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Subject: Lena Rd Landfill (Permit No. 39884-021-SO-01) Technical Report
Attachments: Lena Road Landfill_Technical Report_20201130.pdf

Kate and Steven:

Please see the attached *Lena Road Landfill Technical Water Quality Monitoring Report First Half 2018 Through First Half 2020*. Please let us know if you have any questions.

Thank-you,

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Lena Road Landfill Technical Water Quality Monitoring Report First Half 2018 Through First Half 2020

Manatee County Utilities Department
Solid Waste Division
3333 Lena Road
Bradenton, Florida 34211

SCS ENGINEERS

09217088.21 | November 30, 2020

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Lena Road Landfill Technical Water Quality Monitoring Report
First Half 2018 Through First Half 2020

Submitted to:

MANATEE COUNTY
Manatee County Utilities Department
Solid Waste Division
3333 Lena Road
Bradenton, Florida 34211

Prepared on behalf of:

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11/30/2020

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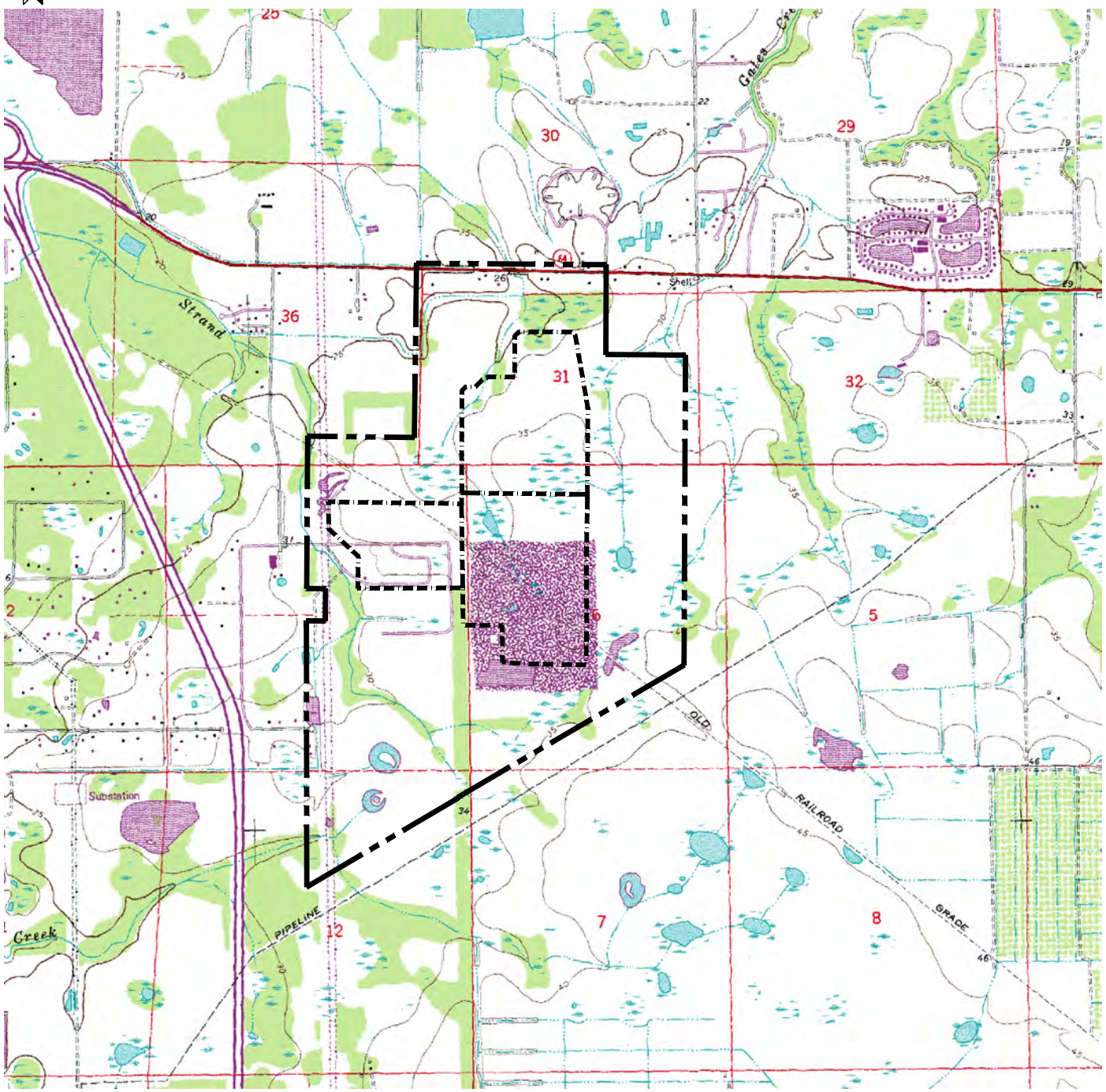
1 INTRODUCTION

SCS Engineers (SCS) prepared this technical water quality monitoring report for the Lena Road Landfill (LRL). The LRL is located in Section 27, Township 33 South, Range 18 East in northern Manatee County (Figure 1-1). The LRL encompasses 316 acres of disposal area and other facilities. It was constructed with a perimeter slurry wall. The current permit number 39884-021-SO-01 calls for the water quality monitoring program to include monitoring of surface water and groundwater in the surficial aquifer.

This report was prepared in accordance with Florida Department of Environmental Protection (FDEP) Permit/certification No. 39884-021-SO-01, Water Quality Monitoring Plan; FDEP Standard Operating Procedures (Chapter 62-160, Florida Administrative Code (FAC)); and FDEP Solid Waste Water Quality Monitoring Requirements (Chapter 62-701.510(8)(b) FAC). Monitoring locations are shown on Figure 1-2. This technical report includes a summary and evaluation of the groundwater analytical data from monitoring events performed at the LRL from March 2018 through the most recent monitoring event, April 2020 (reporting period). The following lists the specific data and information included in this report.

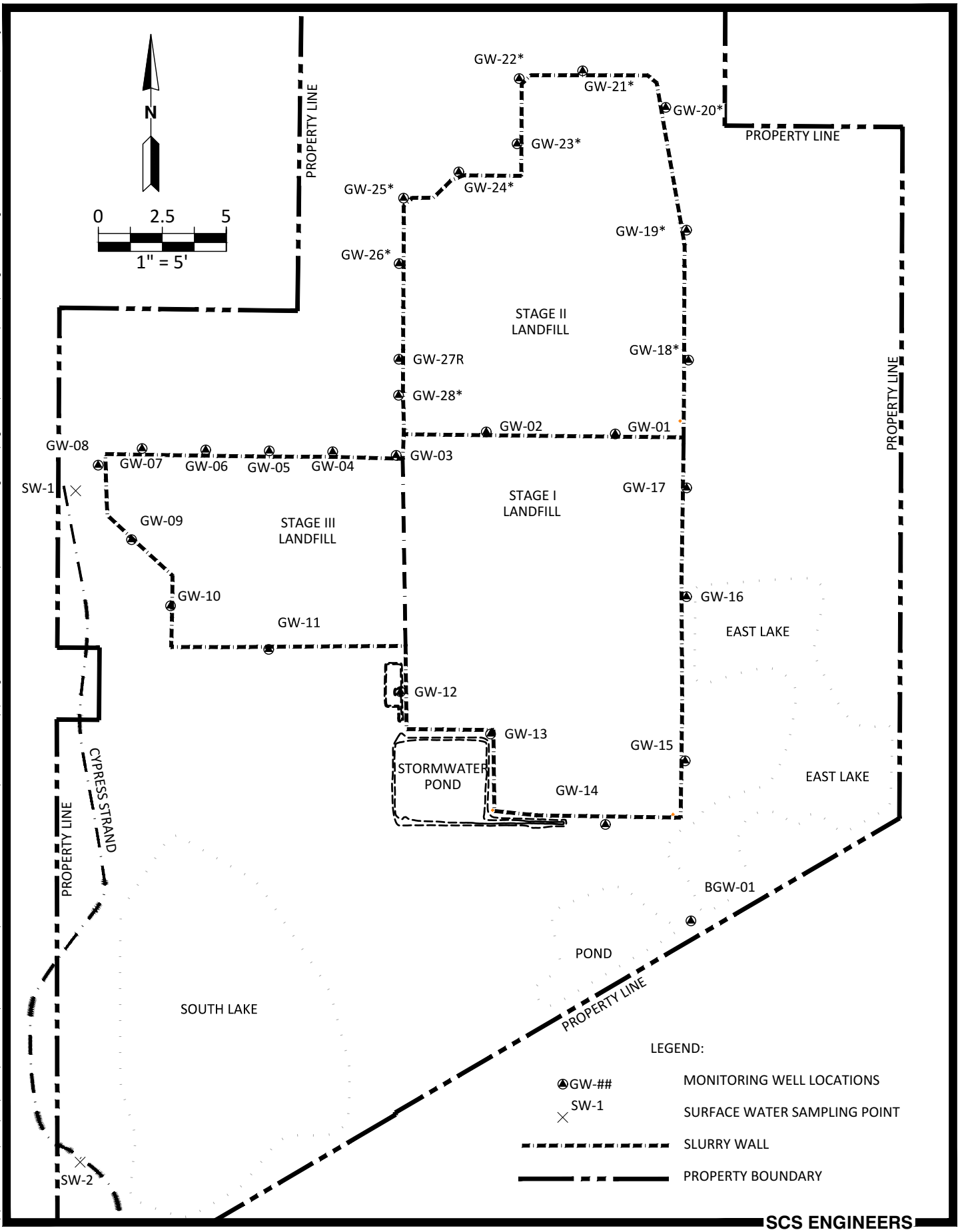
- Tabular displays of data which summarize detected parameters, graphical displays of leachate parameters detected, and hydrographs for all monitoring wells;
- Trend analyses of monitoring parameters consistently detected;
- Comparisons between background water quality and water quality in detection and compliance wells;
- Correlations between related parameters such as total dissolved solids (TDS) and specific conductance;
- Discussion of erratic and/or poorly correlated data;
- An interpretation of the groundwater contour maps, including an evaluation of groundwater flow rates; and
- An evaluation of the adequacy of the water quality monitoring frequency and sampling locations based upon site conditions.

Water quality sampling and physical readings and measurements were performed by Pace Analytical Services, Inc. during the reporting period. Fieldwork, sampling methodologies, data evaluation, and data Quality Assurance/Quality Control (QA/QC) were conducted in accordance with Chapter 62-160, FAC, Standard Operating Procedures (DEP-SOP-001/01), the facility's Water Quality Monitoring Plan, and the LRL solid waste permit. Laboratory analyses were performed in accordance with Chapter 62-160, FAC DEP-SOP-002/01 and the LRL solid waste permit.



SCS ENGINEERS

FIGURE 1-1. SITE LOCATION MAP
LENA ROAD LANDFILL
MANATEE COUNTY, FLORIDA



\\tam-fs01\Tampa\Files\PROJECT\09217088.10\Task 1 - Groundwater\Lena Road\Spring 2019 Lena Road\Tables and Figures\Figures\contour maps_Spring 2019.dwg Jul 02, 2019 - 2:21pm Layout Name: 1-2

FIGURE 1-2. SITE MAP
LENA ROAD LANDFILL
MANATEE COUNTY, FLORIDA

2 GEOLOGIC AND HYDROGEOLOGIC CHARACTERISTICS

Figure 1-1 shows the topography of the LRL site and region. The regional geologic units, which comprise the subsurface beneath the site consist of, in descending order, the undifferentiated Pliocene to Recent age deposits, the Hawthorn Group, the Suwannee Limestone, the Ocala Group, and the Avon Park Limestone. The Pliocene to recent age deposits are unconsolidated sand, silt, and clay to a depth of approximately 30 feet below land surface (bls) in Manatee County. The Pliocene to recent age deposits overlay the Hawthorn Group, a heterogeneous sequence of phosphatic, sandy, clayey, calcareous, and dolomitic sediments, which is 200-300 feet thick throughout the region. Underlying the Hawthorn Group, in descending order, are the Oligocene Suwannee Limestone, the Eocene Ocala Group, and the Avon Park Limestone. These formations generally consist of tan, granular limestone and interbedded dolomite, and collectively reach a thickness of approximately 1,600 feet in Manatee County.

Local hydrogeology is characterized by three aquifers underlying Manatee County and the LRL site:

- Surficial aquifer system
- Intermediate aquifer system
- Floridan aquifer system

The surficial aquifer system is composed of the Pliocene to Recent age deposits. The surficial aquifer is generally undeveloped as a source of potable water in Manatee County, with only a small volume used for domestic supply, lawn irrigation, or stock watering. The direction of groundwater flow in the surficial aquifer in Manatee County is generally to the west and south. This pattern is interrupted locally where the aquifer discharges into streams, lakes, or low swampy areas.

The intermediate aquifer system occurs within water producing units of the Hawthorn Group and supplies most of the water for domestic and irrigation uses in Manatee County. The quality of water in the intermediate aquifer is generally good except near the coast where saltwater intrusion has occurred. In the central portion of the County, concentrations of dissolved solids range from approximately 250 to 400 parts per million.

The Floridan aquifer system in Manatee County occurs within the carbonates of the Tampa Limestone, Suwannee Limestone, the Ocala Group, and the Avon Park Limestone. Water from the Floridan aquifer is used primarily for irrigation, with minor amounts used for industrial purposes, and occasionally for public and domestic water supplies.

GROUNDWATER FLOW ASSESSMENT

For this technical report, SCS performed a groundwater flow assessment of the surficial aquifer for the reporting period. Activities included compilation of depth to groundwater measurements, calculation of groundwater elevations, and preparation of site figures depicting groundwater contours and the estimated groundwater flow direction. Water table and potentiometric maps generated for available monitoring events are presented in Appendix A. Potentiometric maps from March 2018 through March 2020 were prepared by SCS using groundwater level elevations collected from the surficial wells during the reporting period. The maps were reviewed by a Florida licensed professional geologist.

GROUNDWATER VELOCITY

The velocity of groundwater in the surficial aquifer beneath the site was calculated using a form of Darcy's law, $V = k(dh/dl)/\theta$, where:

- V is the average velocity of groundwater (ft/day).
- k is the aquifer horizontal hydraulic conductivity (ft/day).
- dh/dl is the aquifer hydraulic gradient (ft/ft).
- θ is the effective porosity of the aquifer (unitless).

Groundwater velocities were calculated from June 2020 water-level measurements and the hydraulic characteristics reported in a 1982 evaluation of the LRL.[1] These characteristics include a hydraulic conductivity range of 0.0049 ft/day to 0.00045 ft/day and porosity of 0.2. Based on the lithologic descriptions of the surficial aquifer, the overall site-wide average of hydraulic conductivity was estimated at 0.0031 ft/day based on the 1982 evaluation. Therefore, the average velocity of the surficial aquifer was calculated at approximately 0.00003 feet/day or 0.01 feet per year, as presented in Table 2-1. These values are one to two orders of magnitude lower than what is typically seen in the surficial aquifer, and indicate that movement of groundwater and potential of contaminant migration are low.

Table 2-1. April 2020 Groundwater Velocity Calculations, Lena Road Landfill, Manatee County, Florida

Aquifer	Hydraulic Conductivity (feet/day)	Change in head (dh) (feet)	Distance (dl)(feet)	Hydraulic Gradient (dh/dl) (feet)	Porosity (n_e)	Velocity (feet/day)	Velocity (feet/year)	Comments
Surficial	0.003075	3.23	1920	0.0017	0.2	0.000026	0.0094	Between GW-12 and GW-10 ft contours
Surficial	0.003075	2.23	1050	0.0021	0.2	0.000033	0.012	Between GW-17 and GW-18 ft contours

Notes:

1. dh and dl calculations used values from the Lena Potentiometric map October 2017
2. Hydraulic Conductivity and porosity values derived from Ardaman and Associates, Inc. site hydrogeological investigation (1982)
3. Velocity calculation based on modified Darcy equation.

3 MONITORING PROGRAM

According to LRL's permit, the monitoring program consists of monitoring the surficial aquifer groundwater quality at one background well (BGW-1), and 25 compliance wells (GW-3 through GW-26, and GW-27R, listed in Table 3-1. Well locations are shown on Figure 1-2. Construction details for the active monitoring wells comprising the monitoring system are included in Table 3-2.

Table 3-1. Active Surficial Aquifer Monitoring Wells at the Lena Road Landfill

Background Monitoring Wells	
BGW-1	
Detection Monitoring Wells	
GW-1*	GW-15
GW-2*	GW-16
GW-3	GW-17
GW-4	GW-18**
GW-5	GW-19**
GW-6	GW-20**
GW-7	GW-21**
GW-8	GW-22**
GW-9	GW-23**
GW-10	GW-24**
GW-11	GW-25**
GW-12	GW-26**
GW-13	GW-27R**
GW-14	GW-28**
Surface Water	
SW-1	
SW-2	

Notes:

1. * = Wells GW-1 and GW-2 were abandoned on March 27, 2016.
2. ** = Wells GW-18 through GW-28 were installed on March 18, 2016.

TABLE 3-2. EXISTING MONITORING WELL LOCATIONS AND CONSTRUCTION DETAILS, LENA ROAD LANDFILL, MANATEE COUNTY, FLORIDA

WACS ID	Water Quality Monitoring Site ID	Well Type	Aquifer Monitored	Top of Casing Elevation (NGVD)	Well Diameter (inches)	Screen Slot Size (inch)	Screen Length (feet)	Top of Screen (Feet BTOC)	Bottom of Screen (Feet BTOC)	Top of Screen (Feet NGVD)	Bottom of Screen (Feet NGVD)	Northing (NAD 1983)	Easting (NAD 1983)	Latitude (NAD 1983)	Longitude (NAD 1983)
21593	GW-1	DE	Surficial	38.68	2	0.010	15	3.92	18.92	34.76	19.76	1141555.84	514101.29	27° 28' 24.676"	82° 26' 17.304"
21594	GW-2	DE	Surficial	40.92	2	0.010	15	3.91	18.91	37.01	22.01	1141565.32	512079.53	27° 28' 24.698"	82° 26' 39.751"
21595	GW-3	DE	Surficial	39.40	2	0.010	15	4.06	19.06	35.34	20.34	1141382.25	511374.68	27° 28' 22.860"	82° 26' 47.569"
21596	GW-4	DE	Surficial	40.53	2	0.010	15	4.13	19.13	36.40	21.40	1141410.65	510878.61	27° 28' 23.124"	82° 26' 53.078"
21597	GW-5	DE	Surficial	39.90	2	0.010	15	4.16	19.16	35.74	20.74	1141415.37	510383.90	27° 28' 23.153"	82° 26' 58.570"
21598	GW-6	DE	Surficial	38.95	2	0.010	15	4.04	19.04	34.91	19.91	1141424.68	509886.01	27° 28' 23.227"	82° 27' 04.099"
21599	GW-7	DE	Surficial	39.49	2	0.010	15	5.04	20.04	34.45	19.45	1141435.59	509387.99	27° 28' 23.318"	82° 27' 09.628"
21600	GW-8	DE	Surficial	39.75	2	0.010	15	4.82	19.82	34.93	19.93	1141305.40	509044.79	27° 28' 22.016"	82° 27' 13.433"
21601	GW-9	DE	Surficial	39.65	2	0.010	15	5.06	20.06	34.59	19.59	1140722.84	509305.79	27° 28' 16.256"	82° 27' 10.512"
21602	GW-10	DE	Surficial	38.34	2	0.010	15	4.65	19.65	33.69	18.69	1140206.62	509611.46	27° 28' 11.156"	82° 27' 07.098"
21603	GW-11	DE	Surficial	38.26	2	0.010	15	6.11	21.11	32.15	17.15	1139864.83	510378.37	27° 28' 07.799"	82° 26' 58.570"
21604	GW-12	DE	Surficial	42.09	2	0.010	15	4.77	19.77	37.32	22.32	1139527.51	511409.94	27° 28' 04.495"	82° 26' 47.104"
21605	GW-13	DE	Surficial	44.79	2	0.010	15	4.72	19.72	40.07	25.07	1139203.08	512112.46	27° 28' 01.307"	82° 26' 39.292"
21606	GW-14	DE	Surficial	39.63	2	0.010	15	4.65	19.65	34.98	19.98	1138496.26	513011.13	27° 28' 54.339"	82° 26' 29.287"
21607	GW-15	DE	Surficial	42.33	2	0.010	15	4.50	19.50	37.83	22.83	1138992.94	513634.35	27° 27' 59.280"	82° 26' 22.388"
21608	GW-16	DE	Surficial	44.41	2	0.010	15	4.65	19.65	39.76	24.76	1140276.77	513645.17	27° 28' 11.994"	82° 26' 22.318"
21609	GW-17	DE	Surficial	42.19	2	0.010	15	5.30	20.30	36.89	21.89	1141976.95	513542.64	27° 28' 28.826"	82° 26' 23.523"
27495	GW-18	DE	Surficial	41.76	2	0.010	14.5	9.26	24.26	32.5	17.5	1142169.68	513662.64	27° 28' 30.739"	82° 26' 22.199"
27496	GW-19	DE	Surficial	41.20	2	0.010	14.5	10.7	25.7	30.5	15.5	1143144.92	513646.150	27° 28' 40.396"	82° 26' 22.420"
27497	GW-20	DE	Surficial	41.00	2	0.010	14.5	8.5	23.5	32.5	17.5	1144104.750	513482.920	27° 28' 49.895"	82° 26' 24.270"
27498	GW-21	DE	Surficial	40.94	2	0.010	14.5	8.44	23.44	32.5	17.5	1144390.55	512833.490	27° 28' 52.702"	82° 26' 31.492"
27499	GW-22	DE	Surficial	41.53	2	0.010	14.5	8.03	23.03	33.5	18.5	1144329.50	512336.37	27° 28' 52.080"	82° 26' 37.009"
27500	GW-23	DE	Surficial	40.91	2	0.010	14.5	7.41	22.41	33.5	18.5	1143811.98	512321.55	27° 28' 46.955"	82° 26' 37.153"
27501	GW-24	DE	Surficial	41.37	2	0.010	14.5	6.87	21.87	34.5	19.5	1143598.33	511865.48	27° 28' 44.823"	82° 26' 42.209"
27502	GW-25	DE	Surficial	41.11	2	0.010	14.5	6.61	21.61	34.5	19.5	1143393.13	511433.06	27° 28' 42.776"	82° 26' 47.001"
27503	GW-26	DE	Surficial	41.44	2	0.010	14.5	8.94	23.94	32.5	17.5	1142883.01	511397.49	27° 28' 37.723"	82° 26' 47.376"
27504	GW-27R	DE	Surficial	40.90	2	0.010	14.5	7.4	22.4	33.5	18.5	1142133.55	511396.54	27° 28' 30.301"	82° 26' 47.357"
21610	BGW-1	BG	Surficial	47.57	2	0.010	15	4.8	19.8	42.77	27.77	1137577.96	513559.24	27° 27' 45.265"	82° 26' 23.166"

Notes:
1. Well information was obtained from Atkins.
2. NGVD = National Geodetic Vertical Datum of 1929.
3. NAD 1983 = North American Datum of 1983.
4. WACS = State Water Assurance Compliance System.
5. BTOC = Below Top of Casing.
6. DE = Detection.
7. BG = Background.

