

# CITY OF ALBUQUERQUE



Ms. Dezbah Jesus  
Remediation Oversight Section  
Groundwater Quality Bureau  
New Mexico Environment Department  
121 Tijeras Ave. NE  
Suite 1000  
Albuquerque, NM 87102

August 14, 2019

**RE: City of Albuquerque Los Angeles Landfill Groundwater Report for Remediation System, DP-1468–Half One (1) 2019 and Voluntary Stage 2 Abatement Plan.**

Dear Ms. Jesus:

The City of Albuquerque (COA) Environmental Health Department (EHD) submits this **1<sup>st</sup> Half 2019** (H-01) Monitoring Report to the New Mexico Environment Department (NMED) as a requirement of Discharge Permit DP-1468 Los Angeles Landfill (LALF) Groundwater Remediation System (GWRS) and Stage 2 Voluntary Abatement Plan (S2VAP).

PO Box 1293

Pursuant to DP-1468, the activities which produce the discharge, the location of the discharge and the nature of this discharge are briefly described below:

Albuquerque

- Up to 460,000 gallons per day (gpd) of remediated groundwater is discharged to onsite injection wells.
- Contaminated groundwater is pumped from three extraction wells (GWEX-2, GWEX-3, and GWEX 4) to a pre-treatment storage tank prior to filtration and air stripper treatment. Remediated groundwater from the remediation system is held in two pre injection storage tanks prior to being discharged to the injection well (IW-3).
- DP-1468 authorizes discharges associated with an abatement plan pursuant to Sections 206.2.4101 through 20.6.2.4116 NMAC (COA/LALF Conditional S2VAP approved March 12, 2004).
- The GWRS is located at 4400 Paseo del Norte NE, Albuquerque, in Section 23, Township 11N, Range 3E, Bernalillo County.
- Groundwater most likely to be affected at a depth of approximately 160 feet and has a total dissolved solids concentration of approximately 500 milligrams per liter.
- The original DP-1468 was issued on December 22, 2004 and renewed on December 6, 2010 and April 8, 2016. The permit will expire on May 6, 2021.

NM 87103

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On November 27, 2018 a modification to the S2VAP was approved by NMED. The modification allowed for the following:

- Cessation of groundwater remediation via the groundwater pump and treat system.
- Implementation of Monitored Natural Attenuation (MNA) to abate groundwater contamination.

- Continuance of the soil vapor and landfill gas abatement strategy of source control via landfill gas extraction, soil vapor extraction, and air injection.

### **GWRS Pump System Decommission**

On January 23, 2019, the pumping systems from three groundwater extraction wells (GWEX2, GWEX3, and GWEX4) and injection well IW3 were decommissioned. The pumping system decommissioning included removing all downhole equipment from the wells and securing the wellheads in a manner that allows access to the well for future monitoring and sampling purposes.

The pump system decommissioning was performed by INTERA Incorporated (Intera) and subcontractor Rodgers and Company, Inc.

The decommissioning activities including utilizing an overhead rig to remove the down-hole equipment. Down-hole equipment in each well included a submersible transducer, a ½-inch schedule 40 PVC sounding tube that extends to the top of the pump, electrical cable, drop pipe (3-inch stainless-steel in the injection well and 2-inch galvanized in the extraction wells), and an electric submersible pump (Grundfos Model No. 75S75S-12 in the extraction wells). In addition, the injection well IW-3 contained a V-Smart Valve above the Grundfos Model MS6EST30 pump and two hydraulic hoses (for V-Smart Valve actuation).

The Intera decommissioning report is attached to this letter and includes pictures of the decommissioning.

The measurement point (Top of Casing) for the GWEX2, GWEX3, and GWEX4. Were affected by the decommissioning therefore on July 23, 2019 staff from the City of Albuquerque Survey Section resurveyed each well. A correction factor was then created and applied to each Groundwater level measurement of these wells for February through June 2019.

The GWRS system was not operated in the 1<sup>st</sup> Half of 2019.

### **Ground Water Analytical Results**

As of H-01 2019 no well is over Stage 2VAP Remedial Action Objectives. Monitor well LALF24 showed a concentration of 11 milligrams per liter (mg/l) of nitrate as nitrogen (nitrate) on Q1 sampling and 10 mg/l on Q2 sampling.

Analytical results from the following monitor wells were above the Water Quality Control Commission standards for manganese: LALF03 (0.38 mg/l), LALF04 (0.95 mg/l), LALF07 (1.2 mg/l), LALF12 (0.91 mg/l), LALF14 (1.7 mg/l), LALF16 (2.6 mg/l), LALF17 (0.62 mg/l), LALF18 (1.3 mg/l), and LALF19 (0.23 mg/l).

As previously stated in the June 2018 Abatement Plan Modification Proposal, data from LALF15 indicate a sulfate richer aquifer, aerobic conditions and potentially impacted by upgradient nitrate concentrations. Of interest is the presence of manganese in this upgradient well. Typically manganese is not present in groundwater when aerobic conditions exist with elevated nitrate concentrations. It is

likely that LALF15 is affected by upgradient river valley anoxic conditions that have transported dissolved manganese and a non-oxidized form of nitrogen. When this transported water reaches aerobic conditions, as seen in LALF15 due to the higher dissolved oxygen concentrations, the nitrogen is oxidized to nitrate while the dissolved manganese remains in solution and has not reached highly oxygenated conditions capable of precipitation.

All other wells sampled were below all Stage 2VAP standards and all NMED Groundwater Quality Standards.

### **Groundwater Level Errors for REEVES1 and REEVES2**

It appears that the March 2019 groundwater level readings for groundwater monitoring wells REEVES1 and REEVES2 are not correct. The REEVES1 reading is approximately 6 feet lower than the February and April reading and the REEVES2 reading is approximately 11.5 feet lower than the February and April readings. The electronic data in the COA database was compared with the field book for this activity and they were in agreement. It is therefore believed that the field technicians may have inadvertently read the water level tape incorrectly at these wells.

Table 5 reflects that water level readings for this half, which includes the two suspected erroneous readings. However, the potentiometric map for March 2019 (Figure 7) did not include the data for Reeves1 and Reeves 2 in the data set when the surface was generated.

### **Non Regulatory Sampling**

COA EHD staff made a decision to sample for 1,4-Dioxane in select wells at LALF. This sampling was conducted at the same time as the H01 2019 sampling. The following wells were chosen for 1,4-Dioxane sampling due to historic higher detections of tetrachloroethene: LALF03, LALF06, LALF09, LALF10, LALF12, LALF13, and LALF18.

