC Sample Results

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

Job ID: 580-92224-1

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

Lab Sample ID: MB 580-321686/8
Matrix: Water
Analysis Batch: 321686

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

Analyte	MB	MB	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
	Result	Qualifier							
Vinyl chloride	ND		0.20		ug/L			01/30/20 12:53	1
cis-1,2-Dichloroethene	ND		0.20		ug/L			01/30/20 12:53	1
Trichloroethene	ND		0.20		ug/L			01/30/20 12:53	1
Tetrachloroethene	ND		0.20		ug/L			01/30/20 12:53	1

Surrogate	MB	MB	Limits	Prepared	Analyzed	Dil Fac
	%Recovery	Qualifier				
Trifluorotoluene (Surr)	107		80 - 120		01/30/20 12:53	1
Toluene-d8 (Surr)	100		80 - 120		01/30/20 12:53	1
1,2-Dichloroethane-d4 (Surr)	110		80 - 120		01/30/20 12:53	1
4-Bromofluorobenzene (Surr)	97		80 - 120		01/30/20 12:53	1
Dibromofluoromethane (Surr)	103		80 - 120		01/30/20 12:53	1

Lab Sample ID: LCS 580-321686/5
Matrix: Water
Analysis Batch: 321686

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

Analyte	Spike Added	LCS	LCS	Unit	D	%Rec	%Rec. Limits
		Result	Qualifier				
Vinyl chloride	5.00	4.90		ug/L		98	52 - 128
cis-1,2-Dichloroethene	5.00	5.32		ug/L		106	72 - 130
Trichloroethene	5.00	4.97		ug/L		99	72 - 136
Tetrachloroethene	5.00	4.88		ug/L		98	75 - 131

Surrogate	LCS	LCS	Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	99		80 - 120
Toluene-d8 (Surr)	103		80 - 120
1,2-Dichloroethane-d4 (Surr)	99		80 - 120
4-Bromofluorobenzene (Surr)	102		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

Lab Sample ID: LCSD 580-321686/6
Matrix: Water
Analysis Batch: 321686

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

Analyte	Spike Added	LCSD	LCSD	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
		Result	Qualifier						
Vinyl chloride	5.00	4.76		ug/L		95	52 - 128	3	21
cis-1,2-Dichloroethene	5.00	5.26		ug/L		105	72 - 130	1	20
Trichloroethene	5.00	4.91		ug/L		98	72 - 136	1	14
Tetrachloroethene	5.00	4.74		ug/L		95	75 - 131	3	20

Surrogate	LCSD	LCSD	Limits
	%Recovery	Qualifier	
Trifluorotoluene (Surr)	97		80 - 120
Toluene-d8 (Surr)	102		80 - 120
1,2-Dichloroethane-d4 (Surr)	102		80 - 120
4-Bromofluorobenzene (Surr)	101		80 - 120
Dibromofluoromethane (Surr)	101		80 - 120

QC Sample Results

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

Job ID: 580-92224-1

Method: RSK-175 - Dissolved Gases (GC)

Lab Sample ID: MB 280-483796/6
Matrix: Water
Analysis Batch: 483796

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			01/23/20 11:22	1
Ethylene	ND		0.0050		mg/L			01/23/20 11:22	1
Ethane	ND		0.0050		mg/L			01/23/20 11:22	1
Acetylene	ND		0.0050		mg/L			01/23/20 11:22	1

Lab Sample ID: LCS 280-483796/4
Matrix: Water
Analysis Batch: 483796

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	0.0758		mg/L		104	75 - 125
Ethylene	0.128	0.129		mg/L		101	75 - 125
Ethane	0.137	0.140		mg/L		102	75 - 125
Acetylene	0.119	0.127		mg/L		107	75 - 125

Lab Sample ID: LCSD 280-483796/5
Matrix: Water
Analysis Batch: 483796

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	0.0743		mg/L		102	75 - 125	2	20
Ethylene	0.128	0.130		mg/L		102	75 - 125	1	20
Ethane	0.137	0.140		mg/L		102	75 - 125	0	20
Acetylene	0.119	0.134		mg/L		113	75 - 125	5	20

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-321224/3
Matrix: Water
Analysis Batch: 321224

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Nitrite as N	ND		0.40		mg/L			01/21/20 15:33	1
Nitrate as N	ND		0.20		mg/L			01/21/20 15:33	1