The current permit requires semi-annual sampling of the background and compliance monitoring wells for the field and laboratory parameters listed below.

Field Parameters

- Static water level before purging
- Specific conductance
- pH
- Dissolved oxygen
- Turbidity
- Temperature
- Color and sheens by observation

Laboratory Parameters

- Total ammonia-nitrogen
- Chloride
- Iron
- Mercury
- Nitrate
- Sodium
- TDS
- Additional parameters listed in Title 40 Code of Federal Regulations (CFR) Part 258, Appendix I

SURFACE WATER MONITORING PROGRAM

Surface water is monitored in the Cypress Stand. Surface water monitoring sites include one downstream location (SW-1) and one upstream location (SW-2). The sampling site characteristics are described in Table 1-1, and the surface water sampling locations are shown on Figure 1. Electronic water level monitoring devices have been installed at the pump stations in the East Lake and the South Lake (see Figure 1), and are used to measure water levels at the surface water bodies near the landfill. The water level data are reported in conjunction with the groundwater level data.

Semi-annual surface water samples are collected from SW-1 and SW-2 for the following parameters:

Field Parameters

- Surface Water Elevation
- Specific conductance
- pH
- Dissolved oxygen
- Turbidity
- Temperature
- Colors and sheens (by observation)

Laboratory Parameters (Unfiltered)

- Biochemical Oxygen Demand (BOD)
- Chemical Oxygen Demand (COD)
- Total Organic Carbon (TOC)
- Chlorophyll A
- Total Hardness (as milligrams per liter (mg/L) $CaCO_3$)
- Iron
- Mercury
- Nitrate
- Total Nitrogen
- Un-ionized ammonia
- Total phosphorus (as mg/L P)
- TDS
- Total Suspended Solids (TSS)
- Fecal Coliform
- Additional parameters listed in 40 CFR 258, Appendix I

SURFICIAL AQUIFER GROUNDWATER QUALITY

Data tables are provided in Appendix B summarizing parameters detected during the reporting period. In accordance with Chapter 62-701, FAC, groundwater results were compared to primary and secondary drinking water standards maximum contaminant levels (MCLs) listed in Chapter 62-550. For comparison purposes, groundwater cleanup target levels (GCTLs) in Rule 62-777, FAC, are used when no MCL has been established. GCTLs are used as a screening tool for potential anomalies in the data that may require further consideration or review.

Graphs of water quality data and water quality trends for selected detected constituents are included in Appendix C. Graphs are provided for leachate constituents, constituents that frequently exceeded applicable standards, and constituents that exhibited clear trends over time. The following section discusses exceedances and includes data trends, where appropriate. The relationship between TDS and specific conductance is presented following the exceedances discussion.

Metals Exceedances and Trends

Metals detected at concentrations in excess of MCLs during at least one sampling event in the reporting period include arsenic and iron.

Arsenic

The primary MCL for arsenic (10 micrograms per liter (µg/L)) was exceeded in GW-6, GW-10, GW-11, GW-12, GW-13, GW-18, GW-20, GW-22, GW-26, and GW-27R at least once during the reporting period. Arsenic exceedances ranged from 10.5 µg/L to 42.3 µg/L.

Trend analyses for arsenic concentrations indicate a wide range of concentrations with increasing and decreasing trends occurring in various wells (Appendix C).

The arsenic concentrations were generally consistent with historical results across LRL. This indicates that the fluctuations are not caused by landfill leachate. It is more likely that these are naturally occurring in the soil and being released by the shadowing effect of the landfill because arsenic is a redox sensitive naturally occurring metal that often behaves similar to iron, being more soluble under anaerobic conditions.

Iron

The secondary MCL for iron (300 µg/L) was exceeded in BGW-1, GW-3 through GW-7, and GW-9 through GW-27R. Iron concentrations were consistently above the MCL for most of the sampling events in the reporting period. Iron exceedances ranged from 365 µg/L to 35,200 µg/L.

Trend analyses for iron concentrations indicate a wide range of concentrations with increasing and decreasing trends occurring in various wells (Appendix C).

Iron concentrations were generally consistent with historical results across LRL. Based on the iron exceedances observed in the background monitoring well (BGW-1) and lack of increasing leachate indicator parameters, the iron impacts are likely due to natural background conditions.

Inorganic Parameter Exceedances

Inorganic parameters, other than metals, with concentrations in excess of or outside of applicable groundwater standards or GCTLs for at least one sampling event during the reporting include field pH and TDS.

These exceedances are discussed below and are highlighted in Appendix B. Applicable trends are discussed below and are based on the time series plots in Appendix C.

pH

The Secondary MCL for pH is a range of 6.5 to 8.5 standard units (SU), which was not met in monitoring wells BGW-1, GW-3, GW-4, GW-11 through GW-12, and GW-16 through GW-27 for most monitoring events during the reporting period. Low pH is consistent with historical data at these monitoring wells and is typical of the surficial aquifer in the region. Background pH measurements (BGW-1) ranged from 6.1 to 6.68 SU during the reporting period. Detection well pH measurements were similar to or greater than those reported in the background well. Trend analyses for pH measurements indicate a range of concentrations with stable or increasing trends occurring in various wells (Appendix C).

Low groundwater pH in this region is the result of low pH in precipitation, rapid recharge, and little buffering capacity of the surficial sands. The pH levels observed at the LRL are characteristic of the surficial groundwater in this region of Florida. No pH measurements were above the 8.5 SU during the reporting period.

Total Dissolved Solids

The secondary MCL for TDS (500 mg/L) was exceeded at least once in monitoring wells GW-6, GW-11, GW-13 through GW-15, GW-18, GW-19, and GW-25 during the reporting period. TDS exceedances ranged from 504 mg/L to 1,880 mg/L. TDS concentrations in the background well (BGW-1) ranged from 250 mg/L to 339 mg/L. TDS concentrations in the background well were generally lower than those reported in the detection wells.

Trend analyses for TDS concentrations indicate a wide range of concentrations with increasing and decreasing trends occurring in various wells (Appendix C). Elevated TDS concentrations at these wells is consistent with historical data.

Total Dissolved Solids/Specific Conductance Correlation

A simple ratio was calculated to evaluate the correlation between TDS and specific conductance (SCond) data. The ratio between TDS and SCond may be evaluated using standard water/wastewater analytical methods to assess the accuracy of the laboratory methods and field instruments. A generally acceptable correlation is a TDS to SCond ratio of 0.55 to 0.70. Ratios outside this range may indicate that one or both measurements are suspect.

A summary of the TDS/SCond ratios for the reporting period is presented in Table 3-3. The determined ratios are within the acceptable range or just slightly outside the range. Overall, there are few large deviations. The deviations are most likely due to differences in field sampling techniques and do not affect the quality of the reported data.

Table 3-3. Total Dissolved Solids/Specific Conductivity Ratio

MW-ID	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Detection Monitoring Wells					
BGW-1	0.63	0.52	0.50	0.53	0.74
GW-3	0.69	0.65	0.59	0.54	0.67
GW-4	0.63	0.68	0.56	0.52	0.34
GW-5	0.74	0.62	0.57	0.56	0.61
GW-6	0.66	0.66	0.56	0.60	0.55
GW-7	0.75	0.61	0.67	0.56	0.55
GW-8	0.68	0.65	0.62	0.60	---
GW-9	0.55	0.54	0.54	0.50	0.57
GW-10	0.61	0.52	0.53	0.54	0.63
GW-11	0.61	0.50	0.60	0.87	0.34
GW-12	0.62	0.58	0.58	0.53	0.50
GW-13	0.57	0.55	0.53	0.51	0.51
GW-14	0.61	0.60	0.60	0.56	0.58
GW-15	0.68	0.61	0.61	0.60	0.82
GW-16	0.62	0.52	0.53	0.56	0.50
GW-17	0.87	0.59	0.61	0.89	0.41
GW-18	0.78	0.65	0.63	0.71	0.63
GW-19	0.71	0.77	0.25	0.68	0.71
GW-20	0.67	0.75	0.62	0.61	0.61
GW-21	0.78	0.84	0.46	0.63	0.56
GW-22	0.78	0.70	0.64	0.62	0.46
GW-23	0.69	0.65	0.65	0.71	0.77
GW-24	0.81	0.67	0.63	0.74	0.47
GW-25	0.59	0.59	0.63	0.60	0.72
GW-26	0.84	0.64	0.62	0.51	0.67
GW-27R	0.61	0.60	0.55	0.57	0.66

Note:

1. Yellow shaded value indicates ratio value is outside generally accepted correlation of 0.55 to 0.70.

SURFACE WATER QUALITY

Water quality monitoring for surface water during the reporting period was completed in accordance with Chapter 62-701 and the LRL Permit. Surface water quality standards (SWSs) are listed in Chapter 62-302.530. Appendix B includes tables summarizing detected constituents and SWS exceedances for the reporting period. Selected data tables and graphs are presented to support the groundwater monitoring plan evaluation.

Arsenic was detected above the SWS (50 ug/L) during the June 2018, November 2018, April 2019, and November 2019 sampling events in SW-2. However, arsenic concentrations in SW-2 have exhibited an overall decreasing trend since the second semiannual 2018 sampling event.

Iron was detected above the SWS (1,000 ug/L) in SW-1 and SW-2 during all sampling events throughout the reporting period. The iron concentrations in SW-1 and SW-2 are consistent with historical data.

Mercury was detected above the SWS (0.012 mg/L) in SW-2 during the first and second 2018 semiannual sampling events. Mercury concentrations in SW-2 were below the SWS since the April 2019 sampling event.

The dissolved oxygen concentration at SW-1 and SW-2 was lower than the SWS (>5.0 mg/L) throughout the reporting period. The dissolved oxygen concentrations in SW-1 and SW-2 are consistent with historically low values and are likely to be background concentrations.

The pH in SW-1 was slightly below the SWS range of 6.5 to 8.5 SU during the first semiannual 2020 sampling event. The pH values in SW-2 were below the SWS during the second semiannual 2018 and first semiannual 2020 sampling events and are consistent with historically low pH values in this region.

No other constituents exceeded SWSs during the reporting period.

4 LEACHATE INDICATOR PARAMETERS TRENDS

No significant leachate indicator trends were noted during the technical reporting period. Trend charts of leachate indicator parameters are included in Appendix C.

ERRATIC AND POORLY CORRELATED DATA

No erratic or poorly correlated data were observed in the water quality analyses.

5 ADEQUACY OF MONITORING PROGRAM

This section assesses the adequacy of the monitoring program to observe potential effects of the LRL operations on groundwater.

MONITORING FREQUENCY

Groundwater monitoring frequency for the LRL is semi-annual and appears to provide sufficient data to evaluate trends in concentrations and plan appropriate evaluation monitoring where necessary.

The frequency of monitoring is sufficient to observe changes in groundwater quality and implement corrective action before there are adverse effects on the adjacent beneficial use of the water quality.

MONITORING PARAMETERS

Current routine monitoring parameters include various volatile organic compounds, metals, and inorganic constituents required by Chapters 62-550, 62-302 and 62-701. There have been no findings that indicate a need to modify the routine parameter list. Consequently, the LRL will maintain the current groundwater and surface water quality monitoring parameters.

SURFICIAL AQUIFER MONITORING ADEQUACY

The existing monitoring wells were located based on groundwater flow direction. Locations were selected to monitor hydraulically up-gradient groundwater and down-gradient groundwater that has the potential to be affected by the presence of the landfill.

Table 3-2 lists monitoring wells and surface water sampling stations at the LRL. Monitoring wells listed under the "Type" column as "DE" and "BG" are included during the routine semi-annual monitoring events.

MONITORING WELL GEOGRAPHIC LOCATION

Geographic location is guided by the direction of lateral groundwater flow in the surficial aquifer beneath the LRL. The April 2020 water level map is thought to be representative of the flow of the shallow surficial aquifer. Typically, background wells would be located hydraulically up-gradient with detection wells located down-gradient within the zone of discharge. The following discusses the locations of monitoring wells at the LRL.

Currently, there is one surficial aquifer background monitoring well (BGW-1). This monitoring well is located hydraulically up-gradient from the landfill and appears to provide sufficient surficial aquifer background data for the LRL.

The geographic locations of detection wells appears to be adequate and effective in monitoring groundwater quality variations and meet the spacing requirements in Chapter 62-701.510, FAC. The screen locations at each of the surficial aquifer locations appear to adequately monitor the surficial aquifer for water quality purposes.

While the statements above are accurate with regard to the monitoring well network, the County is in the process of evaluating whether moving monitoring wells GW-6 and GW-18 further away from the slurry wall within the 100 foot zone of discharge will provide a more representative groundwater sample.

PROPOSED ACTIONS

The county is currently evaluating movement of monitoring well GW-6 and GW-18 within the zone of discharge a summary of the findings and any proposed changes will submitted under a separate cover.

Appendix A

Potentiometric Maps and Hydrograph

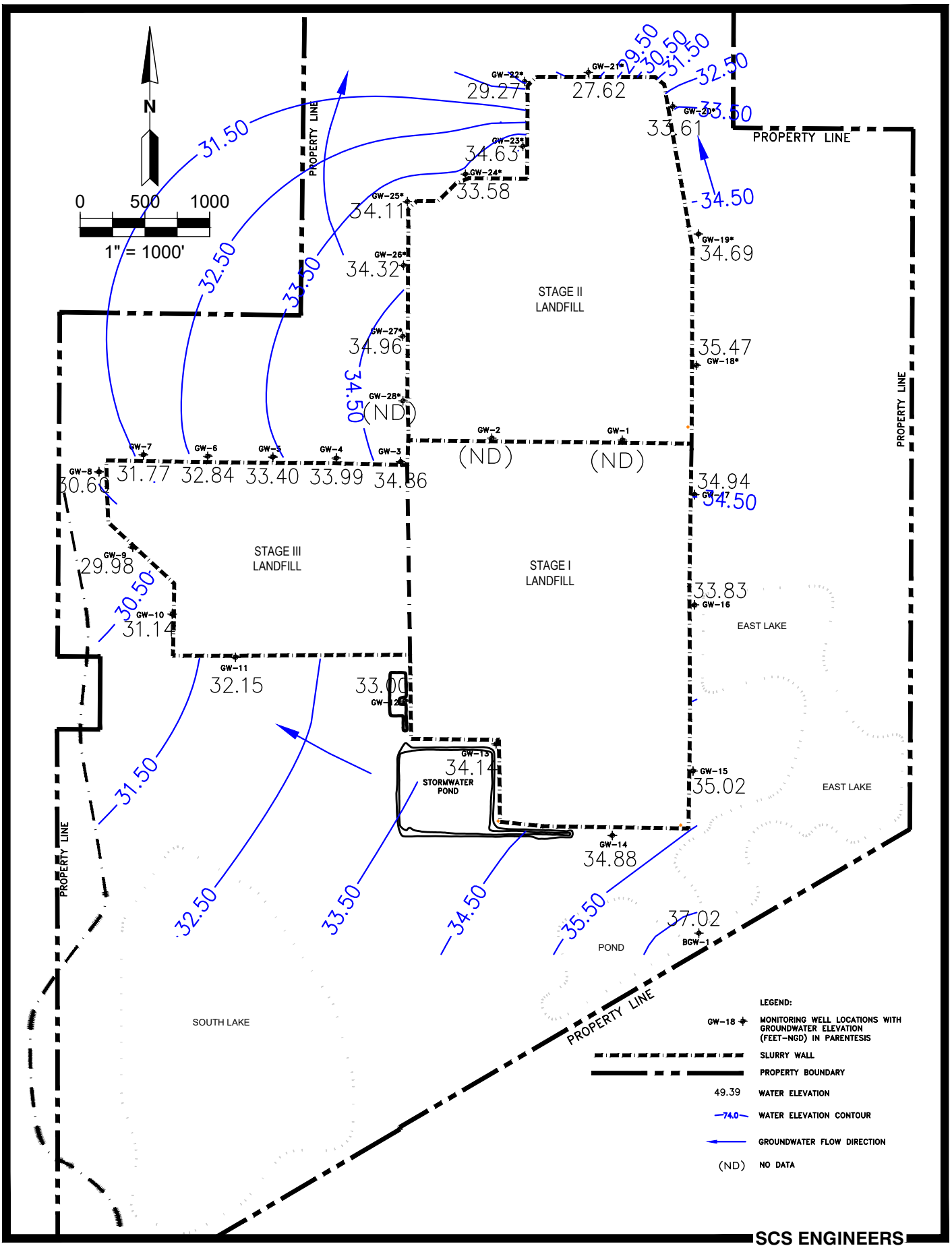
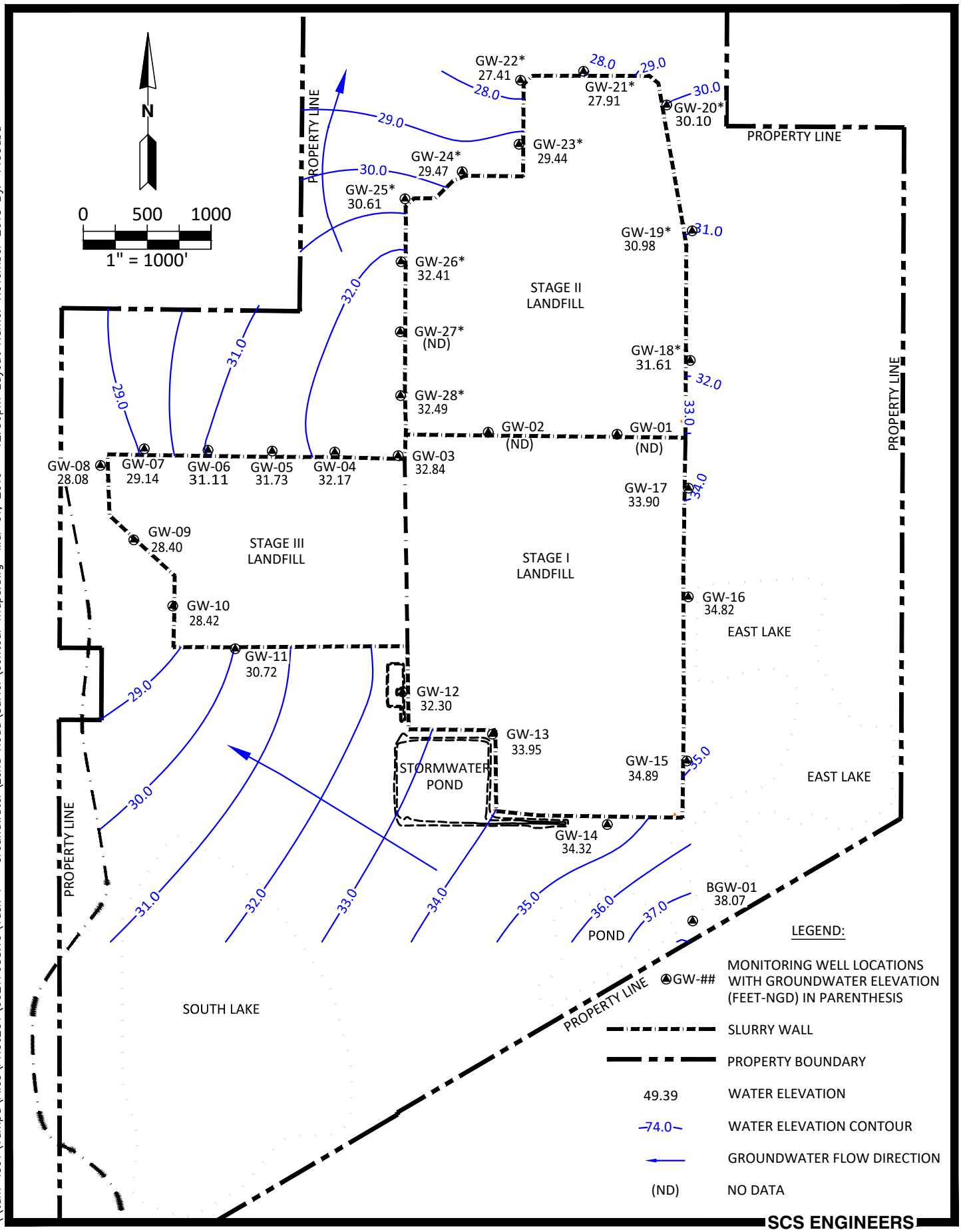


FIGURE 2-1. May 2018 Shallow Surficial Aquifer Water Level Map
Lena Road Landfill, Manatee County, Florida



\\tam-fs01\Tampa\Files\PROJECT\09217088.10\Task 1 - Groundwater\Lena Road\Surfer\contour maps.dwg Mar 01, 2019 - 12:56pm Layout Name: November 2018 By: 4455aba