Of the wells sampled LALF03, LALF06, LALF09, LALF10, LALF12, and LALF18 were non-detect for 1,4-Dioxane. LALF13 had a detection of 10 µg/l. LALF13 is located in the middle of the landfill. LALF03, LALF09, and LALF10 are all wells that are located down gradient of LALF13.

1,4-Dioxane will be sampled at LALF13, LALF24, GWEX2, and GWEX4 during the H-02 2019 sampling event.

1,4-Dioxane results are reported in Table 7.

### **Soil Vapor Testing**

In accordance with Section 4.3 of the modified S2VAP two new soil vapor probes were installed. On November 20, 2018 soil vapor probe M20 was installed by COA EHD staff between groundwater monitoring wells LALF09 and LALF10. On January 10, 2019 soil vapor probe M21 was installed by COA EHD staff inside the GWEX4 vault. Soil vapor probe M20 is screened from 10 feet to 11 feet below ground surface and soil vapor probe M21 is screened from 13 feet to 12 feet below ground surface. The installation report was submitted to NMED on January 30, 2019.



The location of the M20 and M21 are reported in Figure 12. M20 and M21 were sampled on February 21, 2019, in accordance with Section 4.3 and Table 10 of the modified S2VAP. The probes were analyzed for VOCs using EPA method TO-15.

The probe samples were below all Residential NMED Soil Screening Levels (NMSSL). Several chemical compounds were detected but none were over the Residential NMSSLs. All analytical detections are reported in Table 8.

### **Source Zone Capture Monitoring**

In accordance with Section 4.2 and Table 10 of the modified S2VAP the Soil Vapor Extraction System (SVE) and Landfill Gas Extraction and Destruction System (Flare) were sampled on February 21, 2019. The probes were analyzed for VOCs using EPA method TO-15. All analytical detections are reported in Table 9.

The analytical results were used to calculate the estimated removal of chlorinated alkenes from the waste prism as well as from the vadose zone below and in the near proximity of LALF. In calculating the removal the average flow rate of each system from January 1, 2019 through July 1, 2019 was used. The average flow rate for the Flare was 267.2 CFM and the average flow rate for the SVE was 595.6 CFM.

In H-01 2019 it is estimated that the Flare and SVE combined to remove 321.69 pounds of Chlorinated Alkenes (Tetrachloroethene, Trichloroethene, cis-1,2-Dichloroethene, Vinyl chloride, trans-1,2-Dichloroethene, and Methylene chloride) from the source zone. The mass of Chlorinated Alkenes Removed from the Source Zone by the Flare and SVE is reported in Table 10.

### **Updates/Highlights for H-01 LALF S2VAP and GWRS:**

Pursuant to and in accordance with the approved S2VAP:

- 22 wells were sampled and reported in Table 1;
  - LALF24 was sampled quarterly during H-01 2019
- Constituents of concern (CoC), are reported in Table 2;
- Water quality field parameters are reported in Table 3;
- Inorganic monitoring results are reported in Table 4 and
- Groundwater elevations are reported in Table 5.
- Groundwater monitoring wells and CoC concentrations are reported in Figures 1-5.

Pursuant to and in accordance with DP-1468 *Page 3, Item 2, and Page 5, Item 11*:

- Since the GWRS was decommissioned and not operated in the 1<sup>st</sup> half of 2019 the alternative monitoring wells (LALF12, LALF19, LALF22, and LALF23) were sampled and reported in Table 6.

Pursuant to and in accordance with DP-1468 *Page 6, Item 12*:

- Since the GWRS was decommissioned and not operated in the 1<sup>st</sup> half of 2019 the monthly average, maximum, and minimum values for injection pressure are 0.
- Since the GWRS was decommissioned and not operated in the 1<sup>st</sup> half of 2019 flow rates and total volume of groundwater treated and discharged are 0.



Pursuant to and in accordance with DP-1468 *Page 6, Item 13*:

- H-01 2019 water level data is summarized in Table 5. Groundwater flow contour maps are depicted in Figures 6-11 for each month of the reporting period. The map area includes the PNM Reeves Station and PNM monitoring wells. As has been the case throughout the period of monitoring at LALF, groundwater generally flows toward the south, to south-east.

Pursuant to and in accordance with DP-1468 *Page 7, Item 14*:

- Since the GWRS was decommissioned and not operated in the 1<sup>st</sup> half of 2019 the totalized average daily and peak daily discharge volumes for each month of reclaimed contaminated groundwater are 0.

Pursuant to and in accordance with DP-1468 *Page 7, Item 15*:

- Since the GWRS was decommissioned and not operated in the 1<sup>st</sup> half of 2019 the totalized average daily and peak daily discharge volumes for each month of reclaimed contaminated groundwater are 0.

The landfill gas system at LALF is optimized through a procedures known as balancing. The landfill gas system at LALF is balanced on a bi-weekly basis. The balancing of the landfill gas system ensures that landfill gas generated from the landfill is contained and not moving off site it also ensures that ambient air is not being introduced into the landfill as this could potentially lead to a landfill gas fire.

The EHD will continue monitoring the groundwater, landfill gas and vadose zone at the Los Angeles Landfill per the Stage 2VAP and the DP-1468. The staff is continuously improving operations to assure compliance with the requirements of NMED.

Plans for decommissioning of the remainder of the GWRS as well as plugging and abandonment of Injection Wells IW1, IW2, IW3, IW4, and extraction wells GWEX1 and GWEX3 should take place in H-02 2019.

If you have any questions regarding any aspect of the project please feel free to contact me at 505.768.2669 or [krziegler@cabq.gov](mailto:krziegler@cabq.gov).

Sincerely,





Ken R. Ziegler  
Senior Environmental Health Scientist  
Environmental Health Department

Cc: Steve Pullen, NMED-Ground Water Quality Bureau Pollution Prevention Section, (Mailed hard copy report)  
John Hale, PNM Reeves Station (electronic report)  
Carey Slater, American Gypsum Company (electronic report)  
Bart Faris, City of Albuquerque, Environmental Health Manager (electronic report)  
Diane Agnew, Albuquerque Bernalillo County Water Utility Authority  
File