Lab Sample ID: LCS 580-321224/4
Matrix: Water
Analysis Batch: 321224

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Nitrite as N	5.00	5.02		mg/L		100	90 - 110
Nitrate as N	5.00	5.03		mg/L		101	90 - 110

Lab Sample ID: LCSD 580-321224/5
Matrix: Water
Analysis Batch: 321224

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
Nitrite as N	5.00	5.04		mg/L		101	90 - 110	0	15
Nitrate as N	5.00	5.03		mg/L		101	90 - 110	0	15

Eurofins TestAmerica, Seattle

QC Sample Results

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

Job ID: 580-92224-1

Method: 300.0 - Anions, Ion Chromatography

Lab Sample ID: MB 580-321229/3
 Matrix: Water
 Analysis Batch: 321229

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			01/21/20 15:33	1
Sulfate	ND		1.2		mg/L			01/21/20 15:33	1

Lab Sample ID: LCS 580-321229/4
 Matrix: Water
 Analysis Batch: 321229

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	51.8		mg/L		104	90 - 110
Sulfate	50.0	52.7		mg/L		105	90 - 110

Lab Sample ID: LCSD 580-321229/5
 Matrix: Water
 Analysis Batch: 321229

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	51.8		mg/L		104	90 - 110	0	15
Sulfate	50.0	50.9		mg/L		102	90 - 110	4	15

Method: SM 4500 S2 D - Sulfide, Total

Lab Sample ID: MB 280-484003/10
 Matrix: Water
 Analysis Batch: 484003

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			01/25/20 14:22	1

Lab Sample ID: LCS 280-484003/9
 Matrix: Water
 Analysis Batch: 484003

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfide	0.466	0.494		mg/L		106	81 - 122

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

Lab Sample ID: MB 400-475493/3
 Matrix: Water
 Analysis Batch: 475493

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			01/25/20 12:21	1

Lab Sample ID: LCS 400-475493/5
 Matrix: Water
 Analysis Batch: 475493

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	20.0	19.3		mg/L		97	85 - 115

Eurofins TestAmerica, Seattle

QC Sample Results

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

Job ID: 580-92224-1

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

Lab Sample ID: MRL 400-475493/2
Matrix: Water
Analysis Batch: 475493

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

Analyte	Spike Added	MRL Result	MRL Qualifier	Unit	D	%Rec	%Rec. Limits
Total Organic Carbon	1.00	ND		mg/L		92	50 - 150

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

Lab Chronicle

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

Job ID: 580-92224-1

Client Sample ID: MW13-20200121

Lab Sample ID: 580-92224-1

Date Collected: 01/21/20 12:02

Matrix: Water

Date Received: 01/21/20 12:39

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 15:56	TL1	TAL SEA
Total/NA	Analysis	8260C	DL	10	321686	01/30/20 15:47	DCV	TAL SEA
Total/NA	Analysis	RSK-175		1	483796	01/23/20 14:45	CAS	TAL DEN
Total/NA	Analysis	300.0		1	321224	01/21/20 16:09	AAC	TAL SEA
Total/NA	Analysis	300.0		1	321229	01/21/20 16:09	AAC	TAL SEA
Total/NA	Analysis	SM 4500 S2 D		1	484003	01/25/20 14:22	JDR	TAL DEN
Total/NA	Analysis	SM 5310B		1	475493	01/25/20 12:21	RRC	TAL PEN

Client Sample ID: TripBlank-20200121

Lab Sample ID: 580-92224-2

Date Collected: 01/21/20 00:01

Matrix: Water

Date Received: 01/21/20 12:39

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260C		1	321148	01/22/20 13:17	TL1	TAL SEA

Laboratory References:

TAL DEN = Eurofins TestAmerica, Denver, 4955 Yarrow Street, Arvada, CO 80002, TEL (303)736-0100
 TAL PEN = Eurofins TestAmerica, Pensacola, 3355 McLemore Drive, Pensacola, FL 32514, TEL (850)474-1001
 TAL SEA = Eurofins 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

Job ID: 580-92224-1

Laboratory: Eurofins TestAmerica, Seattle

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

Authority	Program	Identification Number	Expiration Date
Washington	State	C553	02-17-20
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
300.0		Water	Chloride
300.0		Water	Nitrate as N
300.0		Water	Nitrite as N
300.0		Water	Sulfate