FIGURE 2-1. NOVEMBER 2018 SHALLOW SURFICIAL AQUIFER WATER LEVEL MAP
LENA ROAD LANDFILL,
MANATEE COUNTY, FLORIDA

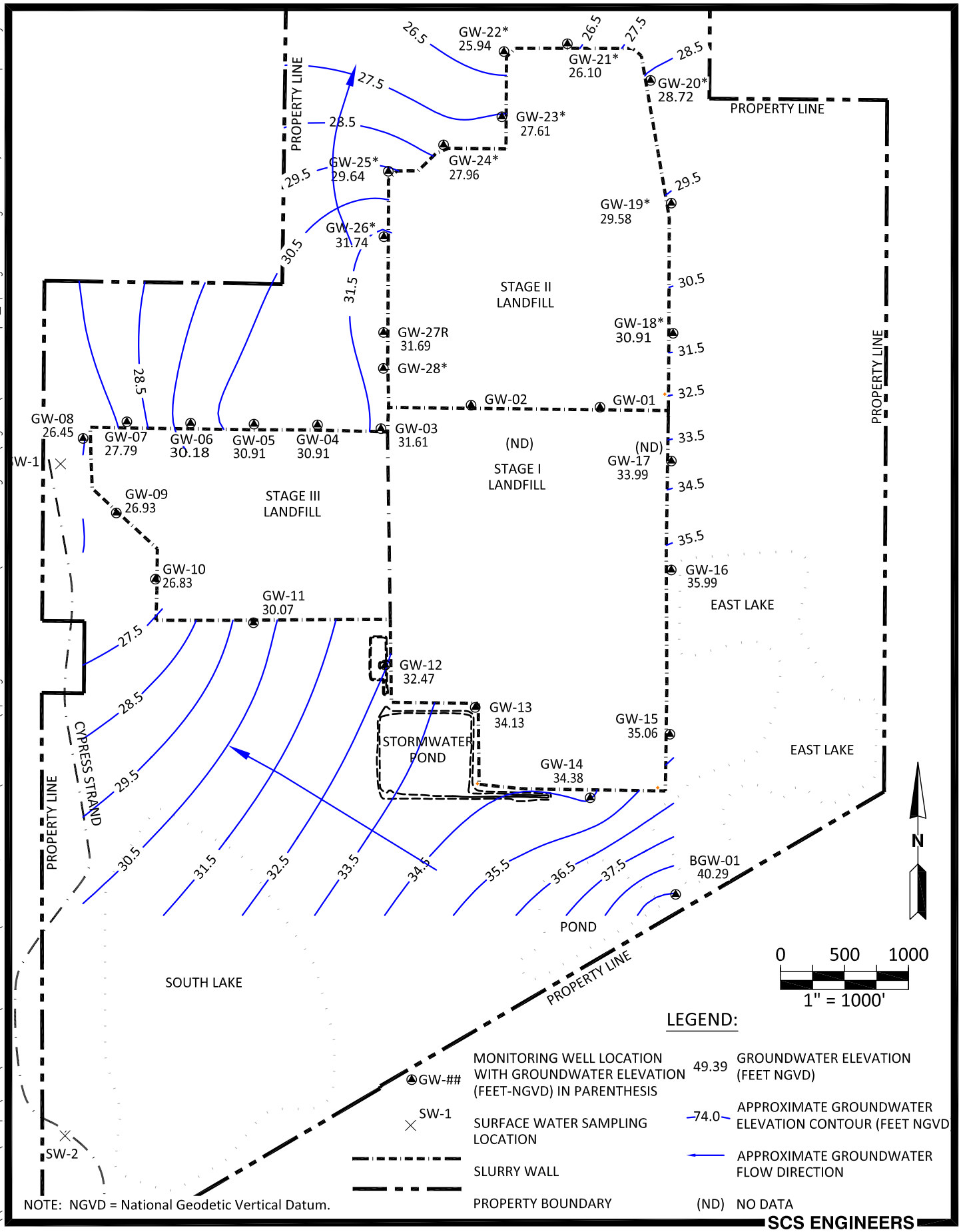
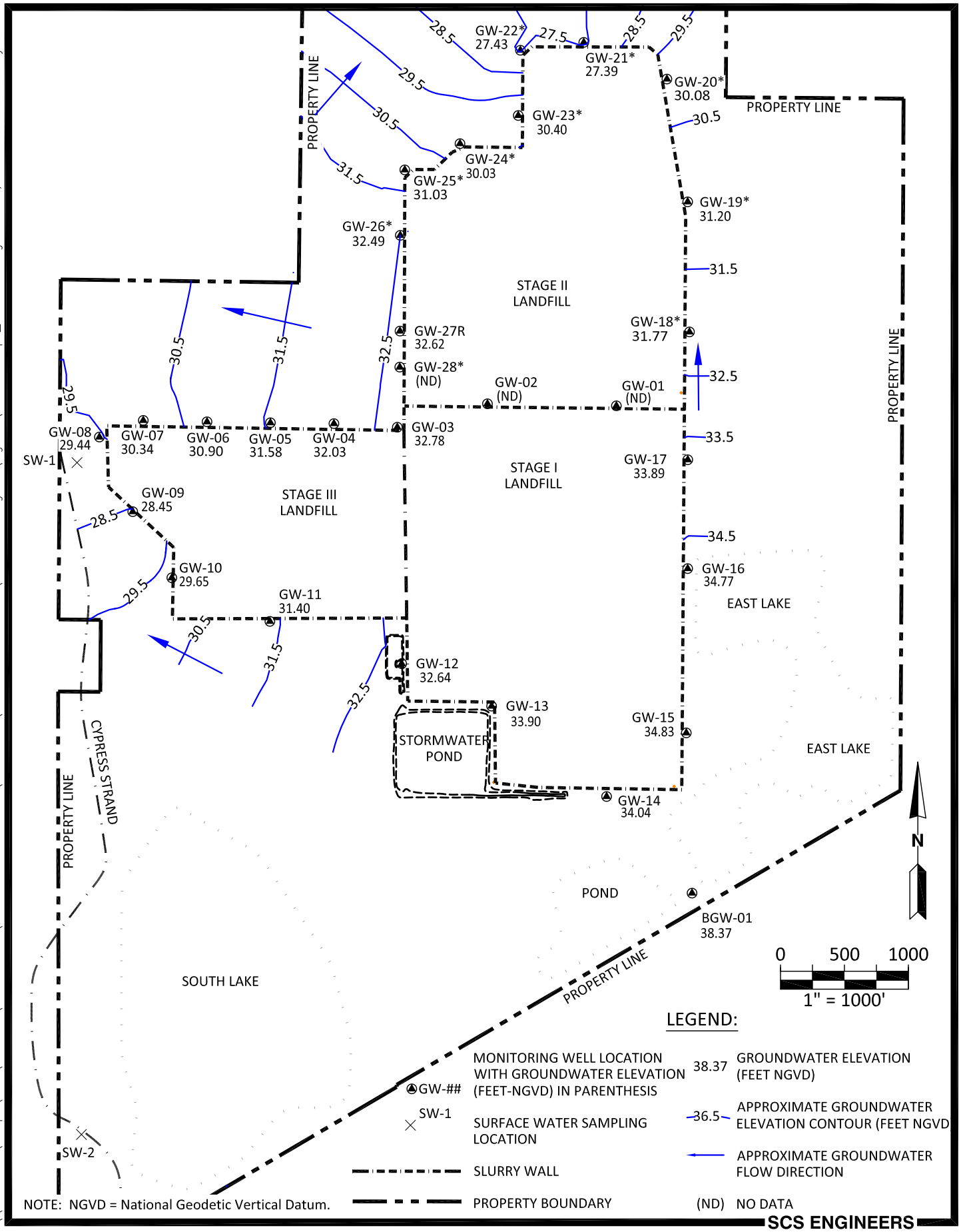
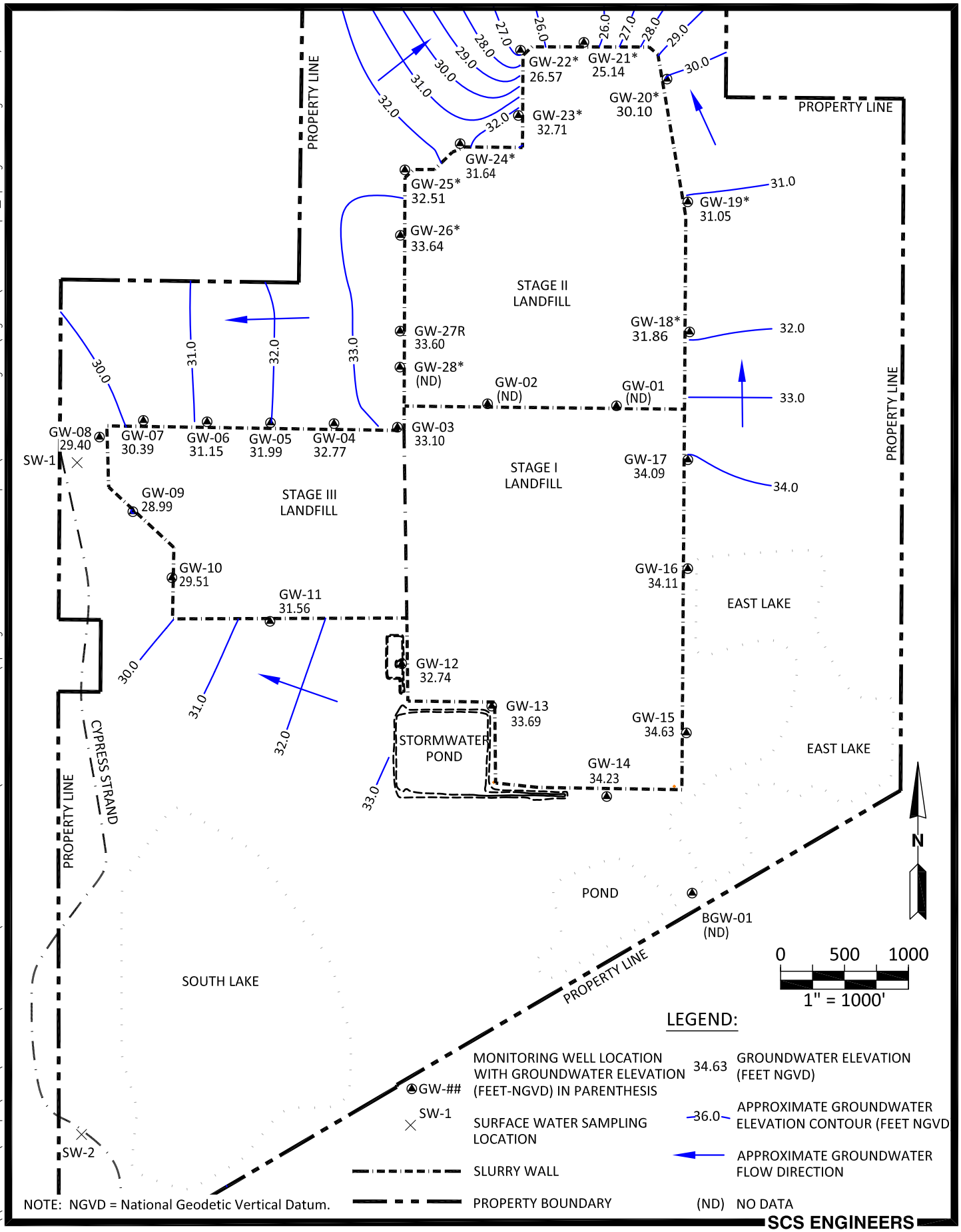


FIGURE 2-1. APRIL 2019 SHALLOW SURFICIAL AQUIFER WATER LEVEL MAP
LENA ROAD LANDFILL
MANATEE COUNTY, FLORIDA



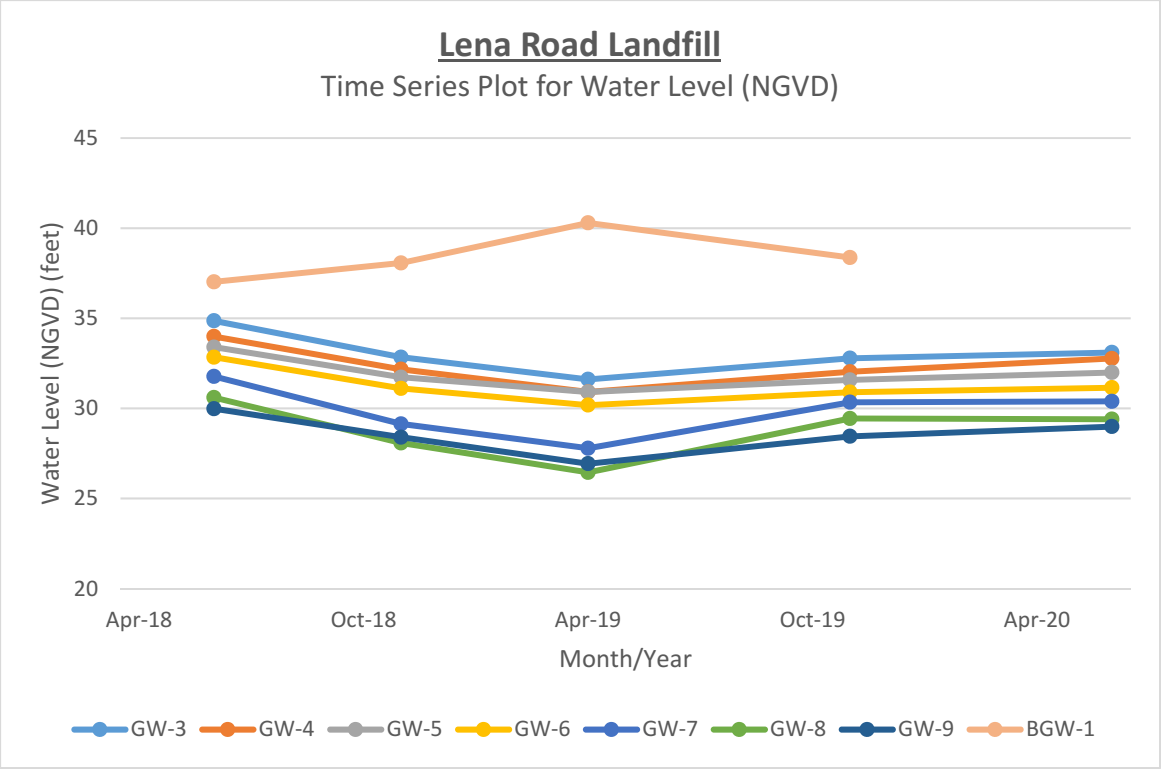
SCS ENGINEERS

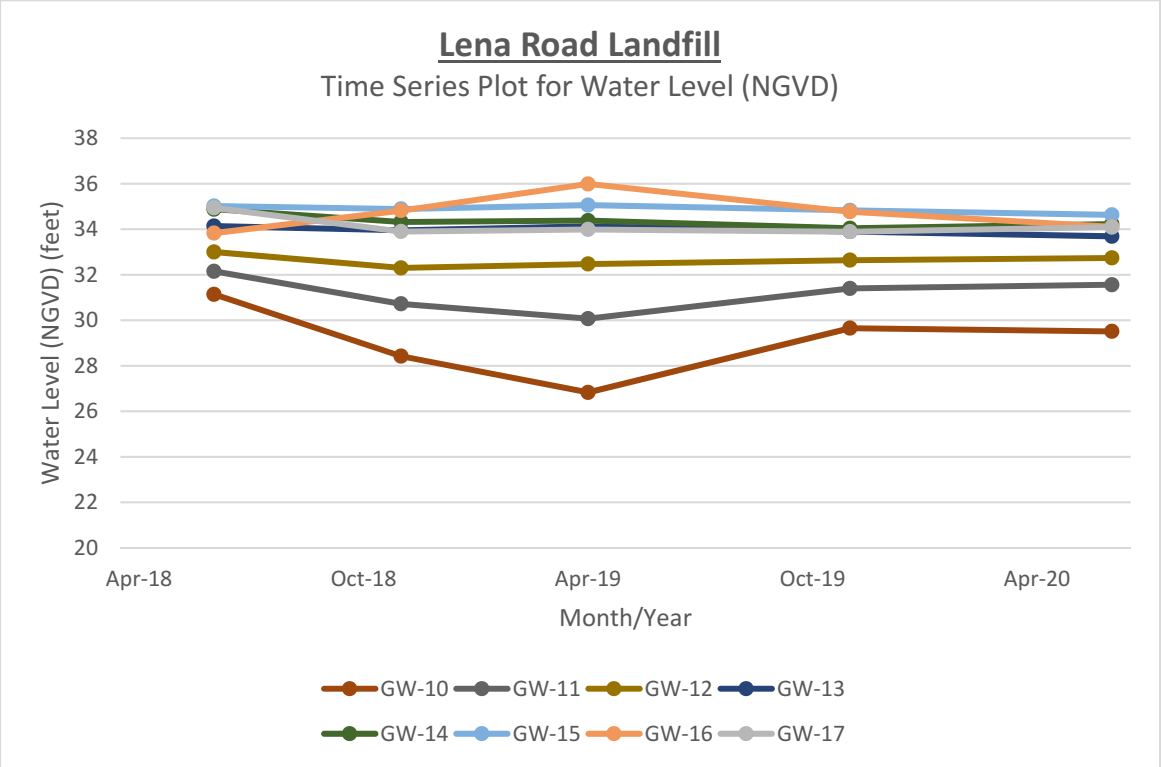
FIGURE 2-1. NOVEMBER 2019 SHALLOW SURFICIAL AQUIFER POTENTIOMETRIC MAP
LENA ROAD LANDFILL
MANATEE COUNTY, FLORIDA

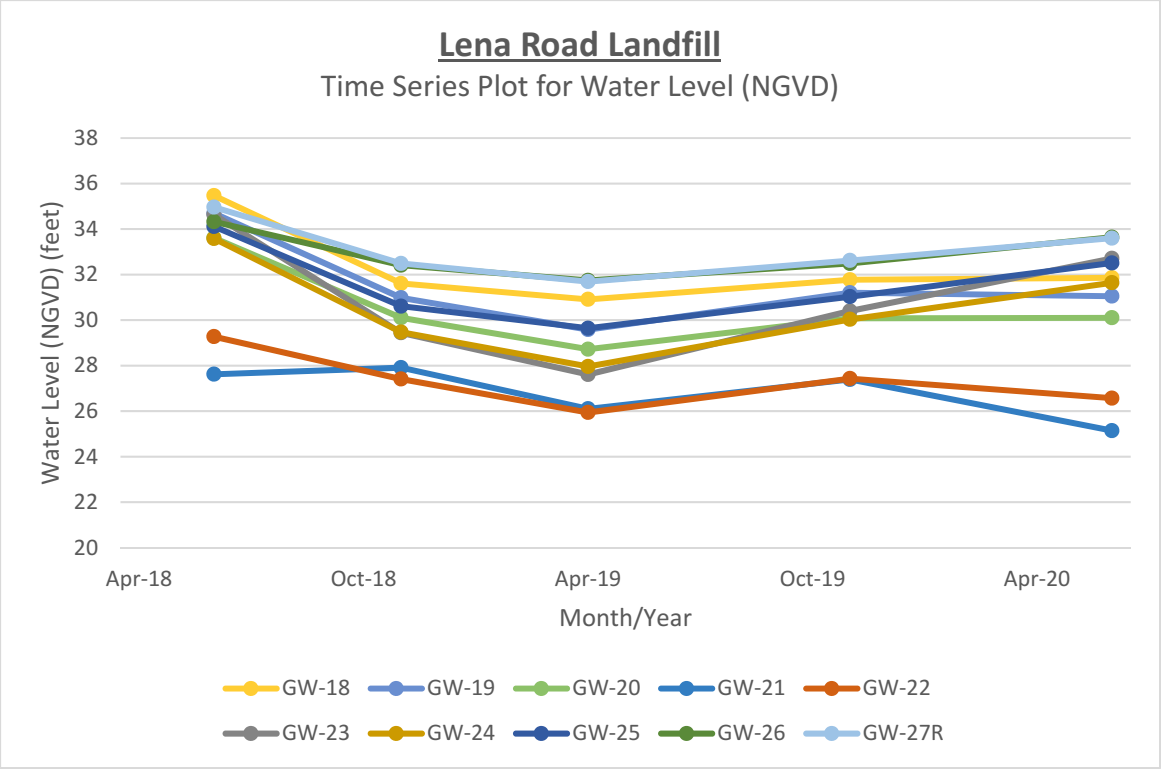


SCS ENGINEERS

FIGURE 2-1. APRIL 2020 SHALLOW SURFICIAL AQUIFER GROUNDWATER CONTOUR MAP
LENA ROAD LANDFILL
MANATEE COUNTY, FLORIDA


Lena Road Landfill
Time Series Plot for Water Level (NGVD)
Water Level (NGVD) (feet)
45
40
35
30
25
20
Apr-18
Oct-18
Apr-19
Oct-19
Apr-20
Month/Year
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
BGW-1


Lena Road Landfill
Time Series Plot for Water Level (NGVD)
Water Level (NGVD) (feet)
38
36
34
32
30
28
26
24
22
20
Apr-18
Oct-18
Apr-19
Oct-19
Apr-20
Month/Year
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17


Lena Road Landfill
Time Series Plot for Water Level (NGVD)
Water Level (NGVD) (feet)
38
36
34
32
30
28
26
24
22
20
Apr-18
Oct-18
Apr-19
Oct-19
Apr-20
Month/Year
GW-18
GW-19
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R

Appendix B

Tables of Exceedances and Detections

Summary of Surface Water Quality Analytical Results at SW-1
(Detected Parameters Only)

Parameter	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Metals							
Arsenic	50	ug/L	7.7	6.5	3.6	3.3	2.7
Barium	NS	ug/L	17	22.1	12.1	12.2	42
Calcium	NS	mg/L	39.4	48.6	32.7	39.4	81.6
Cadmium	See Below	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Calculated Cadmium MCL	Calculated		0.76	0.76	0.76	0.76	0.76
Copper	See Below	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Calculated Copper MCL	Calculated		30.5	30.5	30.5	30.5	30.5
Chromium	See Below	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Calculated Chromium MCL	Calculated		268.2	268.2	268.2	268.2	268.2
Iron	1000	ug/L	4580	7600	2390	2280	2260
Magnesium	NS	mg/L	11.9	13.4	11	12.7	23.7
Mercury	0.012	ug/L	0.00905	0.00864	0.00187	0.00134	0.0042
Selenium	5	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Zinc	See Below	ug/L	10 **U**	14.8 **I**	11 **U**	11 **U**	22.2
Calculated Zinc MCL	Calculated		387.8	387.8	387.8	387.8	387.8
General Chemistry							
Nitrogen, Ammonia	NS	mg/L	0.12	0.78	0.035 **U**	0.11	0.037 **I**
BOD, 5 day	NS	mg/L	2.0 **U**	2.0 **U**	3.3	2.0 **U**	2.8
Chemical Oxygen Demand	NS	mg/L	83	70.1	77.9	59.2	33
Nitrate-Nitrite (N)	NS	mg/L	0.061	0.29	0.096	0.26	0.034 **I**
Nitrogen- Total Kjeldahl	NS	mg/L	1.4	2.4	0.92	0.91	0.77
Phosphorus, Total (as P)	NS	mg/L	0.39	0.92	0.33	0.32	0.089 **I**
Fecal Coliforms	NS	CFU/100 mL	47	52	163	62	73.0 **B**
Tot Hardness asCaCO3	NS	mg/L	147	176	127	151000	301
Total Nitrogen	NS	mg/L	1.4	2.7	1	1.2	0.8
Total Organic Carbon	NS	mg/L	31.6	18.6	24.5	20.7	13.6
Total Suspended Solids	NS	mg/L	6.3	20.6	7.8	3.2	3.6
Total Dissolved Solids	NS	mg/L	339	305	311	301	515
Field Parameters							
Field Specific Conductance	1275	umhos/cm	437	478	508	657	732
Oxygen, Dissolved	>5.0	mg/L	2.3	2.04	1.4	4.1	4.22
Field pH	6.5-8.5	Std. Units	6.71	7.04	7.81	6.91	6.32
Field Temperature	NS	deg C	27.3	24.1	22.5	23.2	21.7
Turbidity	<29	NTU	14.5	12.4	7.89	23.5	10.5

Notes:

1. Parameter MCL is a Surface Water Criterion (Chapter 62-302 F.A.C.).
2. NS = No numeric standard has been set for this analyte.
3. Cadmium MCL is calculated by the following formula: CD < e^(0.7409*[ln Hardness]-4.719)
4. Chromium MCL is calculated by the following formula: CrIII < e^(0.819*[ln Hardness]+0.6848).
5. Lead MCL is calculated by the following formula: Pb < e^(1.273*[ln Hardness]-4.705).
6. Zinc MCL is calculated by the following formula: Zn < e^(0.8473*[ln Hardness]+0.884).
7. Turbidity MCL is 29 NTUs over background levels
8. MCL = Maximum Contamination Level.
9. Shaded = Sample result above the MCL.
10. mg/L = milligrams per liter.
11. ug/L = micrograms per liter.
12. umhos/cm = micromhos/centimeter
13. NTU = nephelometric turbidity units.
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.