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

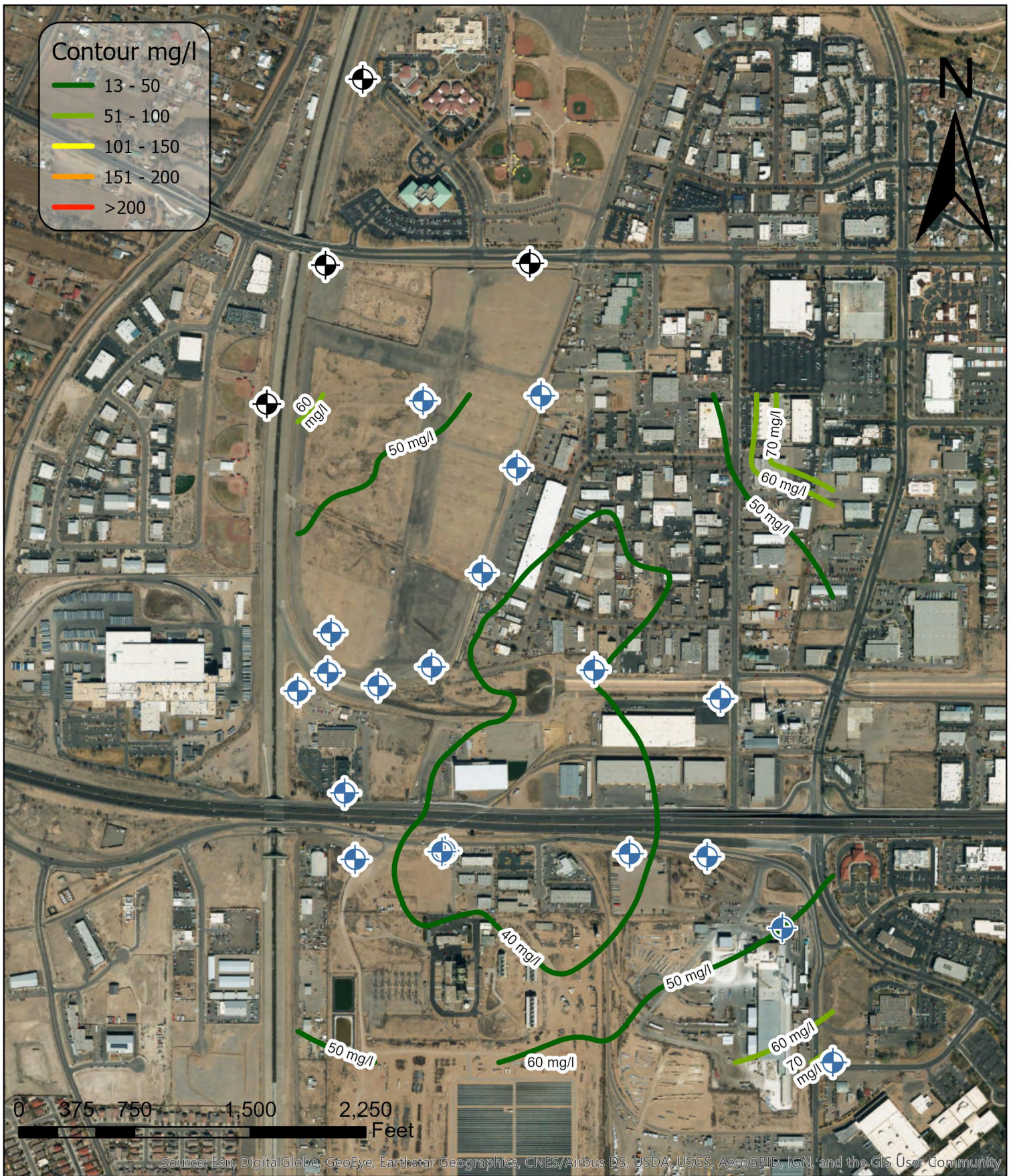
-  Groundwater Level Wells
-  Groundwater Modeling Well Not Sampled



**Figure 1**  
**LALF Monitoring Well**  
**Location Map**  
**H01 2019 Groundwater Monitoring**

Source: COA EQUIS Database





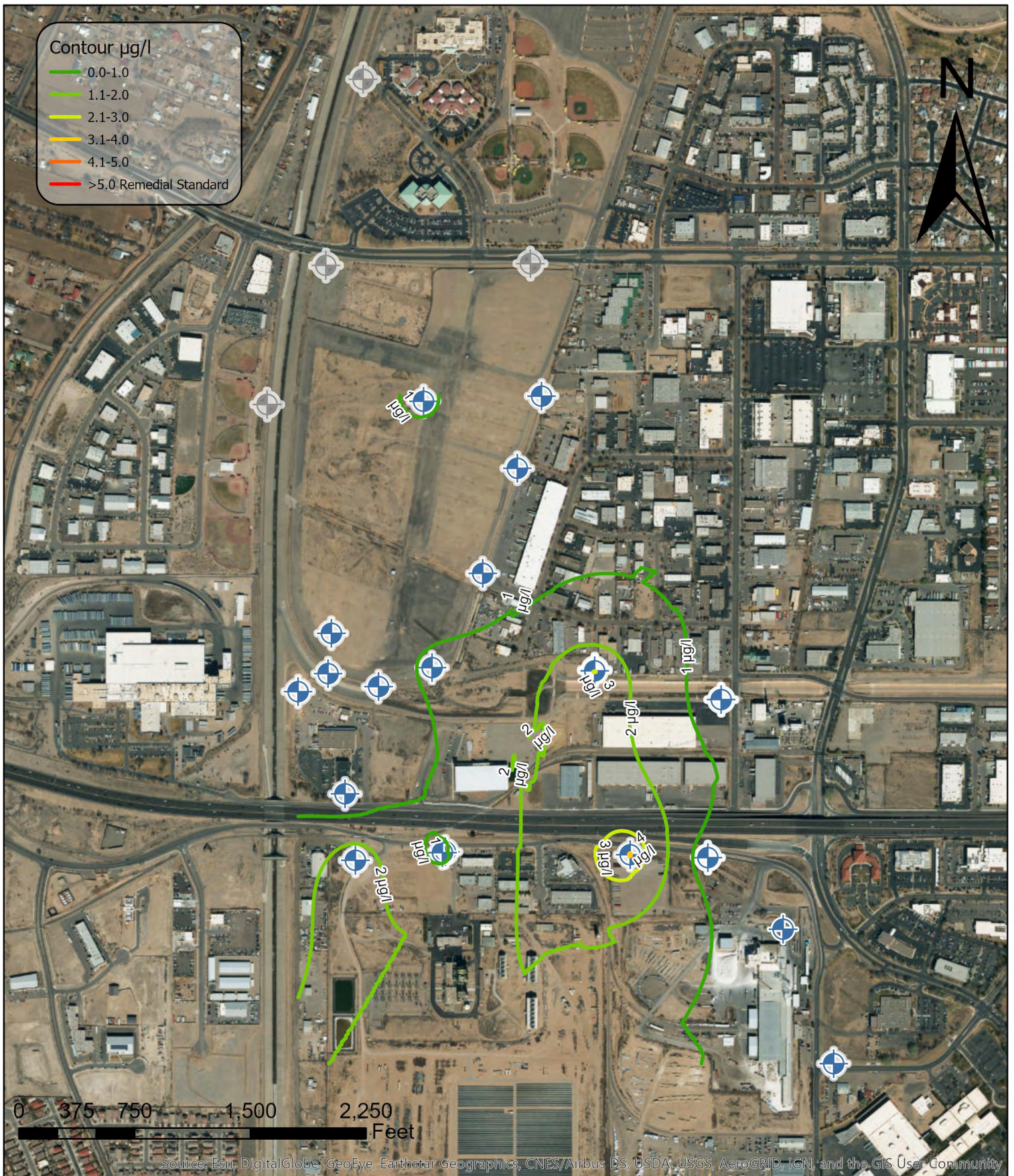
- Groundwater Monitoring Well Sampled
- Groundwater Modeling Well Not Sampled