Laboratory: Eurofins TestAmerica, Denver

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

Authority	Program	Identification Number	Expiration Date
A2LA	Dept. of Defense ELAP	2907.01	10-31-21
A2LA	ISO/IEC 17025	2907.01	10-31-21
Alabama	State Program	40730	09-30-12 *
Alaska (UST)	State	18-001	01-08-20 *
Arizona	State	AZ0713	12-20-20
Arkansas DEQ	State	19-047-0	06-01-20
California	State	2513	01-08-21
Connecticut	State	PH-0686	09-30-20
Florida	NELAP	E87667-57	06-30-20
Illinois	NELAP	2000172019-1	04-30-20
Iowa	State	IA#370	12-01-20
Kansas	NELAP	E-10166	04-30-20
Louisiana	NELAP	30785	06-30-20
Maine	State	2019011 (231)	03-03-21
Minnesota	NELAP	1788752	12-31-20
Nevada	State	CO000262020-1	07-31-20
New Hampshire	NELAP	205319	04-28-20
New Jersey	NELAP	190002	06-30-20
New York	NELAP	59923	04-01-20
North Carolina (WW/SW)	State	358	12-31-20
North Dakota	State	R-034	01-08-20 *
Oklahoma	State	2018-006	08-31-20
Oregon	NELAP	4025-011	01-08-21
Pennsylvania	NELAP	013	08-01-20
South Carolina	State	72002001	01-08-20 *
Texas	NELAP	T104704183-19-17	09-30-20
US Fish & Wildlife	Federal		07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal		03-26-21
USDA	US Federal Programs	P330-18-00099	03-26-21
Utah	NELAP	CO000262019-11	07-31-20
Virginia	NELAP	10490	06-14-20
Washington	State	C583-19	08-05-20
West Virginia DEP	State	354	11-30-20
Wisconsin	State	999615430	08-31-20
Wyoming (UST)	A2LA	2907.01	10-31-21

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

Accreditation/Certification Summary

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

Job ID: 580-92224-1

Laboratory: Eurofins TestAmerica, Pensacola

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

Authority	Program	Identification Number	Expiration Date
Alabama	State	40150	07-01-20
ANAB	ISO/IEC 17025	L2471	02-22-20
Arizona	State	AZ0710	01-13-21
Arkansas DEQ	State	88-0689	09-01-20
California	State	2510	07-01-20
Florida	NELAP	E81010	06-30-20
Georgia	State	E81010(FL)	06-30-20
Illinois	NELAP	004586	10-09-19 *
Iowa	State	367	08-01-20
Iowa	State Program	367	08-01-20
Kansas	NELAP	E-10253	08-16-20
Kentucky (UST)	State	53	06-30-20
Kentucky (UST)	State Program	53	06-30-20
Kentucky (WW)	State	KY98030	12-31-20
Louisiana	NELAP	30976	06-30-20
Louisiana	NELAP	30976	06-30-20
Louisiana (DW)	NELAP	LA017	12-31-20
Louisiana (DW)	State	LA017	12-31-20
Maryland	State	233	09-30-20
Massachusetts	State	M-FL094	06-30-20
Michigan	State	9912	05-06-20
Minnesota	NELAP	012-999-481	12-31-20
New Jersey	NELAP	FL006	06-30-20
North Carolina (WW/SW)	State	314	12-31-20
North Carolina (WW/SW)	State Program	314	12-31-20
Oklahoma	State	9810-186	08-31-20
Pennsylvania	NELAP	68-00467	01-31-20
Rhode Island	State	LAO00307	12-30-20
Rhode Island	State Program	LAO00307	12-30-20
South Carolina	State	96026002	06-30-20
South Carolina	State Program	96026	06-30-20
Tennessee	State	TN02907	06-30-20
Texas	NELAP	T104704286	09-30-20
US Fish & Wildlife	Federal	LE058448-0	07-31-20
US Fish & Wildlife	US Federal Programs	058448	07-31-20
USDA	Federal	P330-18-00148	05-17-21
USDA	US Federal Programs	P330-18-00148	05-17-21
Virginia	NELAP	460166	06-14-20
Washington	State	C915	05-15-20
West Virginia DEP	State	136	06-30-20

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

Eurofins TestAmerica, Seattle