Summary of Surface Water Quality Analytical Results at SW-2
(Detected Parameters Only)

Parameter	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Metals							
Arsenic	50	ug/L	101	913	75.1	59.2	8.4
Barium	NS	ug/L	26.9	153	26.5	22.7	48.6
Calcium	NS	mg/L	43.4	224	31.8	34200	87
Cadmium	See Below	ug/L	0.50 **U**	0.66 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Calculated Cadmium MCL	Calculated		0.4	0.76	0.32	0.76	0.65
Copper	See Below	ug/L	2.5 **U**	20.9	2.6 **U**	2.6 **U**	2.6 **U**
Calculated Copper MCL	Calculated		14.75	30.5	11.37	30.5	25.74
Chromium	See Below	ug/L	2.5 **U**	3.5 **I**	1.7 **U**	1.7 **U**	1.7 **U**
Calculated Chromium MCL	Calculated		133.73	268.22	104.14	268.22	227.98
Iron	1000	ug/L	17000	164000	15600	8400	1460
Magnesium	NS	mg/L	15.1	64.6	11.2	10700	26.9
Mercury	0.012	ug/L	0.0177	0.017	0.00677	2.79	0.0029
Selenium	5	ug/L	0.50 **U**	119	0.50 **U**	0.50 **U**	0.50 **U**
Zinc	See Below	ug/L	10 **U**	53.9	11 **U**	11 **U**	20.8
Calculated Zinc MCL	Calculated		188.77	387.83	145.73	387.83	327.81
General Chemistry							
Nitrogen, Ammonia	NS	mg/L	0.049 **I**	0.52 **U**	0.035 **U**	0.1	0.035 **U**
BOD, 5 day	NS	mg/L	2.0 **U**	7	3	2.0 **U**	2
Chemical Oxygen Demand	NS	mg/L	121	335	70.9	148	27.4
Nitrate-Nitrite (N)	NS	mg/L	0.033 **U**	0.033 **U**	0.047 **I**	0.025 **U**	0.033 **U**
Nitrogen- Total Kjeldahl	NS	mg/L	1.6	2.2	0.95	2.1	0.58
Phosphorus, Total (as P)	NS	mg/L	0.21	1.4	0.18	0.78	0.050 **U**
Fecal Coliforms	NS	CFU/100 mL	51	31	126 **B**	23	39
Tot Hardness asCaCO3	NS	mg/L	171	826	126	129000	328
Total Nitrogen	NS	mg/L	1.6	2.2	1	2.1	0.58
Total Organic Carbon	NS	mg/L	45.1	42.3	22.4	16.2	12.3
Total Suspended Solids	NS	mg/L	12.8	922	86.6	55	2.5
Total Dissolved Solids	NS	mg/L	375	1130	364	335	670
Field Parameters							
Field Specific Conductance	1275	umhos/cm	545	1452	679	529	1088
Oxygen, Dissolved	>5.0	mg/L	0.8	0.84	1.42	4.65	1.69
Field pH	6.5-8.5	Std. Units	7.08	6.24	8.01	6.67	6.11
Field Temperature	NS	deg C	25.9	22.8	20	21.4	21.3
Turbidity	<29	NTU	9.54	16.3	11.6	7.8	2.56

Notes:

1. Parameter MCL is a Surface Water Criterion (Chapter 62-302 F.A.C.).
2. NS = No numeric standard has been set for this analyte.
3. Cadmium MCL is calculated by the following formula: CD < e^(0.7409*[ln Hardness]-4.719)
4. Chromium MCL is calculated by the following formula: CrIII < e^(0.819*[ln Hardness]+0.6848).
5. Lead MCL is calculated by the following formula: Pb < e^(1.273*[ln Hardness]-4.705).
6. Zinc MCL is calculated by the following formula: Zn < e^(0.8473*[ln Hardness]+0.884).
7. Turbidity MCL is 29 NTUs over background levels
8. MCL = Maximum Contamination Level.
9. Shaded = Sample result above the MCL.
10. mg/L = milligrams per liter.
11. ug/L = micrograms per liter.
12. umhos/cm = micromhos/centimeter
13. NTU = nephelometric turbidity units.
14. U = Analyte concentration was below the laboratory detection limit (value shown).
15. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.

Summary of Groundwater Water Quality Analytical Results at BGW-1
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.57 **I**	0.50 **U**	0.5 **U**	0.5 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	0.69 **I**	5.4	0.50 **U**	7.1 **U**	1.1
Barium	PDWS	2000	ug/L	19.8	27.7	15.6	16.0	17.4
Cadmium	PDWS	5	ug/L	0.5 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	1700	7950	1400	1210	926
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	3.2	0.78 **I**	0.55 **I**	1.7	1.2
Sodium	PDWS	160	mg/L	10.4	19.4	47.3	35.5	11.7
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	10.7	7.0 **I**	3.4 **I**	3.5 **I**	4.0 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.61	1.4	1.1	0.87	0.70
Chloride	SDWS	250	mg/L	14.7	31	74	37.9	15.1
Nitrate (N)	PDWS	10	mg/L	0.27	0.029 **I**	0.025 **U**	0.025 **U**	0037 **I**
Total Dissolved Solids	SDWS	500	mg/L	279	256	250	339	286
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	440	488	501	637	385
Oxygen, Dissolved	NS	NS	mg/L	0.95	0.02	0.36	0.98	0.25
Field pH	SDWS	6.5-8.5	Std. Units	6.10	6.68	6.66	6.48	6.37
Field Temperature	NS	NS	deg C	24.4	28.8	26	29	24.1
Turbidity	NS	NS	NTU	3.10	3.20	1.75	2.76	0.88

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-3
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.14 **I**	0.10 **U**	0.3 **U**	0.3 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	1.8	0.83 **I**	0.65 **I**	0.86 **I**	2.8
Arsenic	PDWS	10	ug/L	2.1	2.7	3.5	2.6	1.0
Barium	PDWS	2000	ug/L	13.5	16.2	12.8	13.6	11.2
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.8 **I**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	201	206	2600	752	195
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	6.3	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	12.6 **I**	1.9	1.4	5.6	4.8
Sodium	PDWS	160	mg/L	5.3	8.8	18.0	5.9	11.6
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	12.1	13.3	10.2	12	9.2 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.054	0.19	0.25	0.088	0.035 **U**
Chloride	SDWS	250	mg/L	12.9	14.6	16.8	5.0	23.4
Nitrate (N)	PDWS	10	mg/L	3.8	0.13	0.025 **U**	0.51	1.2
Total Dissolved Solids	SDWS	500	mg/L	405	412	418	377	410
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	584	633	709	692	614
Oxygen, Dissolved	NS	NS	mg/L	3.00	0.58	0.22	0.91	1.31
Field pH	SDWS	6.5-8.5	Std. Units	6.63	6.60	7.12	6.45	7.03
Field Temperature	NS	NS	deg C	25.6	27.4	24.3	27.8	24.0
Turbidity	NS	NS	NTU	5.90	0.66	2.79	6.75	7.54

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-4
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10.0 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.1 **U**	0.10 **U**	0.3 **U**	0.3 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	0.92 **I**	0.72 **I**	0.52 **I**	0.50 **U**	1.0
Arsenic	PDWS	10	ug/L	1.1	1.3	3.5	1.7	1.9
Barium	PDWS	2000	ug/L	11.4	14.7	19.4	11.8	15.2
Cadmium	PDWS	5	ug/L	0.5 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	4.8 **I**	1.7 **U**	3.5 **I**
Cobalt	NS	NS	ug/L	5 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	292	279	4670	842	2160
Lead	PDWS	15	ug/L	0.50 **U**	0.81 **I**	0.50 **U**	0.50 **U**	1.0 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	9.8 **I**	0.98 **I**	2.5	1.3	1.7 **I**
Sodium	PDWS	160	mg/L	3.7	4.3	4.7	3.3	5.9
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.21 **U**
Vanadium	NS	NS	ug/L	19.6	20.0	19.9	9.6 **I**	9.8 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.14	0.40	1.2	0.13	0.88
Chloride	SDWS	250	mg/L	7.3	8.5	6.4	5.5	9.9
Nitrate (N)	PDWS	10	mg/L	8.2	0.025 **U**	0.025 **U**	0.025 **U**	0.049 **I**
Total Dissolved Solids	SDWS	500	mg/L	247	291	235	197	128
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	393	428	422	380	373
Oxygen, Dissolved	NS	NS	mg/L	2.53	0.26	0.11	0.86	1.02
Field pH	SDWS	6.5-8.5	Std. Units	6.47	6.60	6.96	6.63	6.49
Field Temperature	NS	NS	deg C	24.8	27.2	25.1	27.8	23.4
Turbidity	NS	NS	NTU	5.54	0.01	2.15	3.45	16.3

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-5
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	1.3	0.50 **U**	0.5 **U**	0.56 **I**	0.65 **I**
Arsenic	PDWS	10	ug/L	1.8	10.5	5.6	1.6	3.8
Barium	PDWS	2000	ug/L	14.9	22	18.5	12.1	14.3
Cadmium	PDWS	5	ug/L	0.50 **U**	0.45 **I**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.9 **I**	1.8 J	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	1.3 **I**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	1490	16400	16100	838	2020
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **I**	3.5 **I**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	12.5 **I**	2.5	1.1	2.2	4.5
Sodium	PDWS	160	mg/L	8.5	20.2	17.3	7.5	11.9
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	25.8	12.8	8.7 **I**	15.6	13
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.21	1.0	1.1	0.21	0.59
Chloride	SDWS	250	mg/L	13.5	25.0	20.2	9.9	17.9
Nitrate (N)	PDWS	10	mg/L	9.7	0.11	0.037 **I**	0.093	0.79
Total Dissolved Solids	SDWS	500	mg/L	378	547	451	327	355
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	514	882	794	580	585
Oxygen, Dissolved	NS	NS	mg/L	2.22	0.26	0.04	0.75	1.22
Field pH	SDWS	6.5-8.5	Std. Units	6.56	6.53	7.07	6.53	6.76
Field Temperature	NS	NS	deg C	25.6	28	24.7	28.4	24.5
Turbidity	NS	NS	NTU	13.6	7.71	4.91	4.54	2.73

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-6
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	1.1	1.5	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	2.5	5.5	6.9	5.5	12.8
Barium	PDWS	2000	ug/L	12.0	19.3	12.5	20.2	11.1
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	185	666	3720	1540	4520
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	30.5	1.4	1.2	2.6	2.3
Sodium	PDWS	160	mg/L	3.8	4.6	4.6	3.6	3.1
Thallium	PDWS	2	ug/L	0.50 **U**	0.56 **I**	0.50 **U**	0.34 **I**	0.15 **I**
Vanadium	NS	NS	ug/L	11.1	12.5	8.5 **I**	7.2 **I**	6.6 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.035 **U**	1.2	1.4	1.5	1.8
Chloride	SDWS	250	mg/L	5.3	4.6 **I**	4.8 **I**	12.5 **U**	4.7 **I**
Nitrate (N)	PDWS	10	mg/L	1.9	0.030 **I**	0.025 **U**	0.040 **I**	0.031 **I**
Total Dissolved Solids	SDWS	500	mg/L	583	611	377	667	450
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	880	919	673	1115	813
Oxygen, Dissolved	NS	NS	mg/L	4.23	0.25	0.05	1.2	1.31
Field pH	SDWS	6.5-8.5	Std. Units	7.1	6.8	7.09	6.58	6.89
Field Temperature	NS	NS	deg C	25.6	27.7	23.9	28.4	24.2
Turbidity	NS	NS	NTU	2.79	0.53	3.25	2.60	2.47

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-7
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	1.6	0.50 **U**	0.50 **U**	0.5 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	4.5	9.5	4.8	5.2	2.4
Barium	PDWS	2000	ug/L	12.8	7.7 **I**	9.6 **I**	9.2 **I**	8.1 **I**
Cadmium	PDWS	5	ug/L	0.5 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	110	1490	748	288	106
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	29.6	2.5	0.99 **I**	1.3	0.82 **I**
Sodium	PDWS	160	mg/L	8.4	15	23.5	22.1	17.2
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	25.2	5.5 **I**	3.0 **I**	2.6 **I**	1.8 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.14	0.66	1.1	0.57	0.72
Chloride	SDWS	250	mg/L	11.8	15.1	32.8	28.8	23.3
Nitrate (N)	PDWS	10	mg/L	1.1	0.026 **I**	0.025 **U**	0.025 **U**	0.056
Total Dissolved Solids	SDWS	500	mg/L	466	284	447	400	337
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	621	464	663	710	610
Oxygen, Dissolved	NS	NS	mg/L	3.51	0.22	0.03	1.25	0.56
Field pH	SDWS	6.5-8.5	Std. Units	6.64	6.78	7.08	6.7	6.84
Field Temperature	NS	NS	deg C	26	28	23.8	28.3	23.9
Turbidity	NS	NS	NTU	2.50	2.65	2.03	2.34	2.43

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-8
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	5.8	5.8	3.2	5.1	6.8
Barium	PDWS	2000	ug/L	17.2	8.3 **I**	13.1	12.5	16.4
Cadmium	PDWS	5	ug/L	0.5 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	2.0 **I**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	42.6	46.5	48.4	42.8	72.7
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.55 **I**	0.83 **I**	0.63 **I**	0.68 **I**	0.69 **I**
Sodium	PDWS	160	mg/L	12.6	16.5	16.8	18.4	18.5
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	5.0 **U**	2.6 **I**	2.8 **I**	1.8 **I**	2.6 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.83	0.92	0.85	1.0	0.96
Chloride	SDWS	250	mg/L	14.1	18.5	19	16.7	23.7
Nitrate (N)	PDWS	10	mg/L	0.034 **I**	0.025 **U**	0.025 **U**	0.025 **U**	0.025 **U**
Total Dissolved Solids	SDWS	500	mg/L	473	285	331	376	327
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	696	435.6	538	623	---
Oxygen, Dissolved	NS	NS	mg/L	0.17	0.37	0.32	0.69	---
Field pH	SDWS	6.5-8.5	Std. Units	6.64	6.99	7.63	6.99	7.05
Field Temperature	NS	NS	deg C	26.1	28.1	24	26.6	---
Turbidity	NS	NS	NTU	2.20	3.24	4.25	2.51	---

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-9
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	7.5 **I**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.69 **I**
Arsenic	PDWS	10	ug/L	3.9	5.1	1.5	4.0	3.7
Barium	PDWS	2000	ug/L	6.1 **I**	11	11	11.9	12.4
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	394	509	424	467	365
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	1.0	8.5 **U**	0.50 **U**	0.50 **U**	1.6
Sodium	PDWS	160	mg/L	1.9	5.3	6.0	7.9	11.3
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.12 **I**
Vanadium	NS	NS	ug/L	8.3 **I**	6.9 **I**	6.5 **I**	6.7 **I**	21.3
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.12	0.6	1.1	0.99	0.78
Chloride	SDWS	250	mg/L	2.5 **U**	5.6	6.4	8.3	15.6
Nitrate (N)	PDWS	10	mg/L	0.035 **I**	0.025 **U**	0.025 **U**	0.025 **U**	1.1
Total Dissolved Solids	SDWS	500	mg/L	158	277	274	277	250
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	287.2	517	509.6	551	436
Oxygen, Dissolved	NS	NS	mg/L	0.46	0.45	0.57	1.22	1.24
Field pH	SDWS	6.5-8.5	Std. Units	6.88	6.62	7.39	6.71	7.02
Field Temperature	NS	NS	deg C	25.6	27.3	23.1	27.1	24.5
Turbidity	NS	NS	NTU	18.8	0.02	2.1	1.58	9.9

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-10
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	6.4 **I**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.73 **I**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	4.4	3.8	8.4	2.3	4.0
Arsenic	PDWS	10	ug/L	27.7	10.5	12.8	22.6	11.7
Barium	PDWS	2000	ug/L	17.0	19.9	17.6	13.7	26
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	4740	3210	1480	1960	143
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	2.4	8.5 **U**	3.8	4.6	27.4
Sodium	PDWS	160	mg/L	4.5	7.7	15.7	2.7	6.2
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.12 **I**	0.46 **I**
Vanadium	NS	NS	ug/L	66.6	80.4	32.2	36.2	86.3
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.5	4.8	2.1	1.0	0.34
Chloride	SDWS	250	mg/L	9.0	9.2	19.9	3.7 **I**	11.6
Nitrate (N)	PDWS	10	mg/L	0.025 **U**	0.025 **U**	0.025 **U**	0.035 **I**	1.2
Total Dissolved Solids	SDWS	500	mg/L	431	317	339	329	480
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	704	614	635	614	765
Oxygen, Dissolved	NS	NS	mg/L	0.21	0.84	0.62	2.04	1.24
Field pH	SDWS	6.5-8.5	Std. Units	6.74	6.73	7.5	6.79	7.15
Field Temperature	NS	NS	deg C	25.1	25.9	22.8	26.1	24
Turbidity	NS	NS	NTU	19.7	10.5	12.6	5.35	9.8

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-11
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.4 **I**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.58 **I**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	1.0	0.50 **U**	0.81 I	0.50 **U**	2.9
Arsenic	PDWS	10	ug/L	12.4	1.5	10.6	1.3	3.4
Barium	PDWS	2000	ug/L	12.6	11.4	11.1	10.8	24
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	2500	195	36 **I**	632	374
Lead	PDWS	15	ug/L	1.3	0.50 **U**	1.2	0.50 **U**	0.68 **I**
Nickel	PDWS	100	ug/L	2.5 **U**	2.2 **I**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.79 **I**	0.50 **U**	1.4	0.60 **I**	0.65 **I**
Sodium	PDWS	160	mg/L	19	21.8	23.7	27.9	61.2
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	7.2 **I**	1.4 **I**	19.8	1.6 **I**	10.1
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.13	0.13	0.19	0.11	0.12
Chloride	SDWS	250	mg/L	20.6	24.9	25.6	111	25.4
Nitrate (N)	PDWS	10	mg/L	0.025 **U**	0.025 **U**	0.025 **U**	0.025 **U**	0.17
Total Dissolved Solids	SDWS	500	mg/L	286	263	323	508	379
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	466	528	537	585	1000
Oxygen, Dissolved	NS	NS	mg/L	0.38	0.36	0.07	0.44	6.91
Field pH	SDWS	6.5-8.5	Std. Units	6.56	6.87	7.43	6.52	6.29
Field Temperature	NS	NS	deg C	24	25.9	23.2	27.1	24.8
Turbidity	NS	NS	NTU	5.75	2.51	2.15	1.15	1.14

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-12
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	2.7	2.6	2.2	2.0	1.6
Arsenic	PDWS	10	ug/L	1.8	3.5	4.2	6.1	12.3
Barium	PDWS	2000	ug/L	34.8	37.9	34.6	35.3	40.4
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	1.4 **I**	1.0 **I**	3.1 **I**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	116	549	2300	2870	6420
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	21.3	8.5 **U**	2.9	1.9	2.2
Sodium	PDWS	160	mg/L	4.4	4.4	4.3	4.2	5.4
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.21 **I**	0.29 **I**
Vanadium	NS	NS	ug/L	36.7	37.1	26.5	15.1	8.3 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.11	0.27	0.21	0.54	1.0
Chloride	SDWS	250	mg/L	4.8 **I**	4.8 **I**	5.1	3.9 **I**	5.1
Nitrate (N)	PDWS	10	mg/L	6.7	0.064	0.025 **U**	0.025 **U**	0.036 **I**
Total Dissolved Solids	SDWS	500	mg/L	435	426	410	379	364
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	707	731	713	717	728
Oxygen, Dissolved	NS	NS	mg/L	1.5	0.42	0.05	0.87	0.28
Field pH	SDWS	6.5-8.5	Std. Units	6.55	6.7	7.34	6.44	6.97
Field Temperature	NS	NS	deg C	25.6	27.2	24.1	27.4	24.2
Turbidity	NS	NS	NTU	1.6	0.02	1.1	1.8	2.31