Source: COA EQUIS Database

**Figure 2**  
**Chloride**  
**H01 2019 Groundwater Monitoring**





- Groundwater Level Wells
- Groundwater Modeling Well Not Sampled





Source: COA EQUIS Database

**Figure 3**  
**Tetrachloroethene**  
**H01 2019 Groundwater Monitoring**





Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

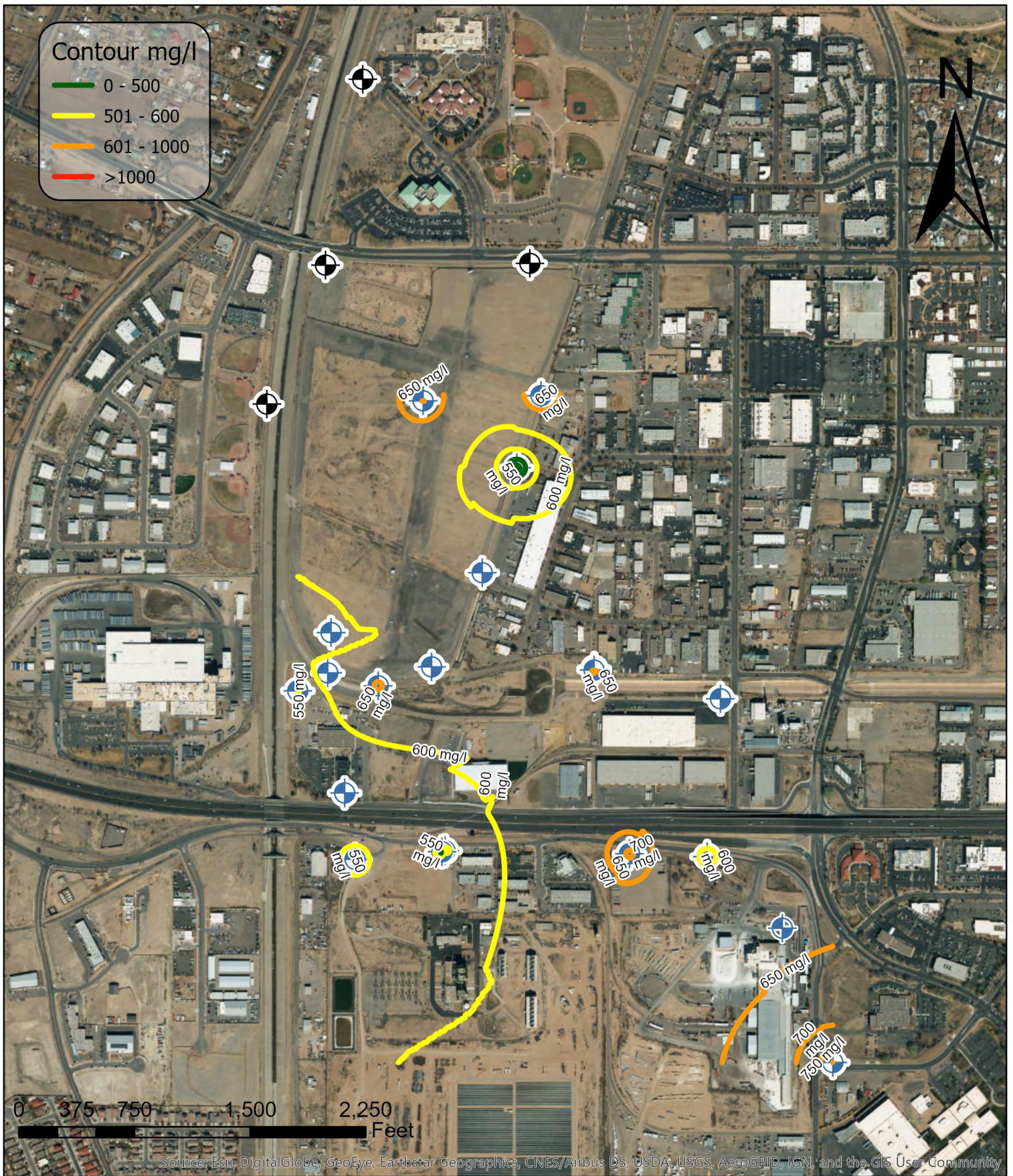
-  Groundwater Monitoring Well Sampled
-  Groundwater Modeling Well Not Sampled