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-13
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	6.3	13.7	18.5	16	13
Barium	PDWS	2000	ug/L	26.1	31.1	30.3	28.4	24.4
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	1.3 **I**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	4340	7730	12800	10100	8740
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	1.8	8.5 **U**	0.93 **I**	1.1	0.74 **I**
Sodium	PDWS	160	mg/L	15	15.2	12.9	12.4	11.8
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	9.4 **I**	8.1 **I**	7.0 **I**	4.8 **I**	6.0 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	4.2	4.8	4.6	4.5	5.2
Chloride	SDWS	250	mg/L	11.4	11	9.1	9.9	8.5
Nitrate (N)	PDWS	10	mg/L	0.025 **U**	0.025 **U**	0.025 **U**	0.025 **U**	0.033 **I**
Total Dissolved Solids	SDWS	500	mg/L	720	700	722	626	588
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	1261	1281	1360	1233	1154
Oxygen, Dissolved	NS	NS	mg/L	0.27	0.47	0.04	1.81	0.19
Field pH	SDWS	6.5-8.5	Std. Units	6.58	6.63	7.33	6.47	7.01
Field Temperature	NS	NS	deg C	25.4	27.9	24.8	27.7	24.6
Turbidity	NS	NS	NTU	3.73	0.02	1.13	1.79	2.1

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-14
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.30 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.35 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	1.1	2.8	2.1	1.9	1.4
Barium	PDWS	2000	ug/L	29.4	36.4	41.8	31.7	29.5
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	1.3 **I**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	850	3600	5780	1680	1120
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.5 **I**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	5.3	8.5 **U**	1.1	0.96 **I**	2.4
Sodium	PDWS	160	mg/L	3.6	12.8	19.4	14.6	13.5
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	5.0 **U**	2.0 **I**	1.4 **I**	1.0 **U**	1.0 **U**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.059	0.35	0.92	0.78	0.31
Chloride	SDWS	250	mg/L	4.3 **I**	12.8	30	11.6	14.2
Nitrate (N)	PDWS	10	mg/L	2.2	0.07	0.025 **U**	0.025 **U**	0.055
Total Dissolved Solids	SDWS	500	mg/L	454	629	676	513	504
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	741	1046	1129	917	863
Oxygen, Dissolved	NS	NS	mg/L	0.25	0.66	0.2	1.08	0.81
Field pH	SDWS	6.5-8.5	Std. Units	6.44	6.68	7.37	6.79	7.06
Field Temperature	NS	NS	deg C	24.8	26.7	24.8	27.7	24
Turbidity	NS	NS	NTU	5.4	9.5	5.41	5.31	1.05

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-15
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	1.0 **U**
Arsenic	PDWS	10	ug/L	6.7	7.0	6.4	6.8	6.1
Barium	PDWS	2000	ug/L	65.9	60.1	62.3	66.4	58.3
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	5.5	5.4	4.7 **I**	4.6 **I**	4.9 **I**
Cobalt	NS	NS	ug/L	5.0 **U**	1.2 **I**	0.96 **U**	0.96 **U**	1.4 **I**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	22900	22200	24400	24500	21300
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	1.0 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.78 **I**	0.92 **I**	0.68 **I**	0.68 **I**	1.0 **U**
Sodium	PDWS	160	mg/L	50.8	50.8	49.9	53.3	47.5
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.21 **U**
Vanadium	NS	NS	ug/L	33.6	36.1	30.7	29.6	30.0
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.97	0.94	0.035 **U**	1.1	1.0
Chloride	SDWS	250	mg/L	87.8	75.7	90.4	86.1	76.4
Nitrate (N)	PDWS	10	mg/L	0.025 **U**	0.027 **I**	0.045 **I**	0.026 **I**	0.12 **U**
Total Dissolved Solids	SDWS	500	mg/L	588	602	605	607	600
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	867	984	987	1004	827
Oxygen, Dissolved	NS	NS	mg/L	0.14	0.25	0.05	0.48	0.32
Field pH	SDWS	6.5-8.5	Std. Units	6.23	6.66	7.01	6.3	6.7
Field Temperature	NS	NS	deg C	25.8	27.8	25.3	27.2	23.4
Turbidity	NS	NS	NTU	3.34	1.03	1.65	4.24	1.01

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-16
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.50 **I**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	2.4	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	3.8	1.4	2.1	1.6	1.3
Barium	PDWS	2000	ug/L	47.6	19.6	14.6	18	20.6
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	950	58.2	46.4	522	105
Lead	PDWS	15	ug/L	0.52 **I**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	11.3 **I**	8.5 **U**	1.0	1.9	1.3
Sodium	PDWS	160	mg/L	33.8	59.8	61.5	62.5	62.3
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	6.6 **I**	4.1 **I**	7.1 **I**	7.2 **I**	61.5
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.22	0.89	0.42	0.99	1.4
Chloride	SDWS	250	mg/L	34.4	80.2	88.3	84.4	92.8
Nitrate (N)	PDWS	10	mg/L	6.4	0.025 **U**	0.025 **U**	0.025 **U**	0.025 **U**
Total Dissolved Solids	SDWS	500	mg/L	386	350	359	406	347
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	622	676	678	722	696
Oxygen, Dissolved	NS	NS	mg/L	0.7	0.31	0.03	1.21	0.32
Field pH	SDWS	6.5-8.5	Std. Units	6.06	7.04	7.57	7.19	7.08
Field Temperature	NS	NS	deg C	25.6	27.1	25.1	26.2	24.4
Turbidity	NS	NS	NTU	8.4	1.26	3.79	5.73	2.77

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-17
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	1.2	1.7	1.5	2.3	1.5
Barium	PDWS	2000	ug/L	5.0 **U**	5.5 **I**	3.7 **I**	7.5 **I**	5.4 **I**
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	8	6.8	5.2	6.2	6.7
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	5650	6180	5160	4980	5590
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	1.3	8.5 **U**	1.3	2.1	1.3
Sodium	PDWS	160	mg/L	2.6	2.3	2.3	2.6	3.1
Thallium	PDWS	2	ug/L	0.5 **U**	0.50 **U**	0.5 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	29	28	24.6	23.4	23.7
General Chemistry								
Ammonia (N)	NS	NS	mg/L	1.1	0.98	0.73	0.83	1.4
Chloride	SDWS	250	mg/L	4.4 **I**	4.0 **I**	4.2 **I**	4.3 **I**	5.7
Nitrate (N)	PDWS	10	mg/L	0.025 **U**	0.025 **U**	0.025 **I**	0.025 **U**	0.025 **U**
Total Dissolved Solids	SDWS	500	mg/L	83	77	82	164	49
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	95.1	131.6	134.1	183.9	119
Oxygen, Dissolved	NS	NS	mg/L	0.22	0.3	0.08	0.65	6.24
Field pH	SDWS	6.5-8.5	Std. Units	5.52	5.98	6.32	6.24	5.73
Field Temperature	NS	NS	deg C	25.7	26.9	22.8	26.9	24
Turbidity	NS	NS	NTU	7.23	7.8	7.6	8.1	4.45

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-18
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	4.7	19.7	42.3	28.2	28.8
Barium	PDWS	2000	ug/L	19.5	35	31.6	33.6	54.2
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	3.4 I	2.3 I	3.7 I	2.7 I	1.9 I
Cobalt	NS	NS	ug/L	5.0 **U**	1.4 I	1.2 I	0.96 I	1.3 I
Copper	SDWS	1000	ug/L	6.8	3.3 I	2.6 **U**	4.7 I	2.6 **U**
Iron	SDWS	300	ug/L	1150	12600	35200	19300	28400
Lead	PDWS	15	ug/L	0.87 I	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	1.1	8.5 **U**	2.8	1.8	1.3
Sodium	PDWS	160	mg/L	9.3	12.1	11.9	22.4	30.5
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	12.3	13.8	9.1 I	12.6	7.5 I
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.035 **U**	1.3	3.1	1.3	2.1
Chloride	SDWS	250	mg/L	15.9	15.3	16.7	29.9	59.8
Nitrate (N)	PDWS	10	mg/L	0.1	0.054	0.025 **U**	0.34	0.031 I
Total Dissolved Solids	SDWS	500	mg/L	266	367	478	506	1880
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	342	567	759	710	976
Oxygen, Dissolved	NS	NS	mg/L	2.52	0.35	0.06	1.76	0.23
Field pH	SDWS	6.5-8.5	Std. Units	6	6.11	6.9	6.09	6.6
Field Temperature	NS	NS	deg C	25.3	27.8	22.9	26.3	24
Turbidity	NS	NS	NTU	15.4	13.2	12.6	6.45	3.62

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-19
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.8 **I**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.1 **U**	0.10 **U**	0.30 **U**	0.1 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.68 **I**
Arsenic	PDWS	10	ug/L	3.2	9.5	3.9	5	1.1
Barium	PDWS	2000	ug/L	13.6	6.3 **I**	14.3	13	7.6 **I**
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **I**	2.2 **I**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	5.0 **I**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	701	3110	2130	1200	90.7
Lead	PDWS	15	ug/L	0.50 **U**	0.63 **I**	1	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.75 **I**	1.5	1.4	0.58 **I**	0.72 **I**
Sodium	PDWS	160	mg/L	15.4	10.2	34.7	35.5	21.3
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	6.5 **I**	9.6 **I**	10 **I**	2.8 **I**	4.8 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.13	1.4	0.29	0.71	0.035 **U**
Chloride	SDWS	250	mg/L	28.2	18.1	100	64.7	35.7
Nitrate (N)	PDWS	10	mg/L	0.055	0.025 **U**	0.027 **I**	0.025 **U**	1.3
Total Dissolved Solids	SDWS	500	mg/L	298	243	230	581	384
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	417	314	927	850	544
Oxygen, Dissolved	NS	NS	mg/L	1.07	0.42	0.29	0.72	2.15
Field pH	SDWS	6.5-8.5	Std. Units	5.77	6.25	7.06	6.08	6.28
Field Temperature	NS	NS	deg C	26.3	27.7	24.6	28.3	25.1
Turbidity	NS	NS	NTU	2.5	0.01	3.2	3.89	8.5

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-20
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.52 **I**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **I**
Arsenic	PDWS	10	ug/L	3.2	27.3	12	14.7	1.3
Barium	PDWS	2000	ug/L	12.1	11.7	13.3	18.8	20.2
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	3.2 **I**	1.7 **I**	2.6 **I**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	3.1 **I**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	835	2830	1420	1810	63.1
Lead	PDWS	15	ug/L	0.50 **U**	0.56 **I**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.76 **I**	3.9	1.7	1.1	1.1
Sodium	PDWS	160	mg/L	7	6.4	8.7	10.9	11.5
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	6.1 **I**	6.2 **I**	3.5 **I**	5.7 **I**	9.6 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.035 **U**	1.5	1.2	0.99	0.035 **U**
Chloride	SDWS	250	mg/L	14.4	10.9	21.1	17.9	16.7
Nitrate (N)	PDWS	10	mg/L	0.21	0.058	0.032 **I**	0.036 **I**	5.8
Total Dissolved Solids	SDWS	500	mg/L	274	267	412	411	466
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	407	357	668	672	761
Oxygen, Dissolved	NS	NS	mg/L	1.46	0.51	0.42	0.56	2.9
Field pH	SDWS	6.5-8.5	Std. Units	6.05	6.47	7.29	6.19	6.49
Field Temperature	NS	NS	deg C	26.1	27.8	25.8	29.7	25.2
Turbidity	NS	NS	NTU	10	1.24	1.78	7.5	4.9

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-21
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.53 **I**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	2.3	5.8	8.9	7.6	6.5
Barium	PDWS	2000	ug/L	10.3	12.1	12.3	15.7	12.8
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	3.0 **I**	4.4 **I**	2.8 **I**	3.2 **I**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	4.5 **I**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	366	1260	3330	1200	2370
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.79 **I**	1.0	1.1	0.83 **I**	0.63 **I**
Sodium	PDWS	160	mg/L	6.6	3.7	4.8	6.0	6.0
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	7.9 **I**	5.1 **I**	5.4 **I**	4.0 **I**	4.2 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.069	0.36	0.52	0.4	0.61
Chloride	SDWS	250	mg/L	10.6	9.6	8.9	11.9	7.0
Nitrate (N)	PDWS	10	mg/L	0.059	0.13	0.036 **I**	0.23	0.034 **I**
Total Dissolved Solids	SDWS	500	mg/L	212	173	138	183	198
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	272	206	298	289	352
Oxygen, Dissolved	NS	NS	mg/L	0.38	0.54	0.07	0.84	0.71
Field pH	SDWS	6.5-8.5	Std. Units	5.57	5.92	6.61	6.21	6.3
Field Temperature	NS	NS	deg C	27.1	28.1	25.2	29.1	25.6
Turbidity	NS	NS	NTU	8.76	0.05	1.97	6.71	3.5

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-22
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	1.4	15.8	9.5	14.4	2.2
Barium	PDWS	2000	ug/L	20.2	24.2	14.6	19.1	13.6
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	6.1	6	2.5 **I**	3.5 **I**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	1.1 **I**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.9 **I**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	957	9510	6560	4730	2280
Lead	PDWS	15	ug/L	2.2	1.7	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	1.6	2.7	1.6	1.7	1.0
Sodium	PDWS	160	mg/L	4.9	4.4	6.3	5.3	4.9
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	26.6	23	7.3 **I**	8.0 **I**	4.2 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.086 **I**	2.3	3.2	3.3	3.5
Chloride	SDWS	250	mg/L	8.3	8.1	10.5	10.6	8.2
Nitrate (N)	PDWS	10	mg/L	0.13	0.064	0.069	0.025 **U**	0.025 **U**
Total Dissolved Solids	SDWS	500	mg/L	164	201	283	213	173
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	209	287	442	346	374
Oxygen, Dissolved	NS	NS	mg/L	0.19	0.27	0.14	1.18	0.86
Field pH	SDWS	6.5-8.5	Std. Units	5.47	5.92	6.5	5.52	6.19
Field Temperature	NS	NS	deg C	25.9	28.1	25.4	28	25
Turbidity	NS	NS	NTU	7.6	15.4	4.75	3.87	3.08

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-23
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	1.2
Arsenic	PDWS	10	ug/L	3.6	6	2.2	4	1.7
Barium	PDWS	2000	ug/L	15.1	12	16	23.4	12.7
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	4.8 **I**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	1260	2630	984	3440	106
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.82 **I**	1.1	1.5	0.65 **I**	1.1
Sodium	PDWS	160	mg/L	7.2	4.7	6.4	8.3	7.8
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	5.0 **U**	4.4 **I**	1.2 **I**	4.5 **I**	6.0 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.63	1.2	0.57	0.32	0.068
Chloride	SDWS	250	mg/L	12.4	5.7	12	15.5	15.6
Nitrate (N)	PDWS	10	mg/L	0.13	0.059	0.12	0.025 **U**	0.24
Total Dissolved Solids	SDWS	500	mg/L	199	200	288	360	215
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	288	309	442	504	279
Oxygen, Dissolved	NS	NS	mg/L	0.59	0.5	0.2	0.73	2.47
Field pH	SDWS	6.5-8.5	Std. Units	5.89	6.35	6.96	5.96	6.12
Field Temperature	NS	NS	deg C	27.7	28.5	26.2	28.6	25.5
Turbidity	NS	NS	NTU	6.72	0.06	2.64	7.18	2.56

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-24
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.10 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.50 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.50 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	0.57 **I**	8.7	3.5	2.1	0.67 **I**
Barium	PDWS	2000	ug/L	30.6	12.9	13.9	16.2	14
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	7.9	1.7 **U**	1.9 **I**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.9 **I**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	551	13200	3870	4000	239
Lead	PDWS	15	ug/L	2.3	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	4.2 **I**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	1.4	1.2	1.3	0.57 **I**	1.2
Sodium	PDWS	160	mg/L	5.1	5.5	7.7	9.3	11.2
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	12.6	6.7 **I**	5.2 **I**	5.3 **I**	2.9 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.035 **U**	2.3	1.7	0.87	0.26
Chloride	SDWS	250	mg/L	5.5	7.4	21.1	17.6	26.9
Nitrate (N)	PDWS	10	mg/L	0.13	0.025 **U**	0.059	0.025 **U**	0.84
Total Dissolved Solids	SDWS	500	mg/L	220	280	267	360	183
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	273	417	425	486	390
Oxygen, Dissolved	NS	NS	mg/L	3.1	0.47	0.04	0.61	2.99
Field pH	SDWS	6.5-8.5	Std. Units	6.14	6.43	6.71	5.86	6.31
Field Temperature	NS	NS	deg C	27.1	28.6	26.1	28.7	25.4
Turbidity	NS	NS	NTU	8.5	0.04	6.51	7.2	8.86

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-25
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.54 **I**
Arsenic	PDWS	10	ug/L	0.50 **U**	8.3	3.0	3.4	0.66 **I**
Barium	PDWS	2000	ug/L	17	20.4	22.9	36.2	20.1
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	1.7 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	229	5230	2610	2210	108
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.62 **I**	0.64 **I**	0.63 **I**	2.4	0.96 **I**
Sodium	PDWS	160	mg/L	9	8.5	9.8	14.1	13.7
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	5.0 **U**	5.5 **I**	3.0 **I**	3.8 **I**	4.1 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.035 **U**	1.2	0.46	0.34	0.035 **U**
Chloride	SDWS	250	mg/L	13.3	10.5	22.3	26.3	41
Nitrate (N)	PDWS	10	mg/L	0.35	0.025 **U**	0.025 **U**	0.025 **U**	0.57
Total Dissolved Solids	SDWS	500	mg/L	224	237	289	538	369
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	378	402	458	890	511
Oxygen, Dissolved	NS	NS	mg/L	2.63	0.26	0.17	0.7	2.7
Field pH	SDWS	6.5-8.5	Std. Units	6.64	6.71	7.48	6.46	6.57
Field Temperature	NS	NS	deg C	25.5	27.6	23.3	27.7	25.8
Turbidity	NS	NS	NTU	12.5	4.32	4.2	2	7.68

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-26
(Detected Parameters Only)

Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Arsenic	PDWS	10	ug/L	4.2	7.0	10.8	9.7	2.3
Barium	PDWS	2000	ug/L	17.9	21	17	19.4	16.8
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	0.33 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	2.1 **I**	3.6 **I**	3.0 **I**	2.4 **I**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	0.96 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	2.6 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	1000	8430	6670	4230	2420
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	2.1 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.84 **I**	0.50 **U**	1.7	1.9	1.1
Sodium	PDWS	160	mg/L	8.9	11	9.9	11.7	12.8
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	8.6 **I**	5.0 **I**	5.1 **I**	4.1 **I**	5.7 **I**
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.22	1.0	1.0	1.6	1.5
Chloride	SDWS	250	mg/L	18.7	16.5	19.1	26.8	36.6
Nitrate (N)	PDWS	10	mg/L	2	0.077	0.025 **U**	0.025 **U**	0.075
Total Dissolved Solids	SDWS	500	mg/L	229	351	306	318	367
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	272	548	492.6	622	544
Oxygen, Dissolved	NS	NS	mg/L	2.59	0.25	0.05	1.47	0.2
Field pH	SDWS	6.5-8.5	Std. Units	5.96	6.28	6.89	6.2	6.44
Field Temperature	NS	NS	deg C	25.1	27.4	23.5	27.3	24.6
Turbidity	NS	NS	NTU	15.4	6.35	4.16	3.13	2.32

Notes:

1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

Summary of Groundwater Water Quality Analytical Results at GW-27R
(Detected Parameters Only)

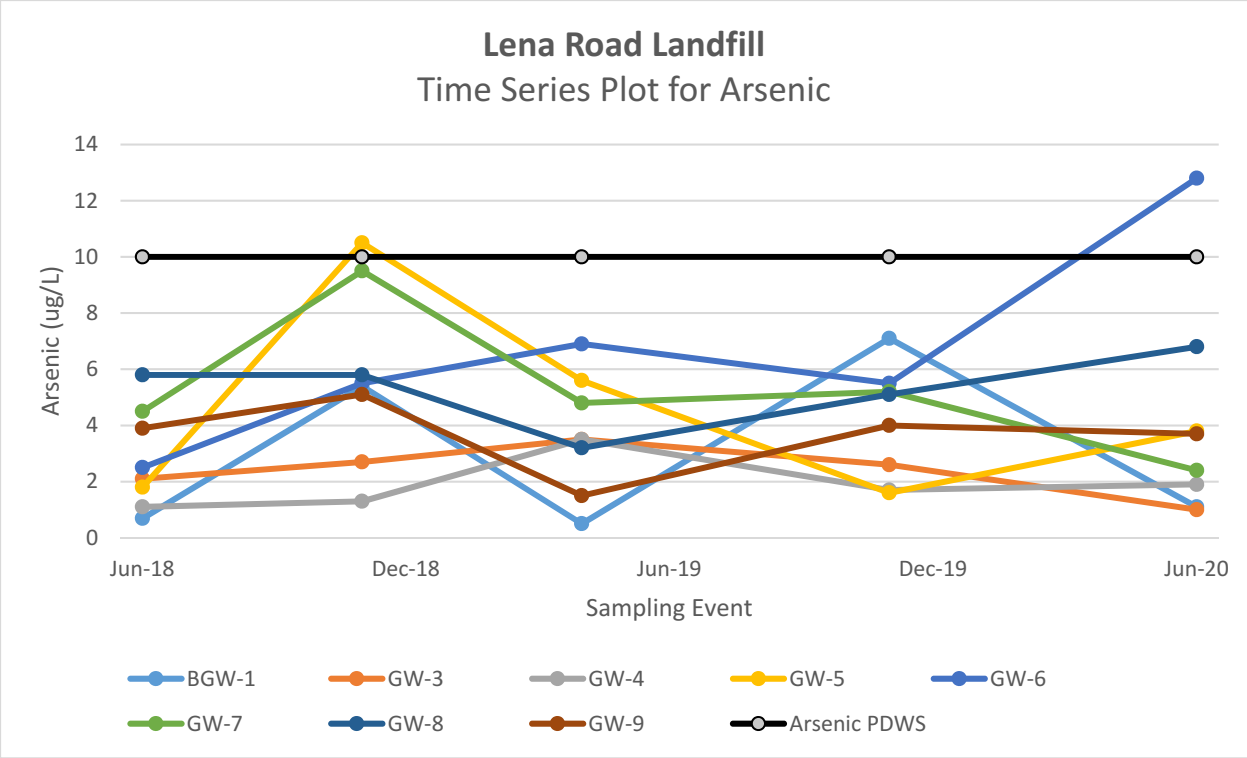
Parameter	Standard	MCL	Units	Jun-18	Nov-18	Apr-19	Nov-19	Jun-20
Volatile Organic Compounds								
Acetone	NS	NS	ug/L	10 **U**	10 **U**	5.3 **U**	5.3 **U**	5.3 **U**
Benzene	PDWS	1	ug/L	0.10 **U**	0.10 **U**	0.30 **U**	0.30 **U**	0.10 **U**
Carbon Disulfide	NS	NS	ug/L	5.0 **U**	5.0 **U**	0.45 **U**	0.45 **U**	0.45 **U**
Chlorobenzene	PDWS	100	ug/L	0.50 **U**	0.50 **U**	0.35 **U**	0.35 **U**	0.50 **U**
Toluene	SDWS	40	ug/L	0.50 **U**	0.50 **U**	0.33 **U**	0.33 **U**	0.50 **U**
Metals								
Antimony	PDWS	6	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	1.5
Arsenic	PDWS	10	ug/L	4.4	30.7	16.8	10.2	3.0
Barium	PDWS	2000	ug/L	13	15.4	71.6	13.8	18.9
Cadmium	PDWS	5	ug/L	0.50 **U**	0.33 **U**	1.6 **U**	0.33 **U**	0.33 **U**
Chromium	PDWS	100	ug/L	2.5 **U**	1.7 **U**	8.5 **U**	1.7 **U**	1.7 **U**
Cobalt	NS	NS	ug/L	5.0 **U**	0.96 **U**	4.8 **U**	0.96 **U**	0.96 **U**
Copper	SDWS	1000	ug/L	2.5 **U**	2.6 **U**	13 **U**	2.6 **U**	2.6 **U**
Iron	SDWS	300	ug/L	1330	9960	30100	4070	608
Lead	PDWS	15	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**	0.50 **U**
Nickel	PDWS	100	ug/L	2.5 **U**	2.1 **U**	10.5 **U**	2.1 **U**	2.1 **U**
Selenium	PDWS	50	ug/L	0.50 **U**	4.1	0.58 **I**	0.77 **I**	0.68 **I**
Sodium	PDWS	160	mg/L	11.9	6.3	31.4	5.7	6.3
Thallium	PDWS	2	ug/L	0.50 **U**	0.50 **U**	0.50 **U**	0.11 **U**	0.11 **U**
Vanadium	NS	NS	ug/L	10.4	8.1 **I**	32.4 **I**	6.1 **I**	18
General Chemistry								
Ammonia (N)	NS	NS	mg/L	0.035 **U**	1.3	0.9	1.0	0.42
Chloride	SDWS	250	mg/L	26.3	9.9	10.3	5.9	14.2
Nitrate (N)	PDWS	10	mg/L	0.059	0.059	0.05	0.039 **I**	2.6
Total Dissolved Solids	SDWS	500	mg/L	354	314	257	299	381
Field Parameter								
Specific Conductance	NS	NS	umhos/cm	579	527	465.8	529	577
Oxygen, Dissolved	NS	NS	mg/L	0.96	0.4	0.07	1.98	0.31
Field pH	SDWS	6.5-8.5	Std. Units	6.53	6.58	7.21	6.28	6.44
Field Temperature	NS	NS	deg C	25.3	27.6	23.9	28	24.9
Turbidity	NS	NS	NTU	15.4	0.1	1.79	4.67	3.36

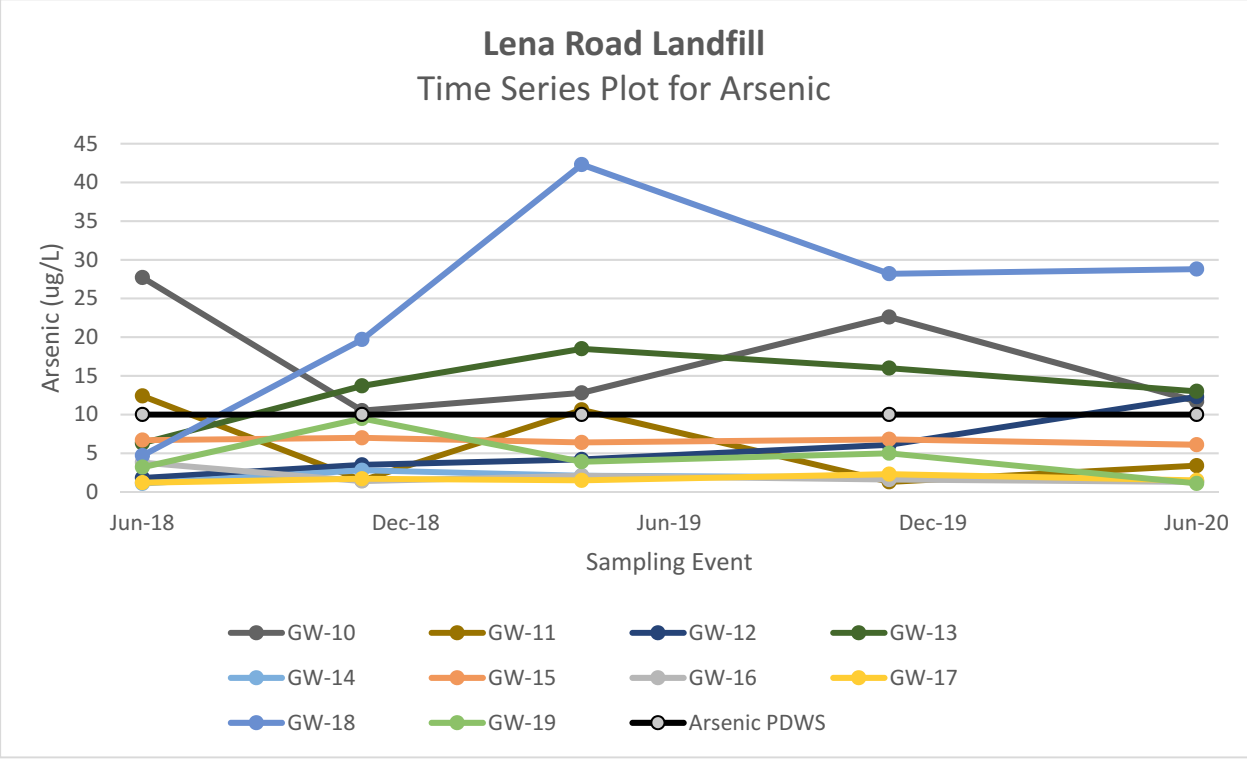
Notes:

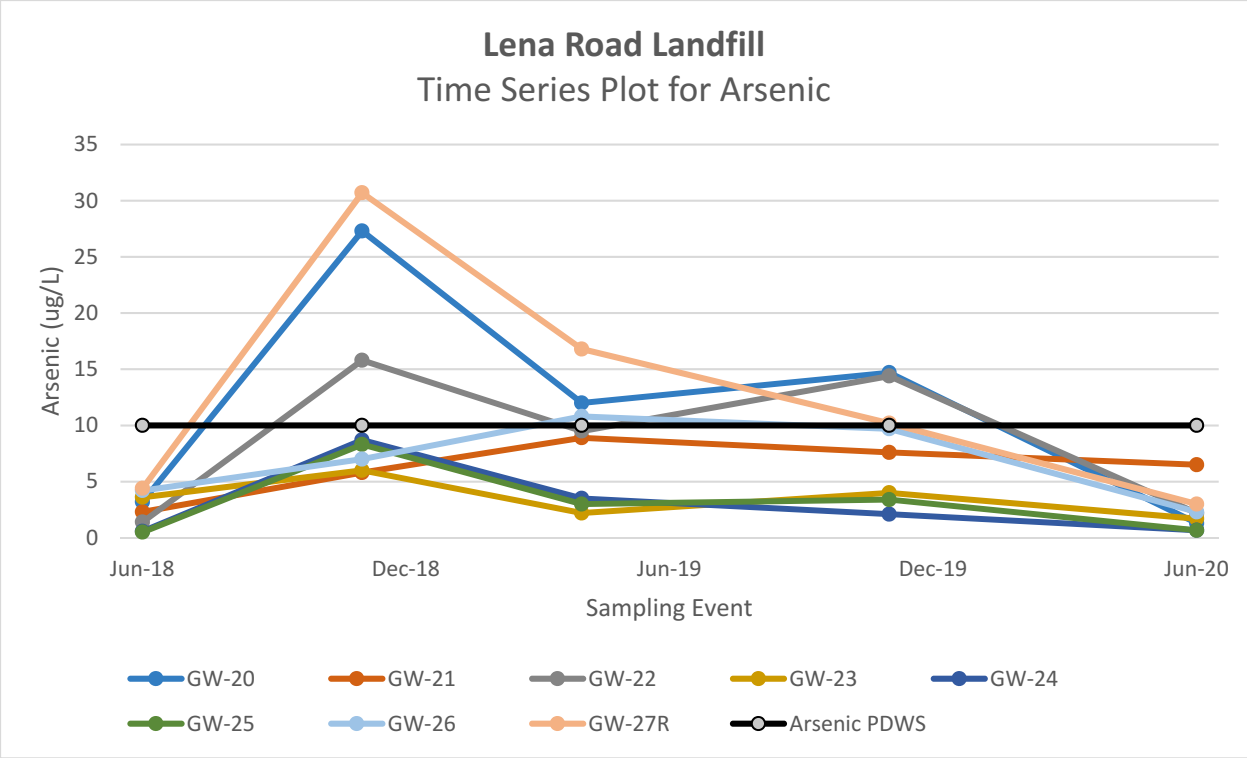
1. PDWS = Primary Drinking Water Standard (62-550 F.A.C.)
2. SDWS = Secondary Drinking Water Standard (62-550 F.A.C.)
3. GCTL = Groundwater Clean-Up Target Level (62-777 F.A.C.)
4. NS = No numeric standard has been set for this analyte.
5. --- = Parameter not analyzed.
6. mg/L = milligrams per liter
7. ug/L = micrograms per liter
8. NTU = nephelometric turbidity units
9. umhos/cm = micromhos per centimeter
10. Yellow shaded values indicate parameter concentrations exceed PDWS, SDWS, or GCTL.
11. Degrees C = degrees Celsius
12. U = Analyte concentration was below the laboratory detection limit (value shown).
13. I = Analyte concentration was between the laboratory detection limit and laboratory practical quantitation limit.
14. J = Estimated Value. Matrix spike recovery exceeded QC limits. Batch accepted based on laboratory control sample recovery.

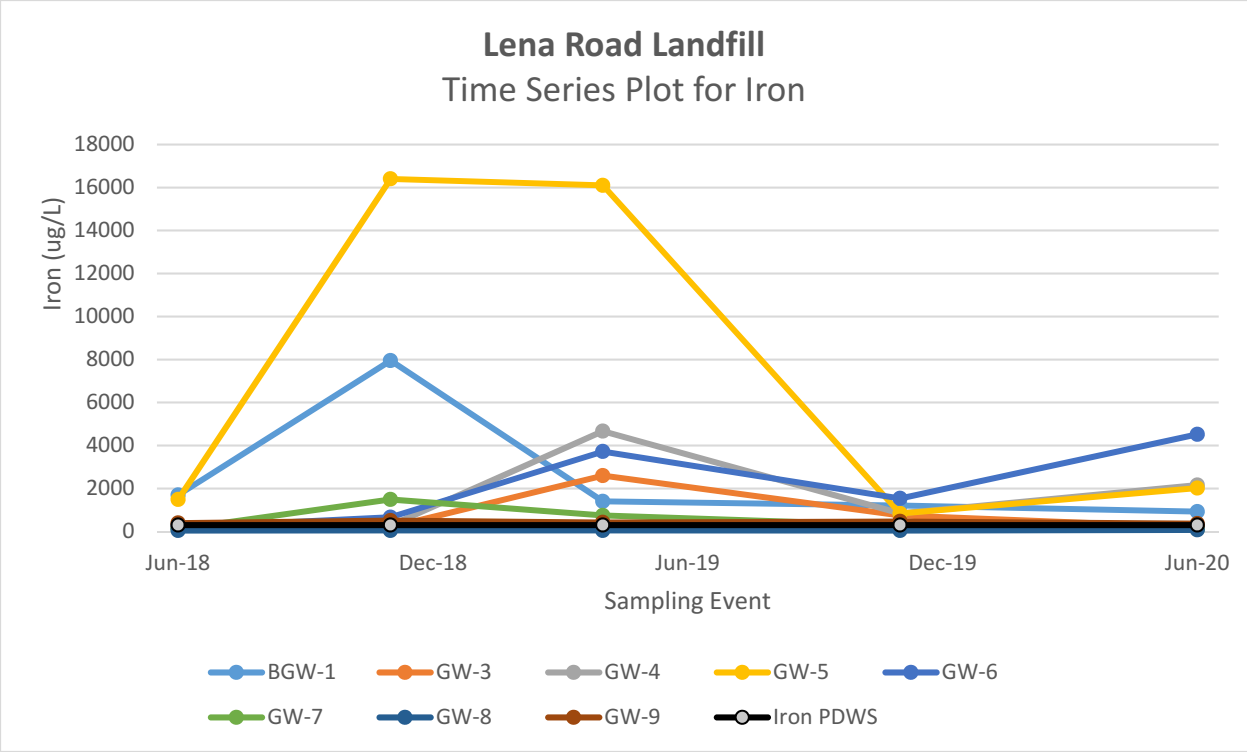
Appendix C

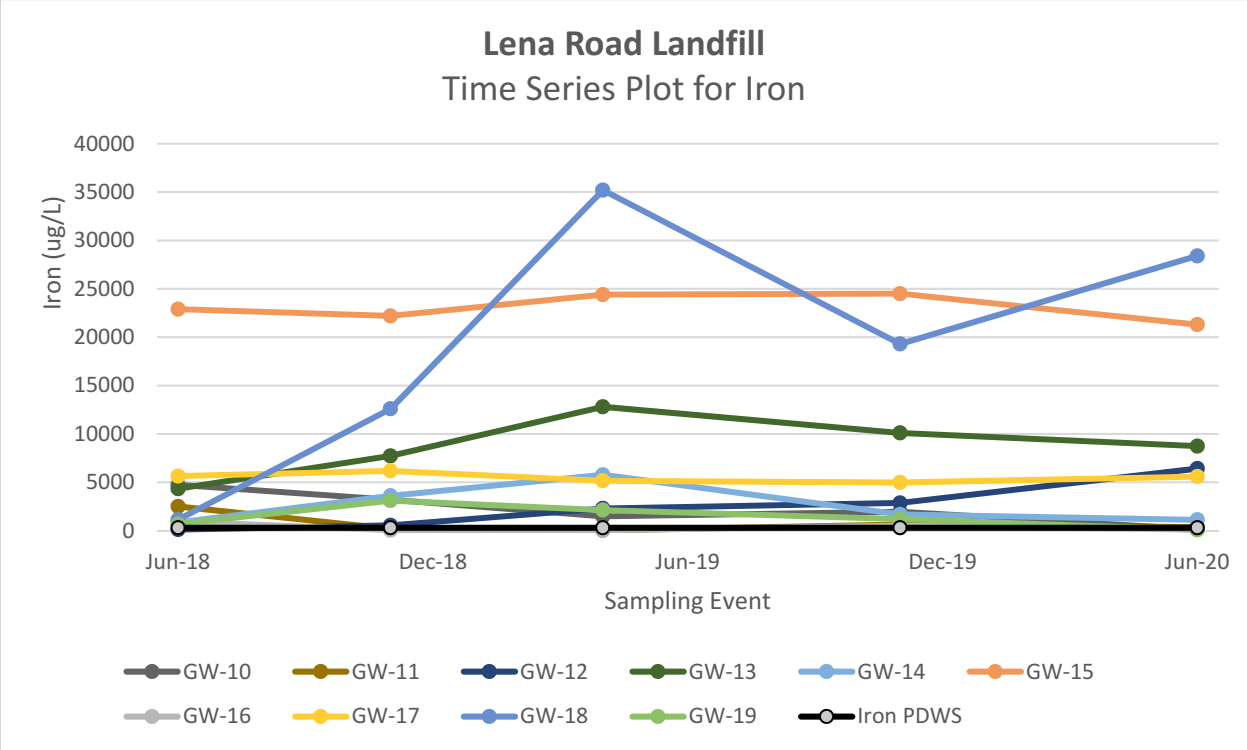
Time Series Plots of Water Quality Trends

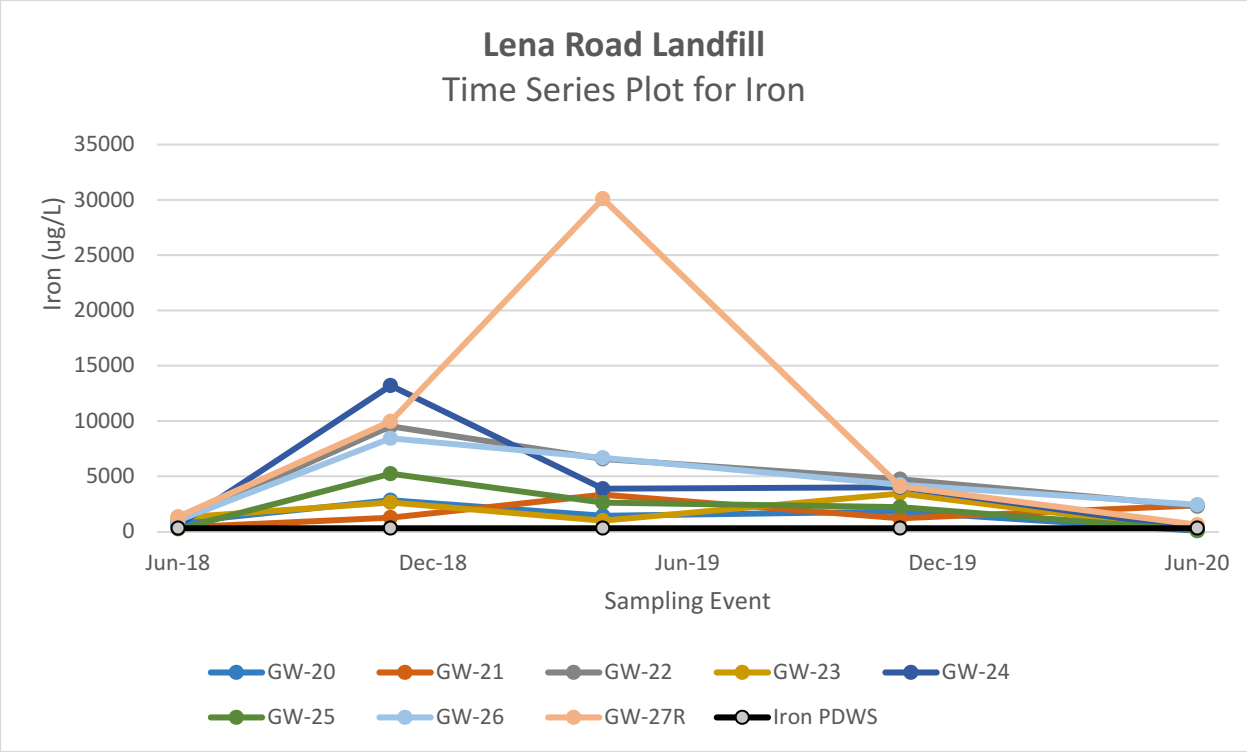

Lena Road Landfill
Time Series Plot for Arsenic
Arsenic (ug/L)
14
12
10
8
6
4
2
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
Arsenic PDWS

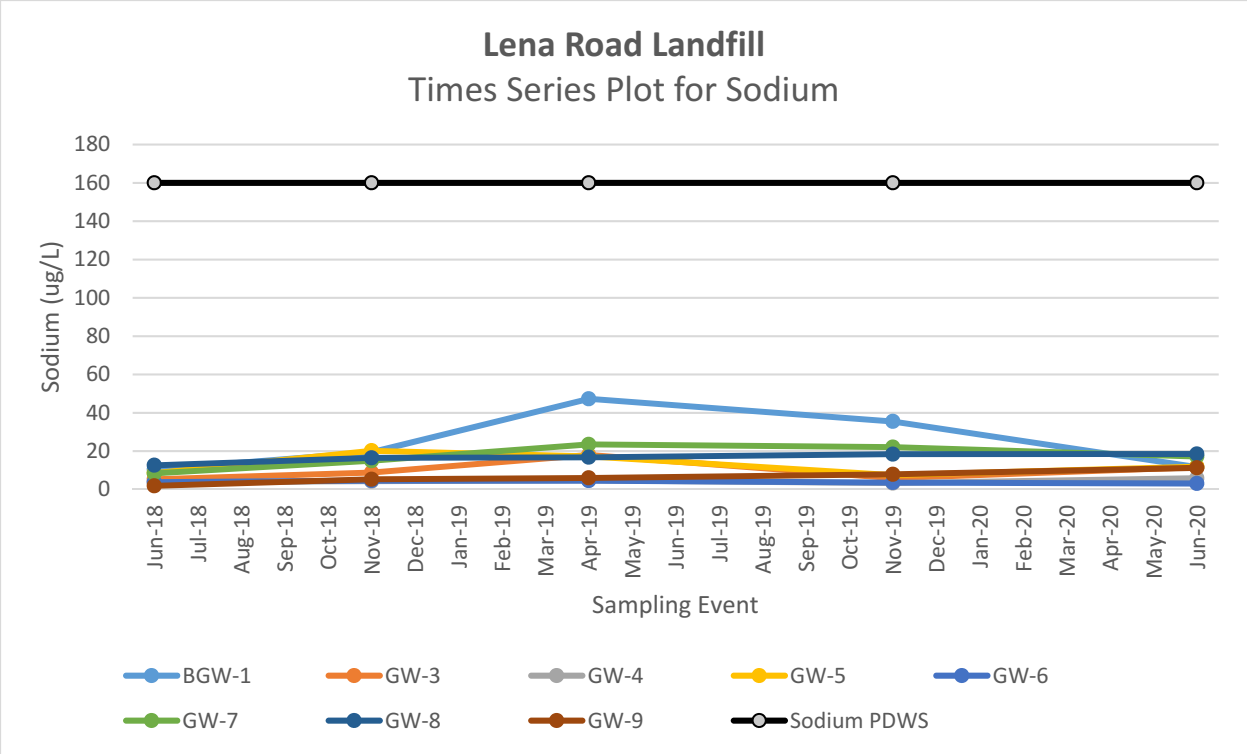

Lena Road Landfill
Time Series Plot for Arsenic
Arsenic (ug/L)
45
40
35
30
25
20
15
10
5
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19
Arsenic PDWS