Source: COA EQUIS Database

**Figure 4**  
**Trichloroethene**  
**H01 2019 Groundwater Monitoring**





- Groundwater Monitoring Well Sampled
- Groundwater Modeling Well Not Sampled



Source: COA EQUIS Database

**Figure 5**  
**Total Dissolved Solids**  
**H01 2019 Groundwater Monitoring**





 Groundwater Level Wells



Source: COA EQUIS Database

**Figure 6**  
**Groundwater Elevation Contours**  
**January 2019**  
**H01 2019 Groundwater Monitoring**





 Groundwater Level Wells



Source: COA EQUIS Database

**Figure 7**  
**Groundwater Elevation Contours**  
**February 2019**  
**H01 2019 Groundwater Monitoring**





 Groundwater Level Wells



Source: COA EQUIS Database

**Figure 8**  
**Groundwater Elevation Contours**  
**March 2019**  
**H01 2019 Groundwater Monitoring**





⊕ Groundwater Level Wells



Source: COA EQUIS Database

**Figure 9**  
**Groundwater Elevation Contours**  
**April 2019**  
**H01 2019 Groundwater Monitoring**





 Groundwater Level Wells



Source: COA EQUIS Database

**Figure 10**  
**Groundwater Elevation Contours**  
**May 2019**  
**H01 2019 Groundwater Monitoring**





⊕ Groundwater Level Wells



Source: COA EQUIS Database

**Figure 11**  
**Groundwater Elevation Contours**  
**June 2019**  
**H01 2019 Groundwater Monitoring**





⊕ Soil Vapor Probe



Source: COA EQUIS Database

**Figure 12**  
**New Soil Vapor Probe Location**  
**H01 2019 Groundwater Monitoring**



**Table 1**  
**H01 2019 Groundwater Wells Sampled**

| <b>Location ID</b> | <b>Sample ID</b>      | <b>Sample Date</b> | <b>Sample Type</b> |
|--------------------|-----------------------|--------------------|--------------------|
| AGPROD             | AGPROD-W-201809241501 | 9/24/2018          | Normal             |
| AGPROD             | AGPROD-W-201902061509 | 2/6/2019           | Normal             |
| GWEX2              | GWEX2-W-201902071549  | 2/7/2019           | Normal             |
| GWEX4              | GWEX4-W-201902071347  | 2/7/2019           | Normal             |
| LALF03             | LALF03-W-201902061113 | 2/6/2019           | Normal             |
| LALF04             | LALF04-W-201902051055 | 2/5/2019           | Normal             |
| LALF06             | LALF06-W-201902050826 | 2/5/2019           | Normal             |
| LALF06             | LALF06-W-20190205-N-7 | 2/5/2019           | Normal             |
| LALF07             | LALF07-W-20190627-N-2 | 6/27/2019          | Normal             |
| LALF08             | LALF08-W-20190627-N-1 | 6/27/2019          | Normal             |
| LALF09             | LALF09-W-201902070929 | 2/7/2019           | Normal             |
| LALF10             | LALF10-W-201902071055 | 2/7/2019           | Normal             |
| LALF12             | LALF12-W-201902061410 | 2/6/2019           | Normal             |
| LALF13             | LALF13-W-201902061240 | 2/6/2019           | Normal             |
| LALF14             | LALF14-W-201902050958 | 2/5/2019           | Normal             |
| LALF16             | LALF16-W-20190205-N-6 | 2/5/2019           | Normal             |
| LALF17             | LALF17-W-201901311443 | 1/31/2019          | Normal             |
| LALF18             | LALF18-W-201902060814 | 2/6/2019           | Normal             |
| LALF19             | LALF19-W-201901311015 | 1/31/2019          | Normal             |
| LALF20             | LALF20-W-201902051324 | 2/5/2019           | Normal             |
| LALF21             | LALF21-W-201902051234 | 2/5/2019           | Normal             |
| LALF22             | LALF22-W-201901311307 | 1/31/2019          | Normal             |
| LALF23             | LALF23-W-201901311209 | 1/31/2019          | Normal             |
| LALF24             | LALF24-W-201902060957 | 2/6/2019           | Normal             |
| LALF24             | LALF24-W-201905291123 | 5/29/2019          | Normal             |



**Table 2**  
**H01 2019 Groundwater Monitoring Analytical Results**

| Chemical Name      | Unit | Location ID and Sample Date |          |          |          |
|--------------------|------|-----------------------------|----------|----------|----------|
|                    |      | LALF04                      | LALF09   | LALF10   | LALF12   |
|                    |      | 2/5/2019                    | 2/7/2019 | 2/7/2019 | 2/6/2019 |
| 1,1-Dichloroethen  | ug/l | <0.105                      | <0.105   | <0.105   | <0.105   |
| Chloride           | mg/l | 43.00                       | 29.00    | 39.00    | 39.00    |
| cis-1,2-Dichloroet | ug/l | <0.19                       | <0.19    | <0.19    | <0.19    |
| Methylene chlorid  | ug/l | <0.105                      | <0.105   | <0.105   | <0.105   |
| Tetrachloroethene  | ug/l | <0.075                      | 2.40     | 3.60     | 1.10     |
| Total Dissolved S  | mg/l | 650.00                      | 576.00   | 703.00   | 700.00   |
| trans-1,2-Dichloro | ug/l | <0.09                       | <0.09    | <0.09    | <0.09    |
| Trichloroethene    | ug/l | <0.13                       | 1.30     | 1.70     | <0.13    |
| Vinyl chloride     | ug/l | <0.09                       | <0.09    | <0.09    | <0.09    |

Notes: Non-detects are shown as  
less than half the detection limit  
µg/L = micrograms per liter  
mg/L = milligrams per liter



**Table 2**  
**H01 2019 Groundwater Monitoring Analytical Results**

| Chemical Name            | Unit | LALF14   | LALF16   | LALF18   | LALF19    | LALF06   | LALF13   |
|--------------------------|------|----------|----------|----------|-----------|----------|----------|
|                          |      | 2/5/2019 | 2/5/2019 | 2/6/2019 | 1/31/2019 | 2/5/2019 | 2/6/2019 |
| 1,1-Dichloroethene       | ug/l | <0.105   | <0.105   | <0.105   | <0.105    | <0.105   | <0.105   |
| Chloride                 | mg/l | 39.00    | 41.00    | 54.00    | 21.00     | 77.00    | 86.00    |
| cis-1,2-Dichloroethene   | ug/l | <0.19    | <0.19    | <0.19    | <0.19     | <0.19    | <0.19    |
| Methylene chloride       | ug/l | <0.105   | <0.105   | <0.105   | <0.105    | <0.105   | <0.105   |
| Tetrachloroethene        | ug/l | <0.075   | <0.075   | <0.075   | <0.075    | <0.075   | 1.40     |
| Total Dissolved Solids   | mg/l | 580.00   | 673.00   | 571.00   | 428.00    | 627.00   | 706.00   |
| trans-1,2-Dichloroethene | ug/l | <0.09    | <0.09    | <0.09    | <0.09     | <0.09    | <0.09    |
| Trichloroethene          | ug/l | <0.13    | <0.13    | <0.13    | <0.13     | <0.13    | 1.20     |
| Vinyl chloride           | ug/l | <0.09    | <0.09    | <0.09    | <0.09     | <0.09    | <0.09    |