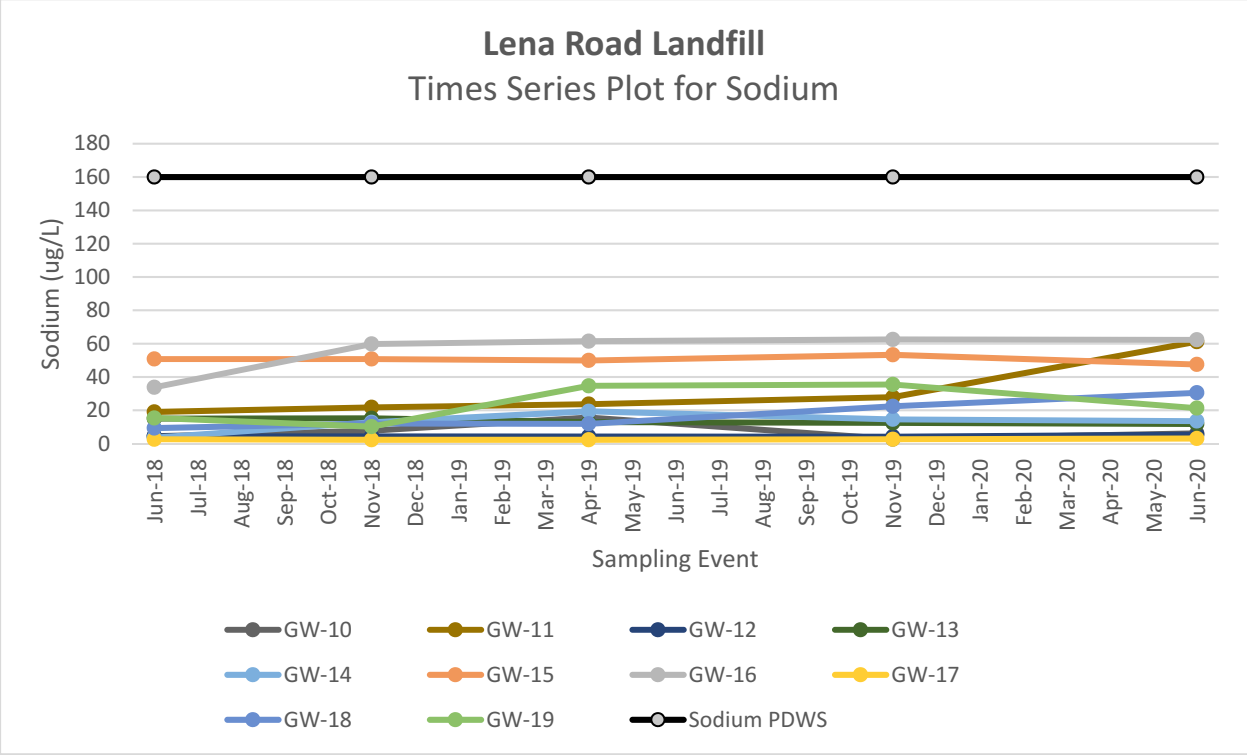

Lena Road Landfill
Time Series Plot for Arsenic
Arsenic (ug/L)
35
30
25
20
15
10
5
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R
Arsenic PDWS

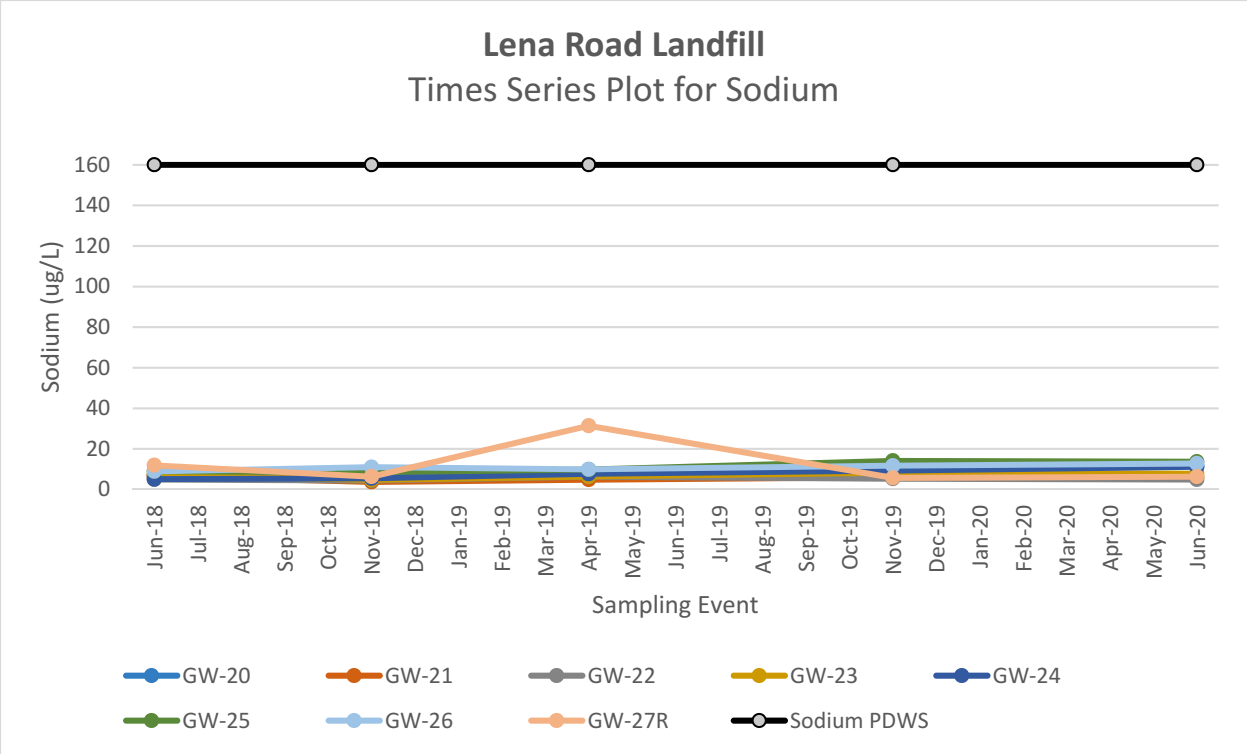

Lena Road Landfill
Time Series Plot for Iron
Iron (ug/L)
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
Iron PDWS

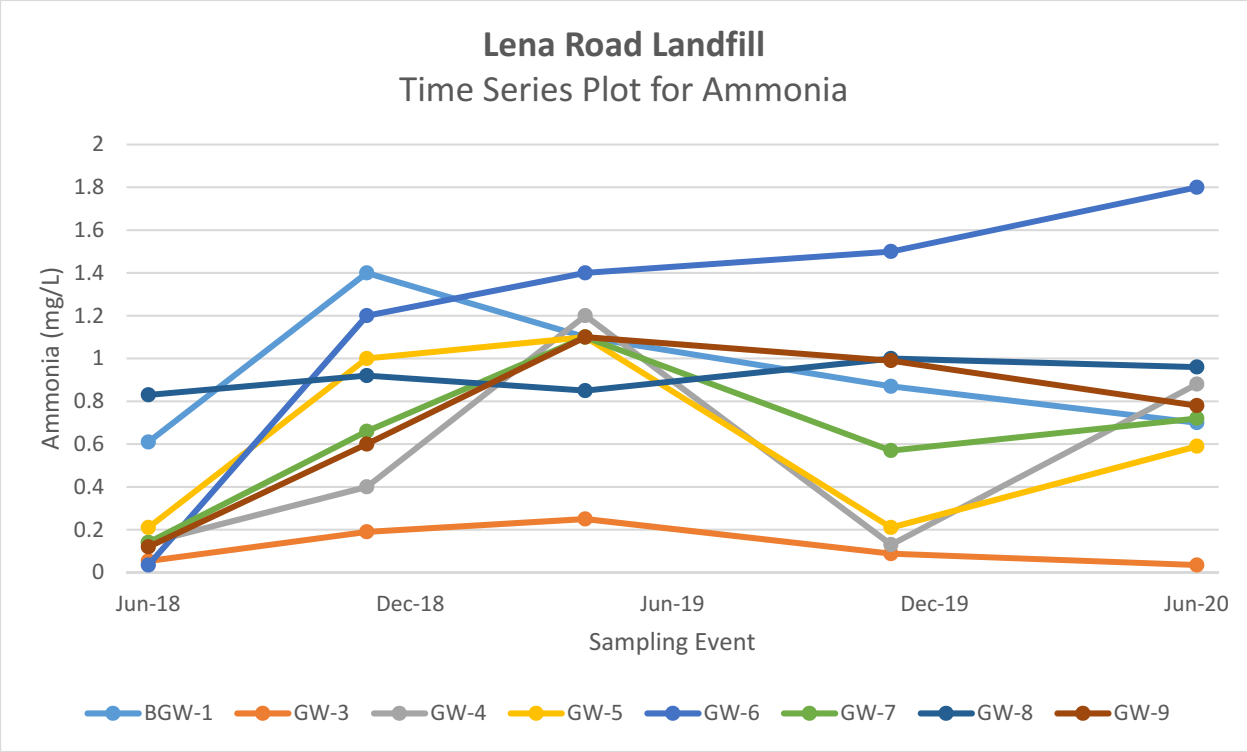

Lena Road Landfill
Time Series Plot for Iron
Iron (ug/L)
40000
35000
30000
25000
20000
15000
10000
5000
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19
Iron PDWS

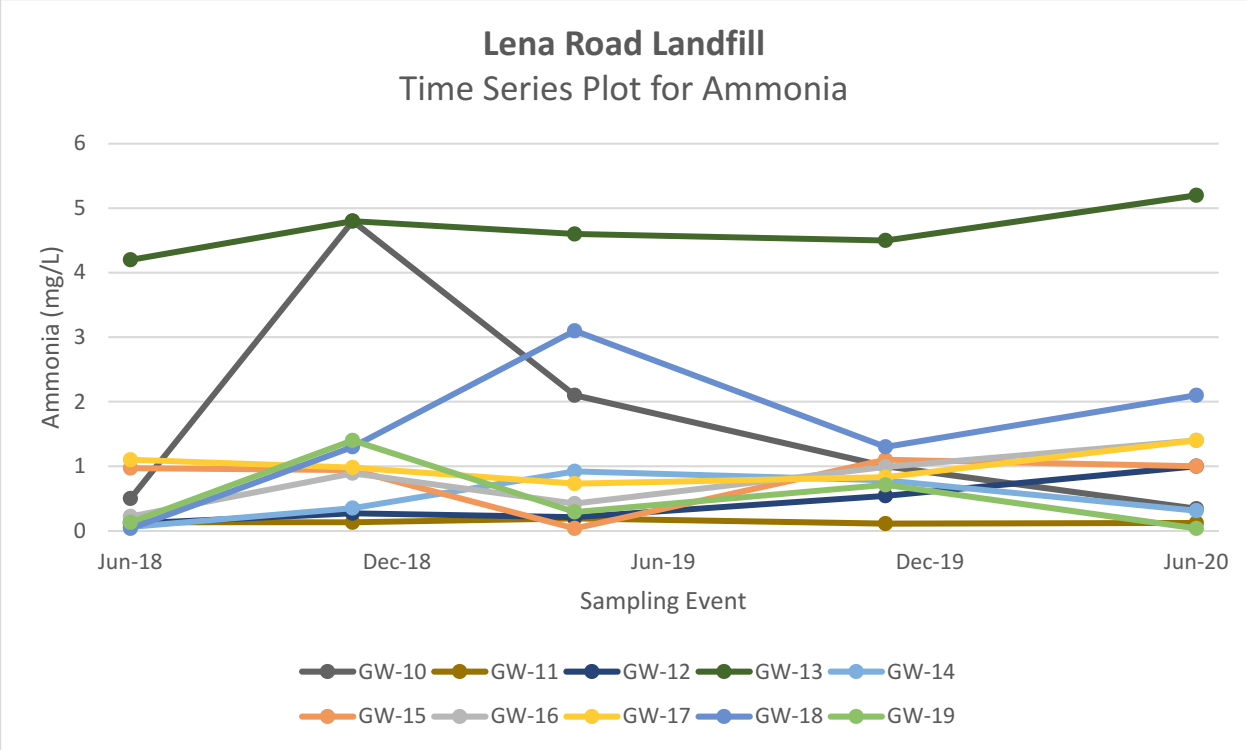

Lena Road Landfill
Time Series Plot for Iron
Iron (ug/L)
35000
30000
25000
20000
15000
10000
5000
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R
Iron PDWS

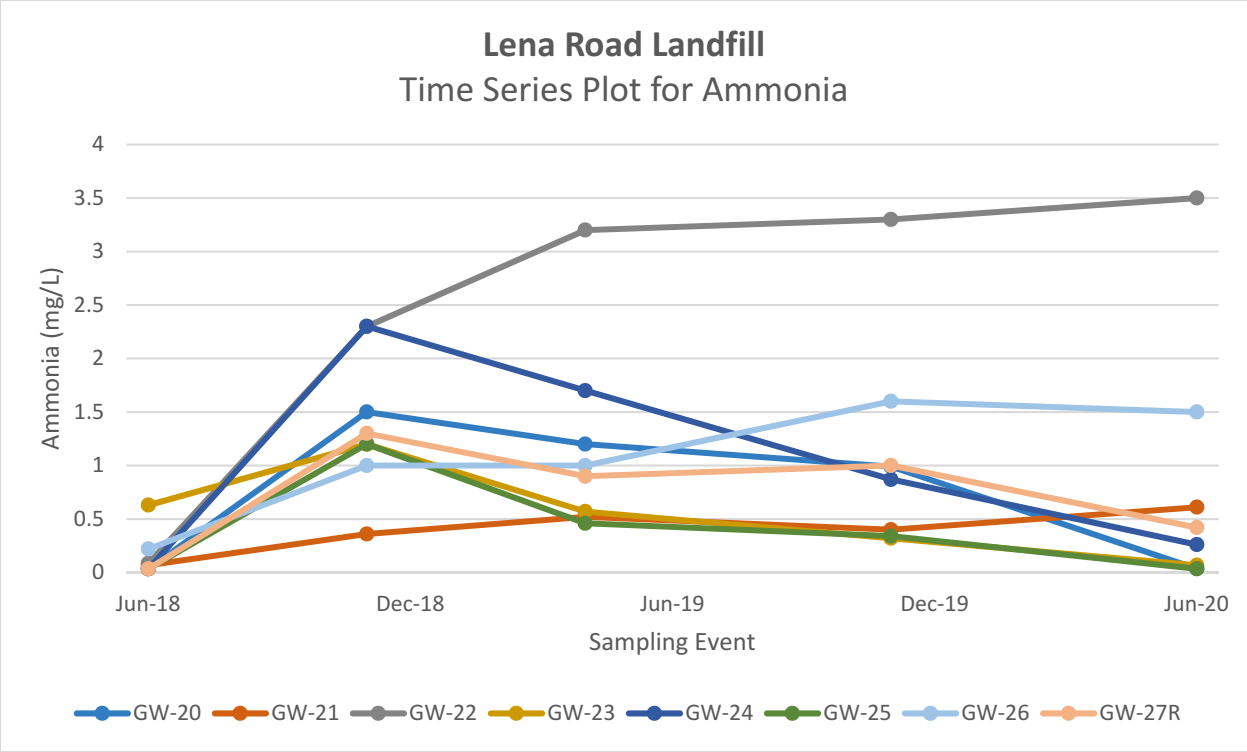

Lena Road Landfill
Times Series Plot for Sodium
Sodium (ug/L)
180
160
140
120
100
80
60
40
20
0
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
Sodium PDWS

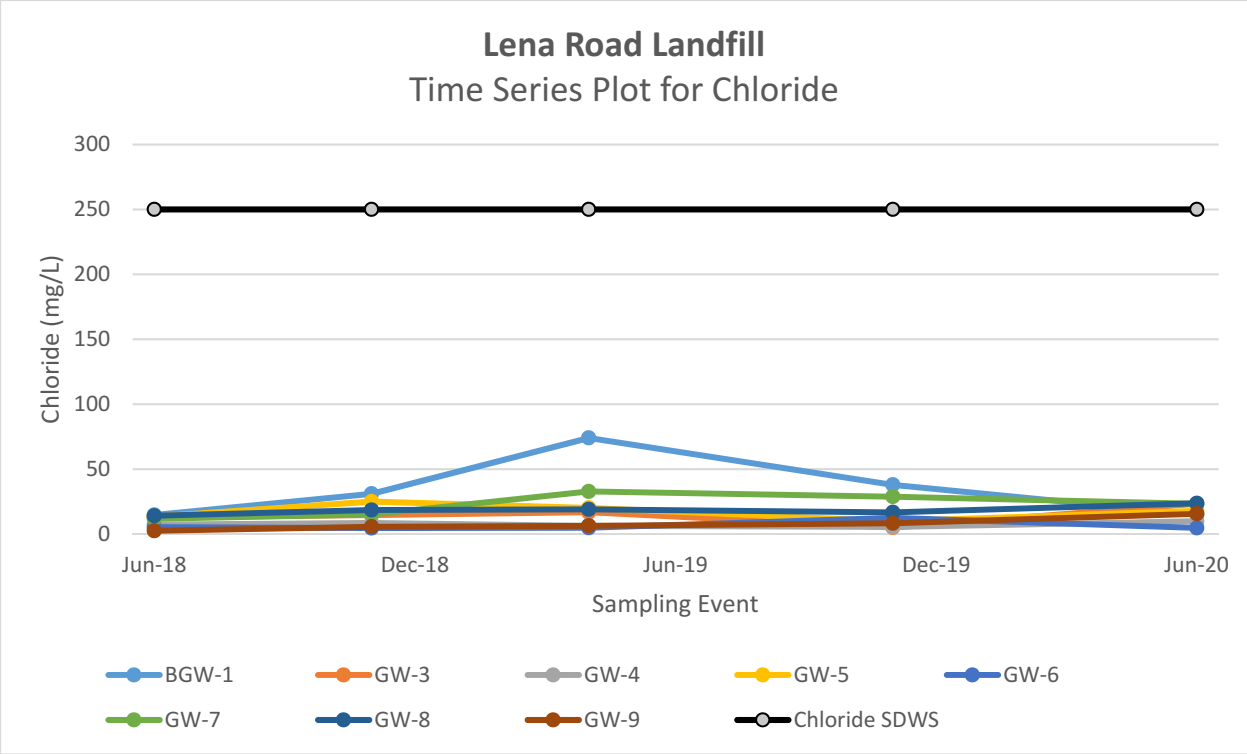

Lena Road Landfill
Times Series Plot for Sodium
Sodium (ug/L)
180
160
140
120
100
80
60
40
20
0
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19
Sodium PDWS

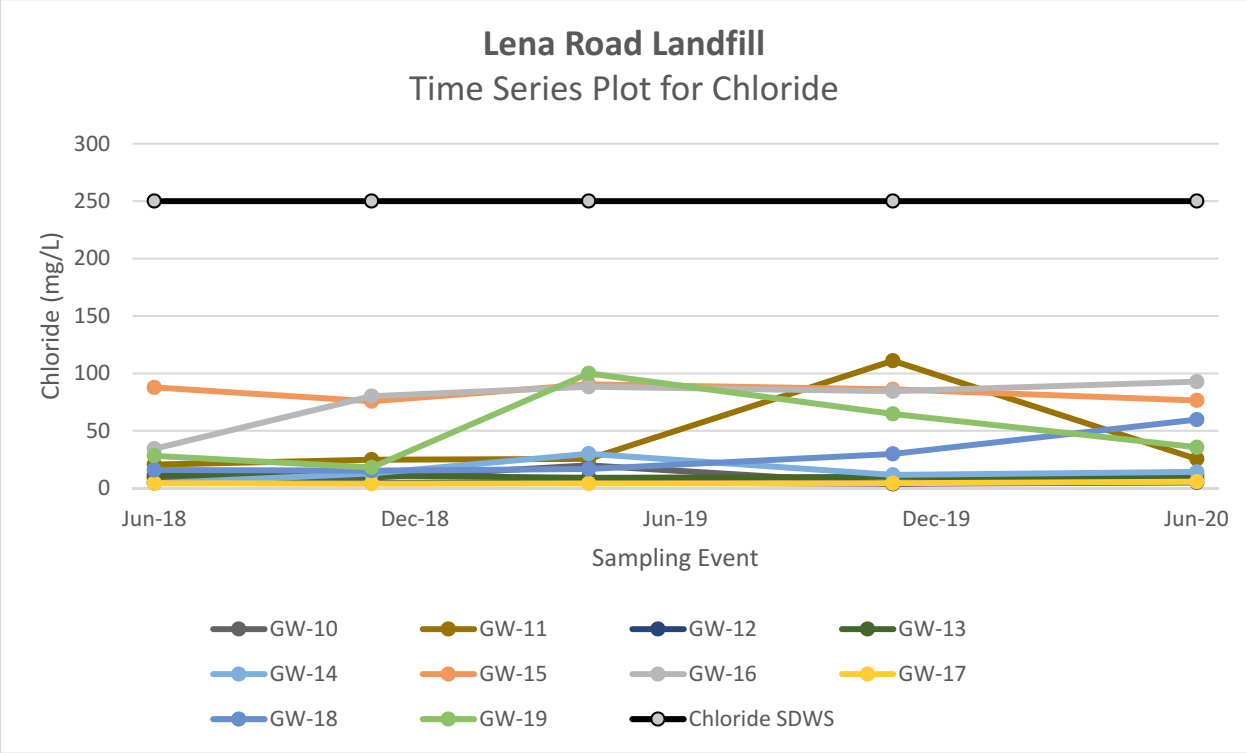

Lena Road Landfill
Times Series Plot for Sodium
Sodium (ug/L)
160
140
120
100
80
60
40
20
0
Jun-18
Jul-18
Aug-18
Sep-18
Oct-18
Nov-18
Dec-18
Jan-19
Feb-19
Mar-19
Apr-19
May-19
Jun-19
Jul-19
Aug-19
Sep-19
Oct-19
Nov-19
Dec-19
Jan-20
Feb-20
Mar-20
Apr-20
May-20
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R
Sodium PDWS

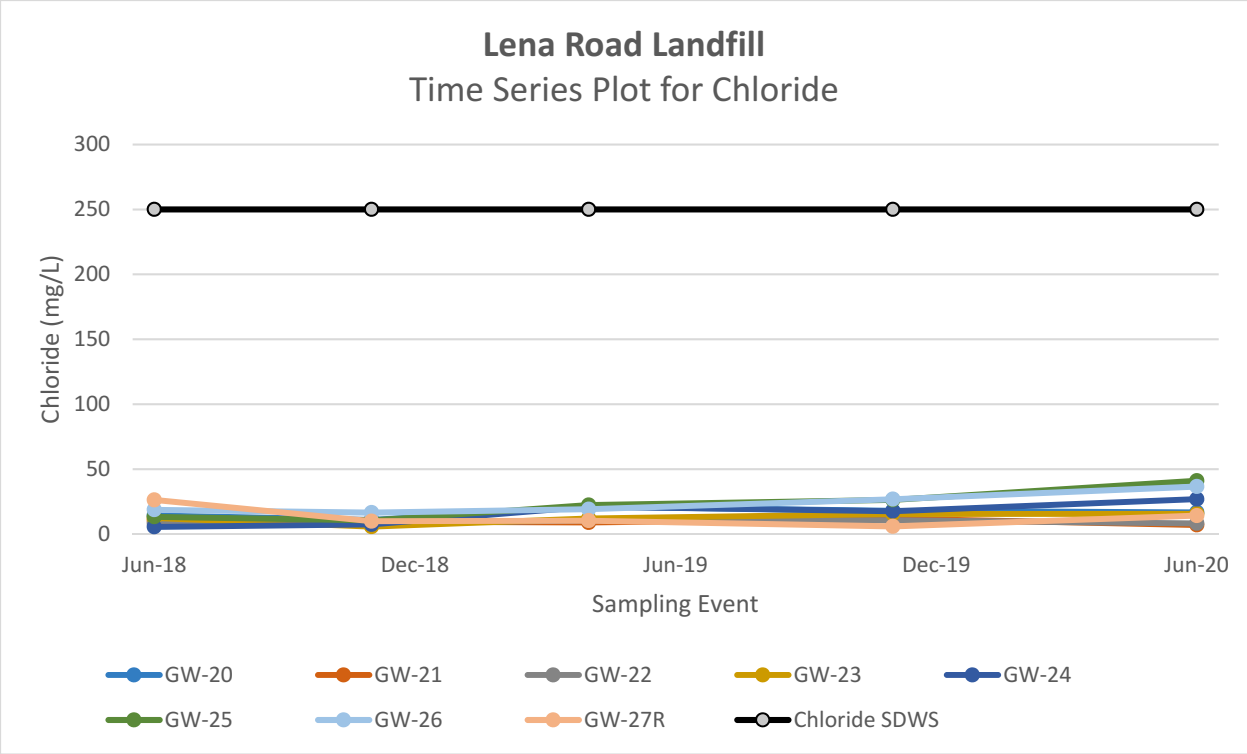

Lena Road Landfill
Time Series Plot for Ammonia
Ammonia (mg/L)
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9

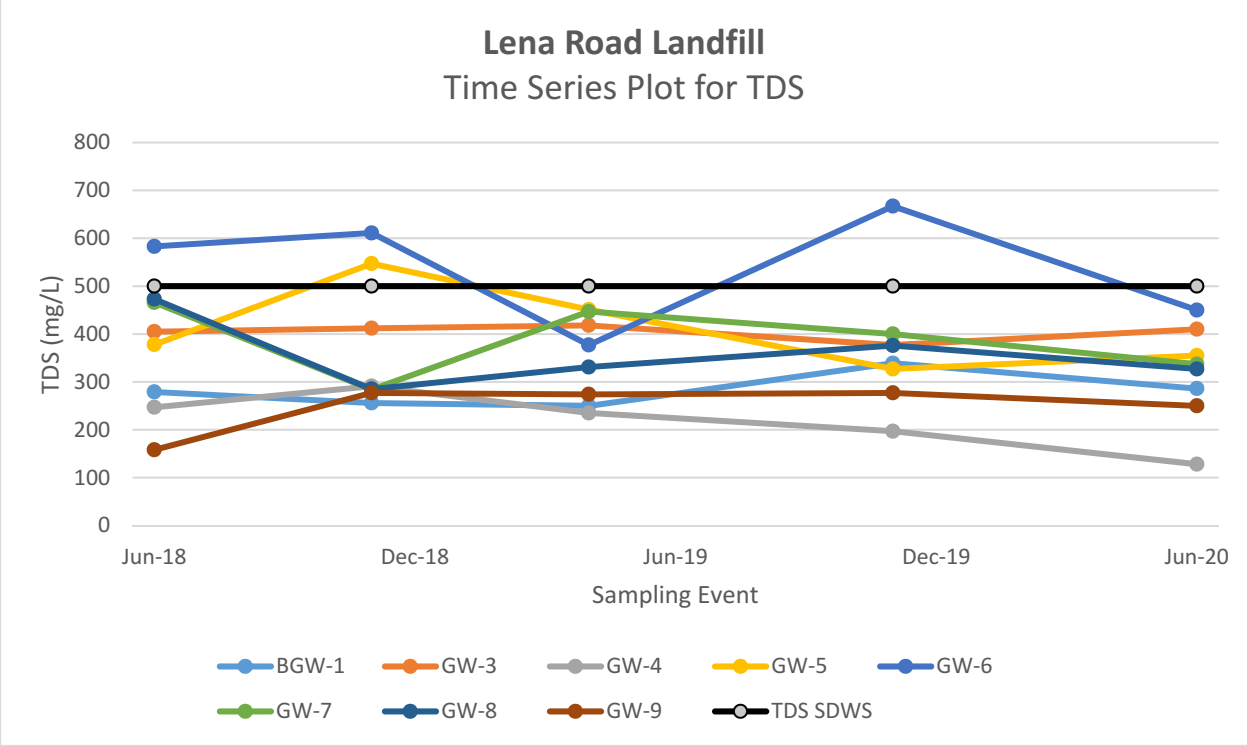

Lena Road Landfill
Time Series Plot for Ammonia
Ammonia (mg/L)
6
5
4
3
2
1
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19

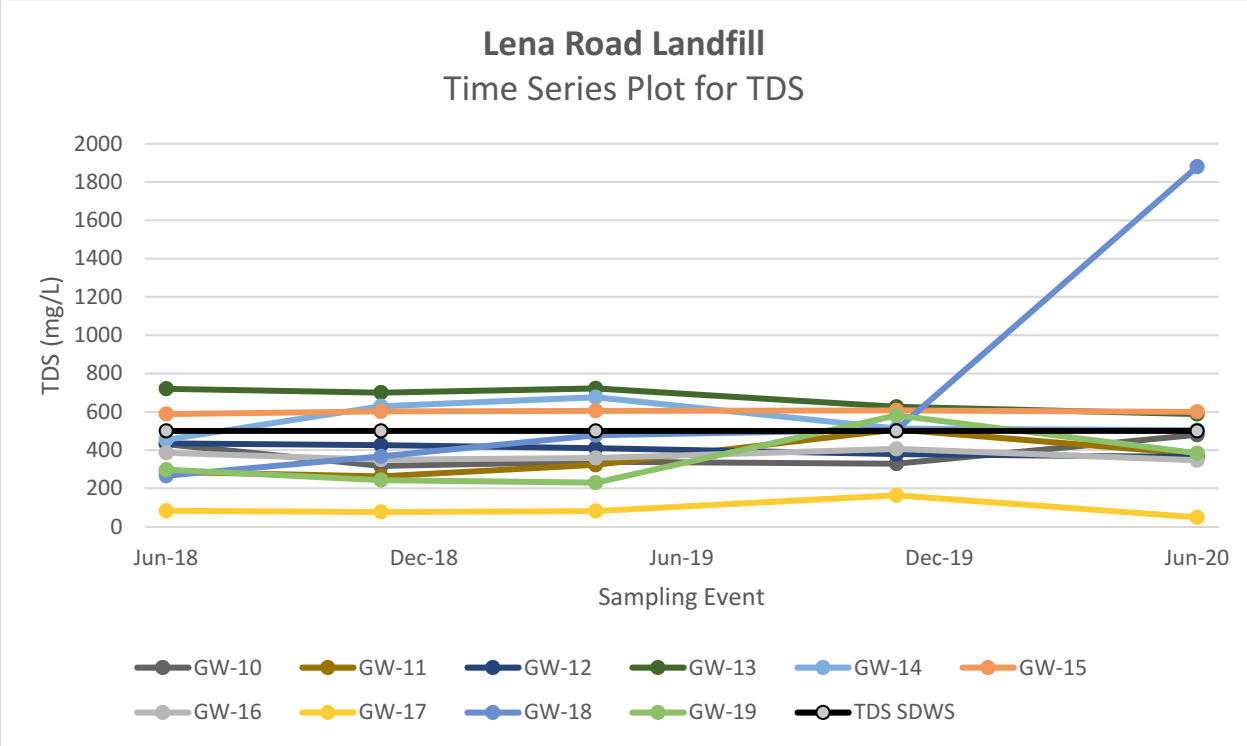

Lena Road Landfill
Time Series Plot for Ammonia
Ammonia (mg/L)
4
3.5
3
2.5
2
1.5
1
0.5
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R

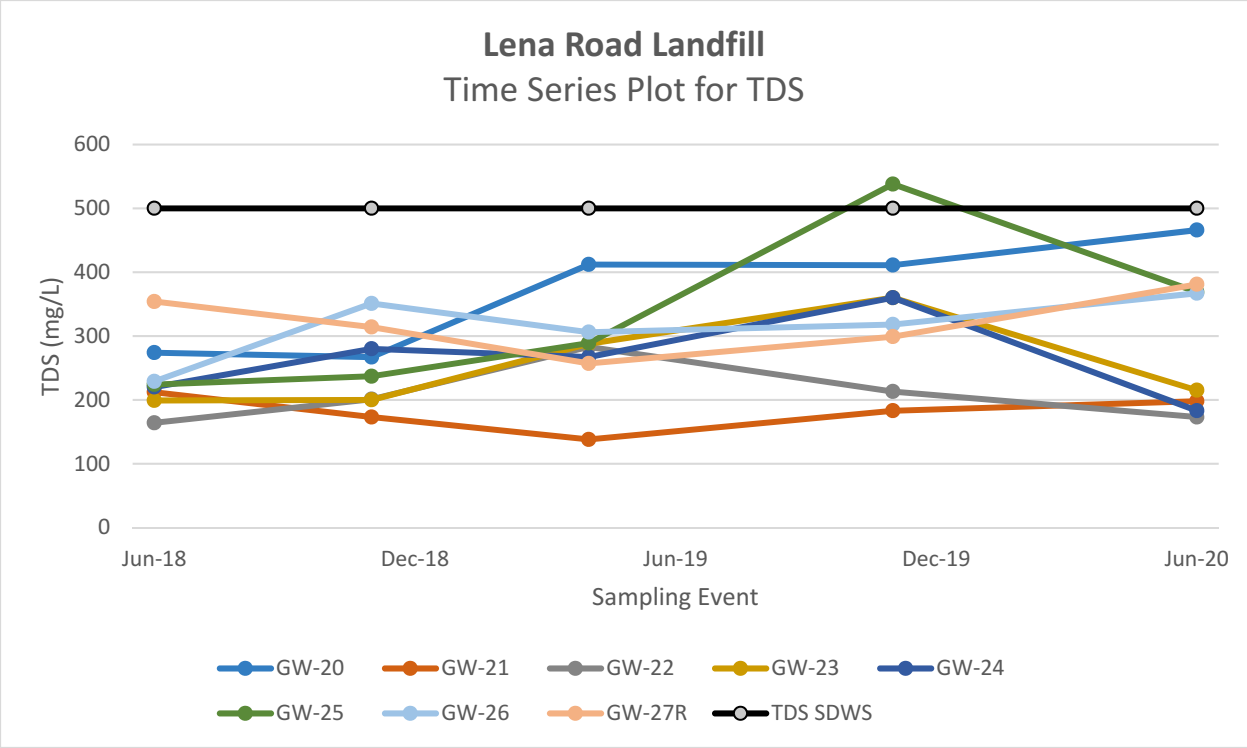

Lena Road Landfill
Time Series Plot for Chloride
300
250
200
150
100
50
0
Chloride (mg/L)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
Chloride SDWS

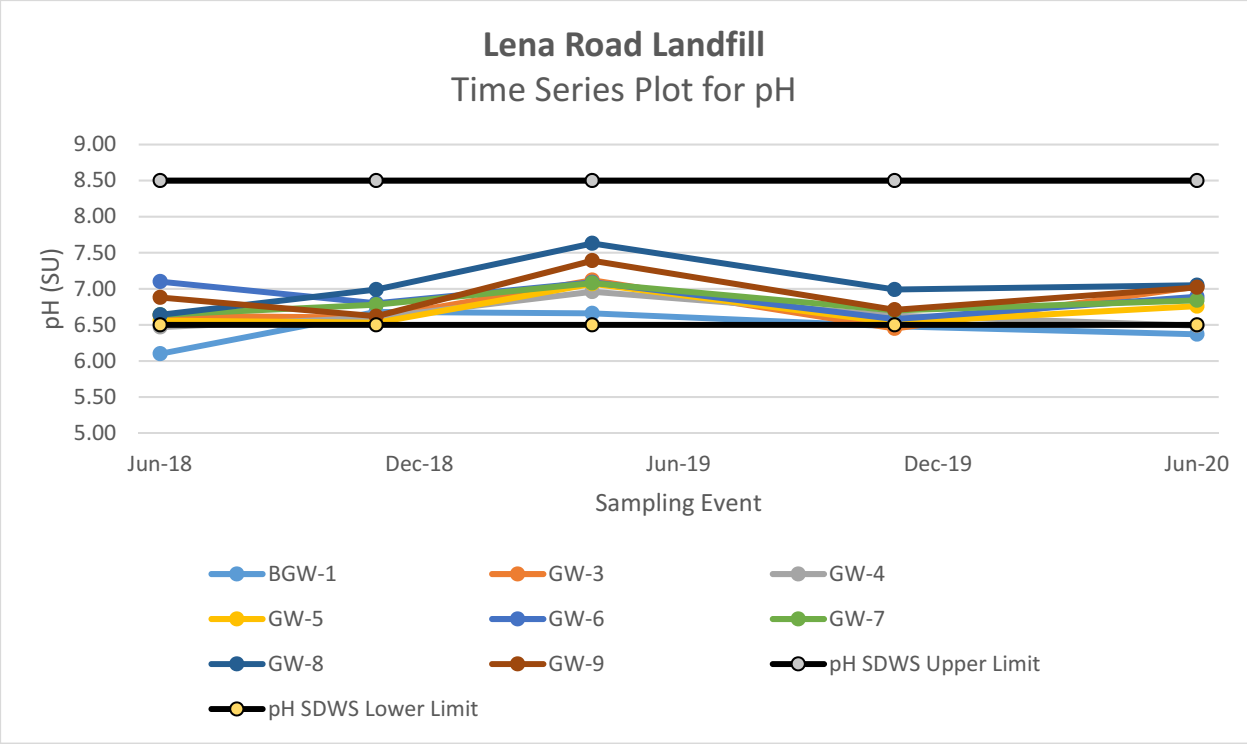

Lena Road Landfill
Time Series Plot for Chloride
300
250
200
150
100
50
0
Chloride (mg/L)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19
Chloride SDWS

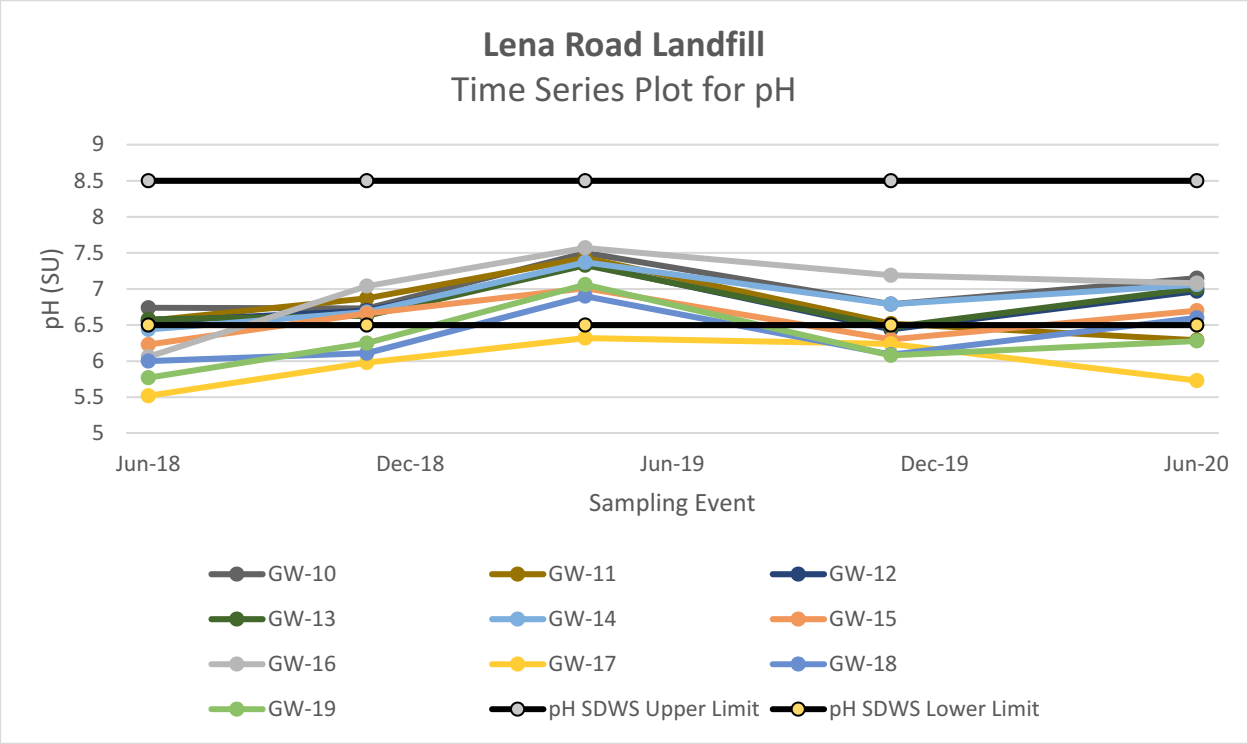

Lena Road Landfill
Time Series Plot for Chloride
Chloride (mg/L)
300
250
200
150
100
50
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R
Chloride SDWS

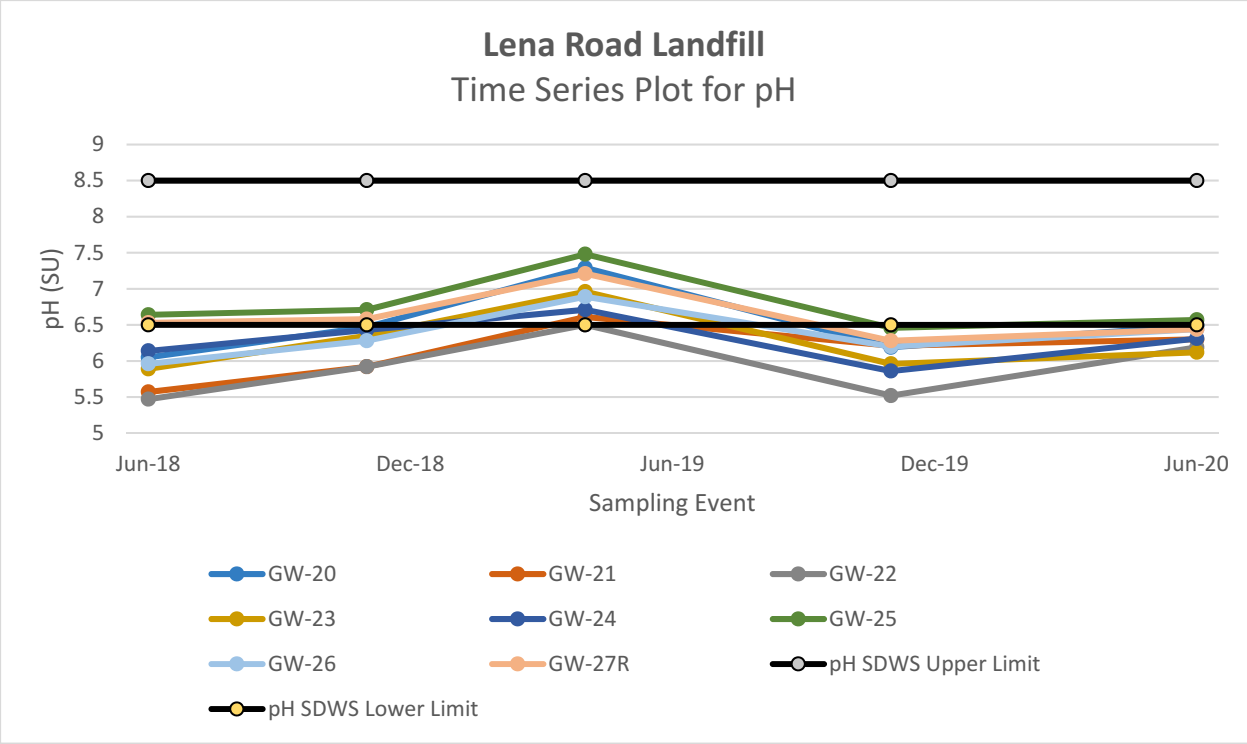

Lena Road Landfill
Time Series Plot for TDS
800
700
600
500
400
300
200
100
0
TDS (mg/L)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
TDS SDWS


Lena Road Landfill
Time Series Plot for TDS
2000
1800
1600
1400
1200
1000
800
600
400
200
0
TDS (mg/L)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19
TDS SDWS


Lena Road Landfill
Time Series Plot for TDS
TDS (mg/L)
600
500
400
300
200
100
0
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R
TDS SDWS


Lena Road Landfill
Time Series Plot for pH
9.00
8.50
8.00
7.50
7.00
6.50
6.00
5.50
5.00
pH (SU)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
BGW-1
GW-3
GW-4
GW-5
GW-6
GW-7
GW-8
GW-9
pH SDWS Upper Limit
pH SDWS Lower Limit


Lena Road Landfill
Time Series Plot for pH
9
8.5
8
7.5
7
6.5
6
5.5
5
pH (SU)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-10
GW-11
GW-12
GW-13
GW-14
GW-15
GW-16
GW-17
GW-18
GW-19
pH SDWS Upper Limit
pH SDWS Lower Limit


Lena Road Landfill
Time Series Plot for pH
9
8.5
8
7.5
7
6.5
6
5.5
5
pH (SU)
Jun-18
Dec-18
Jun-19
Dec-19
Jun-20
Sampling Event
GW-20
GW-21
GW-22
GW-23
GW-24
GW-25
GW-26
GW-27R
pH SDWS Upper Limit
pH SDWS Lower Limit