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**Table 2**  
**H01 2019 Groundwater Monitoring Analytical Results**

| Chemical Name            | Unit | LALF17    | LALF21   | LALF20   | LALF22    | LALF23    | AGPROD   | LALF03   |
|--------------------------|------|-----------|----------|----------|-----------|-----------|----------|----------|
|                          |      | 1/31/2019 | 2/5/2019 | 2/5/2019 | 1/31/2019 | 1/31/2019 | 2/6/2019 | 2/6/2019 |
| 1,1-Dichloroethene       | ug/l | <0.105    | <0.105   | <0.105   | <0.105    | <0.105    | <0.105   | <0.105   |
| Chloride                 | mg/l | 30.00     | 44.00    | 42.00    | 41.00     | 27.00     | 12.00    | 42.00    |
| cis-1,2-Dichloroethene   | ug/l | <0.19     | <0.19    | <0.19    | <0.19     | <0.19     | <0.19    | <0.19    |
| Methylene chloride       | ug/l | <0.105    | <0.105   | <0.105   | <0.105    | <0.105    | <0.105   | <0.105   |
| Tetrachloroethene        | ug/l | <0.075    | <0.075   | <0.075   | <0.075    | <0.075    | <0.075   | 1.60     |
| Total Dissolved Solids   | mg/l | 538.00    | 642.00   | 652.00   | 647.00    | 528.00    | 279.00   | 646.00   |
| trans-1,2-Dichloroethene | ug/l | <0.09     | <0.09    | <0.09    | <0.09     | <0.09     | <0.09    | <0.09    |
| Trichloroethene          | ug/l | <0.13     | <0.13    | <0.13    | <0.13     | <0.13     | <0.13    | 1.10     |
| Vinyl chloride           | ug/l | <0.09     | <0.09    | <0.09    | <0.09     | <0.09     | <0.09    | <0.09    |

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**Table 2**  
**H01 2019 Groundwater Monitoring Analytical Results**

| Chemical Name            | Unit | LALF07    | LALF08    | LALF24   | LALF24    | GWEX2    | GWEX4    |
|--------------------------|------|-----------|-----------|----------|-----------|----------|----------|
|                          |      | 6/27/2019 | 6/27/2019 | 2/6/2019 | 5/29/2019 | 2/7/2019 | 2/7/2019 |
| 1,1-Dichloroethene       | ug/l | <0.105    | <0.105    | <0.105   | <0.105    | <0.105   | <0.105   |
| Chloride                 | mg/l | 48.00     | 23.00     | 85.00    | 82.00     | 44.00    | 45.00    |
| cis-1,2-Dichloroethene   | ug/l | <0.19     | <0.19     | <0.19    | <0.19     | <0.19    | 1.10     |
| Methylene chloride       | ug/l | <0.105    | <0.105    | <0.105   | <0.105    | <0.105   | <0.105   |
| Tetrachloroethene        | ug/l | <0.075    | <0.075    | <0.075   | <0.075    | 3.20     | 4.50     |
| Total Dissolved Solids   | mg/l | 703.00    | 411.00    | 801.00   | 802.00    | 499.00   | 725.00   |
| trans-1,2-Dichloroethene | ug/l | <0.09     | <0.09     | <0.09    | <0.09     | <0.09    | <0.09    |
| Trichloroethene          | ug/l | <0.13     | <0.13     | 2.50     | 2.50      | <0.13    | 2.60     |
| Vinyl chloride           | ug/l | <0.09     | <0.09     | <0.09    | <0.09     | <0.09    | <0.09    |

Notes: Non-detects are shown as  
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µg/L = micrograms per liter  
mg/L = milligrams per liter



**Table 3**  
**H01 2019 Groundwater Monitoring Field Parameters**

|             |             | Field Dissolved Oxygen | Field Specific Conductivity | Field Eh Redox potential |
|-------------|-------------|------------------------|-----------------------------|--------------------------|
| Location ID | Sample Date | mg/L                   | µS/cm                       | mv                       |
| AGPROD      | 2/6/2019    | 0.96                   | 357.00                      | 129.90                   |
| LALF03      | 2/6/2019    | 1.17                   | 874.00                      | 241.00                   |
| LALF04      | 2/5/2019    | 0.15                   | 935.00                      | 123.20                   |
| LALF06      | 2/5/2019    | 4.78                   | 936.00                      | 37.70                    |
| LALF09      | 2/7/2019    | 0.24                   | 766.00                      | 159.80                   |
| LALF10      | 2/7/2019    | 0.71                   | 933.00                      | 176.80                   |
| LALF12      | 2/6/2019    | 0.20                   | 975.00                      | 111.80                   |
| LALF13      | 2/6/2019    | 0.64                   | 1113.00                     | 114.00                   |
| LALF14      | 2/5/2019    | 0.23                   | 787.00                      | 108.70                   |
| LALF16      | 2/5/2019    | 0.28                   | 933.00                      | 173.50                   |
| LALF17      | 1/31/2019   | 0.56                   | 725.00                      | 130.10                   |
| LALF18      | 2/6/2019    | 0.63                   | 787.00                      | 200.70                   |
| LALF19      | 1/31/2019   | 0.17                   | 524.00                      | 118.90                   |
| LALF20      | 2/5/2019    | 1.89                   | 901.00                      | 147.70                   |
| LALF21      | 2/5/2019    | 1.08                   | 859.00                      | 123.90                   |
| LALF22      | 1/31/2019   | 1.48                   | 855.00                      | 168.60                   |
| LALF23      | 1/31/2019   | 0.16                   | 708.00                      | 201.50                   |
| LALF07      | 6/27/2019   | 0.29                   | 903.00                      | 138.50                   |
| LALF08      | 6/27/2019   | 0.26                   | 503.00                      | 127.60                   |
| LALF24      | 2/6/2019    | 6.19                   | 1063.00                     | 246.00                   |
| LALF24      | 5/29/2019   | 6.42                   | 1021.00                     | 52.70                    |
| GWEX2       | 2/7/2019    | 0.45                   | 717.00                      | 0.50                     |
| GWEX4       | 2/7/2019    | 4.10                   | 977.00                      | -31.60                   |

Notes:

mg/L = milligrams per liter

mV = millivolts

pH = hydrogen ion concentration, log scale

µS/cm = microSiemens per centimeter

NTU = Nephelometric Turbidity Units



**Table 3**  
**H01 2019 Groundwater Monitoring Field Parameters**

|             |             | Field pH | Field Temperature | Field Turbidity |
|-------------|-------------|----------|-------------------|-----------------|
| Location ID | Sample Date | pH       | °C                | NTU             |
| AGPROD      | 2/6/2019    | 8.16     | 15.30             | 0.39            |
| LALF03      | 2/6/2019    | 7.39     | 18.10             | 1.53            |
| LALF04      | 2/5/2019    | 7.52     | 18.30             | 3.56            |
| LALF06      | 2/5/2019    | 7.32     | 19.70             | 2.73            |
| LALF09      | 2/7/2019    | 7.73     | 16.40             | 0.37            |
| LALF10      | 2/7/2019    | 7.43     | 17.30             | 0.68            |
| LALF12      | 2/6/2019    | 7.44     | 17.40             | 1.59            |
| LALF13      | 2/6/2019    | 7.53     | 17.40             | 2.38            |
| LALF14      | 2/5/2019    | 7.42     | 18.90             | 0.51            |
| LALF16      | 2/5/2019    | 7.37     | 19.80             | 0.56            |
| LALF17      | 1/31/2019   | 7.50     | 18.00             | 0.67            |
| LALF18      | 2/6/2019    | 7.27     | 18.40             | 0.31            |
| LALF19      | 1/31/2019   | 7.80     | 16.70             | 0.31            |
| LALF20      | 2/5/2019    | 7.60     | 17.90             | 0.25            |
| LALF21      | 2/5/2019    | 7.68     | 17.00             | 0.29            |
| LALF22      | 1/31/2019   | 7.54     | 17.40             | 1.30            |
| LALF23      | 1/31/2019   | 7.77     | 16.80             | 0.74            |
| LALF07      | 6/27/2019   | 7.62     | 18.90             | 0.50            |
| LALF08      | 6/27/2019   | 7.97     | 16.70             | 0.55            |
| LALF24      | 2/6/2019    | 7.70     | 17.20             | 1.04            |
| LALF24      | 5/29/2019   | 7.46     | 17.90             | 0.91            |
| GWEX2       | 2/7/2019    | 7.41     | 19.10             | 49.00           |
| GWEX4       | 2/7/2019    | 7.57     | 17.80             | 6.25            |

Notes:

mg/L = milligrams per liter  
mV = millivolts  
pH = hydrogen ion concentration, log scale  
µS/cm = microSiemens per centimeter  
NTU = Nephelometric Turbidity Units



**Table 4**  
**H01 2019 Groundwater Monitoring Analytical Results: Inorganics**

| Location ID | Date      | Arsenic<br>mg/l | Bicarbonate<br>mg/l | Calcium<br>mg/l |
|-------------|-----------|-----------------|---------------------|-----------------|
| AGPROD      | 2/6/2019  | 0.0031          | 132.3               | 58              |
| GWEX2       | 2/7/2019  | 0.001           | 202.4               | 83              |
| GWEX4       | 2/7/2019  | 0.0018          | 310.4               | 140             |
| LALF03      | 2/6/2019  | 0.0019          | 269                 | 120             |
| LALF04      | 2/5/2019  | 0.0022          | 268.2               | 130             |
| LALF06      | 2/5/2019  | 0.0024          | 206.4               | 110             |
| LALF07      | 6/27/2019 | 0.005           | 281.6               | 130             |
| LALF08      | 6/27/2019 | 0.0021          | 197                 | 84              |
| LALF09      | 2/7/2019  | 0.0017          | 279.1               | 120             |
| LALF10      | 2/7/2019  | 0.0018          | 313.7               | 130             |
| LALF12      | 2/6/2019  | 0.0015          | 298.9               | 130             |
| LALF13      | 2/6/2019  | 0.0034          | 165.8               | 140             |
| LALF14      | 2/5/2019  | 0.0018          | 248.3               | 120             |
| LALF16      | 2/5/2019  | 0.0021          | 295.1               | 140             |
| LALF17      | 1/31/2019 | 0.0023          | 245.1               | 110             |
| LALF18      | 2/6/2019  | 0.0019          | 207                 | 95              |
| LALF19      | 1/31/2019 | 0.002           | 212.5               | 86              |
| LALF20      | 2/5/2019  | 0.002           | 275.3               | 120             |
| LALF21      | 2/5/2019  | 0.0021          | 280.3               | 120             |
| LALF22      | 1/31/2019 | 0.002           | 270.9               | 120             |
| LALF23      | 1/31/2019 | 0.0021          | 271.6               | 110             |
| LALF24      | 2/6/2019  | 0.0022          | 212.5               | 170             |
| LALF24      | 5/29/2019 | 0.0019          | 203.5               | 160             |

**Items in Red and Bold are above Standard**

Notes: Non-detects are shown as less than half the detection limit

mg/L = milligrams per liter



**Table 4**  
**H01 2019 Groundwater Monitoring Analytical Results: Inorganics**

| Location ID | Carbonate<br>mg/l | Chloride<br>mg/l | Magnesium<br>mg/l | Nitrogen, Nitrate (As N)<br>mg/l | Nitrogen, Nitrite (As N)<br>mg/l |
|-------------|-------------------|------------------|-------------------|----------------------------------|----------------------------------|
| AGPROD      | 170               | 12               | 7.4               | 0.1                              | 0.1                              |
| GWEX2       | 270               | 44               | 16                | 1.4                              | 0.1                              |
| GWEX4       | 420               | 45               | 18                | 3.5                              | 0.1                              |
| LALF03      | 370               | 42               | 17                | 0.18                             | 0.1                              |
| LALF04      | 400               | 43               | 17                | 1.4                              | 0.11                             |
| LALF06      | 340               | 77               | 18                | 6.9                              | 0.1                              |
| LALF07      | 400               | 48               | 17                | 7.1                              | 0.1                              |
| LALF08      | 260               | 23               | 11                | 0.1                              | 0.1                              |
| LALF09      | 360               | 29               | 15                | 0.36                             | 0.1                              |
| LALF10      | 410               | 39               | 17                | 1.7                              | 0.1                              |
| LALF12      | 410               | 39               | 19                | 0.1                              | 0.1                              |
| LALF13      | 410               | 86               | 15                | 4.6                              | 0.1                              |
| LALF14      | 370               | 39               | 18                | 0.1                              | 0.1                              |
| LALF16      | 430               | 41               | 22                | 0.1                              | 0.1                              |
| LALF17      | 330               | 30               | 15                | 0.54                             | 0.1                              |
| LALF18      | 310               | 54               | 17                | 1.1                              | 0.1                              |
| LALF19      | 260               | 21               | 11                | 0.1                              | 0.1                              |
| LALF20      | 380               | 42               | 17                | 6                                | 0.1                              |
| LALF21      | 380               | 44               | 17                | 4.2                              | 0.1                              |
| LALF22      | 360               | 41               | 17                | 5.2                              | 0.1                              |
| LALF23      | 330               | 27               | 15                | 1.3                              | 0.15                             |
| LALF24      | 520               | 85               | 23                | <b>11</b>                        | 0.1                              |
| LALF24      | 500               | 82               | 24                | <b>10</b>                        | 0.1                              |

**Items in Red and Bold are al**

Notes: Non-detects are shown as less than half the detection limit

mg/L = milligrams per liter



**Table 4**  
**H01 2019 Groundwater Monitoring Analytical Results: Inorganics**

| Location ID | Potassium<br>mg/l | Sodium<br>mg/l | Total Dissolved Solids<br>mg/l | Manganese<br>mg/l |
|-------------|-------------------|----------------|--------------------------------|-------------------|
| AGPROD      | 2.7               | 18             | 279                            | 0.062             |
| GWEX2       | 5.5               | 55             | 499                            | 0.11              |
| GWEX4       | 7                 | 73             | 725                            | 0.0099            |
| LALF03      | 7.3               | 59             | 646                            | <b>0.38</b>       |
| LALF04      | 5.9               | 52             | 650                            | <b>0.95</b>       |
| LALF06      | 7.8               | 61             | 627                            | 0.072             |
| LALF07      | 7.5               | 63             | 703                            | <b>1.2</b>        |
| LALF08      | 4.8               | 31             | 411                            | 0.16              |
| LALF09      | 5.7               | 51             | 576                            | <b>0.24</b>       |
| LALF10      | 7                 | 70             | 703                            | 0.068             |
| LALF12      | 5.9               | 64             | 700                            | <b>0.91</b>       |
| LALF13      | 6.7               | 52             | 706                            | 0.13              |
| LALF14      | 5.9               | 38             | 580                            | <b>1.7</b>        |
| LALF16      | 6.1               | 47             | 673                            | <b>2.6</b>        |
| LALF17      | 5.2               | 38             | 538                            | <b>0.62</b>       |
| LALF18      | 5.7               | 53             | 571                            | <b>1.3</b>        |
| LALF19      | 5                 | 31             | 428                            | <b>0.23</b>       |
| LALF20      | 7                 | 60             | 652                            | 0.016             |
| LALF21      | 6.7               | 59             | 642                            | 0.0032            |
| LALF22      | 7.1               | 61             | 647                            | 0.002             |
| LALF23      | 5.2               | 41             | 528                            | 0.19              |
| LALF24      | 6.3               | 45             | 801                            | 0.0099            |
| LALF24      | 6.5               | 46             | 802                            | 0.002             |

**Items in Red and Bold are al**

Notes: Non-detects are shown as less than half the detection limit

mg/L = milligrams per liter



**Table 5**  
**H01 2019 Groundwater Elevations (Feet)**

| Location ID | January | February | March    | April   | May     | June    |
|-------------|---------|----------|----------|---------|---------|---------|
| GWEX2       | 4953.21 | 4953.27  | 4953.21  | 4953.47 | 4953.44 | 4953.63 |
| GWEX3       | 4950.32 | 4950.46  | 4950.45  | 4950.72 | 4950.71 | 4950.94 |
| GWEX4       | 4950.72 | 4951.16  | 4951.12  | 4951.44 | 4951.20 | 4950.79 |
| IW3         | 4945.88 | 4945.47  | 4945.07  | 4946.09 | 4946.11 | 4946.57 |
| IW4         | 4944.76 | 4944.96  | 4944.97  | 4945.27 | 4945.33 | 4945.59 |
| LALF01      | 4965.65 | 4965.74  | 4965.61  | 4965.76 | 4965.81 | 4966.05 |
| LALF03      | 4956.68 | 4956.87  | 4956.75  | 4956.99 | 4957.03 | 4957.23 |
| LALF04      | 4957.98 | 4958.15  | 4958.04  | 4958.29 | 4958.31 | 4958.49 |
| LALF05      | 4963.64 | 4963.78  | 4963.69  | 4963.86 | 4963.90 | 4964.07 |
| LALF06      | 4956.86 | 4957.01  | 4956.94  | 4957.16 | 4957.15 | 4957.35 |
| LALF07      | 4960.63 | 4960.80  | 4960.71  | 4960.92 | 4960.95 | 4961.12 |
| LALF08      | 4958.36 | 4958.53  | 4958.46  | 4958.65 | 4958.70 | 4958.84 |
| LALF09      | 4952.86 | 4953.09  | 4953.05  | 4953.28 | 4953.32 | 4953.45 |
| LALF10      | 4956.15 | 4956.30  | 4956.24  | 4956.47 | 4956.50 | 4956.63 |
| LALF11      | 4962.57 | 4962.64  | 4962.53  | 4962.72 | 4962.74 | 4962.95 |
| LALF12      | 4952.93 | 4953.15  | 4953.07  | 4953.38 | 4953.34 | 4953.54 |
| LALF13      | 4961.58 | 4961.67  | 4961.59  | 4961.77 | 4961.79 | 4961.91 |
| LALF14      | 4957.78 | 4957.86  | 4957.72  | 4957.94 | 4957.98 | 4958.16 |
| LALF15      | 4977.33 | 4977.29  | 4977.12  | 4977.21 | 4977.27 | 4977.54 |
| LALF16      | 4956.50 | 4956.69  | 4956.57  | 4956.82 | 4956.84 | 4957.01 |
| LALF17      | 4956.56 | 4956.71  | 4956.60  | 4956.87 | 4956.84 | 4957.04 |
| LALF18      | 4954.55 | 4954.72  | 4954.63  | 4954.88 | 4954.88 | 4955.08 |
| LALF19      | 4950.02 | 4950.13  | 4950.13  | 4950.43 | 4950.37 | 4950.62 |
| LALF20      | 4955.17 | 4955.48  | 4955.51  | 4955.72 | 4955.72 | 4955.86 |
| LALF21      | 4951.11 | 4951.26  | 4951.08  | 4951.57 | 4951.49 | 4951.74 |
| LALF22      | 4948.39 | 4948.42  | 4948.44  | 4948.69 | 4948.81 | 4948.78 |
| LALF23      | 4947.72 | 4947.87  | 4947.68  | 4948.29 | 4948.19 | 4948.45 |
| REEVES1     | 4939.29 | 4939.53  | 4933.60* | 4939.91 | 4939.99 | 4940.23 |
| REEVES2     | 4942.54 | 4942.65  | 4931.07* | 4942.96 | 4942.99 | 4943.20 |
| REEVES3     | 4943.38 | 4943.56  | 4943.60  | 4943.86 | 4943.90 | 4944.11 |
| REEVES4     | 4940.05 | 4940.29  | 4940.29  | 4940.68 | 4940.73 | 4940.99 |
| REEVES5     | 4950.61 | 4950.76  | 4950.69  | 4951.02 | 4950.98 | 4951.21 |
| REEVES6     | 4947.47 | 4947.67  | 4947.66  | 4947.99 | 4948.01 | 4948.26 |
| LALF24      | 4940.84 | 4941.06  | 4941.19  | 4941.44 | 4941.54 | 4941.75 |



**Table 6**  
**H01 2019 Groundwater Remediation System (GWRs) Analytical Results Contaminants of Concern (DP 1468)**

|                              |      | Location ID and Sample Date |              |           |           |
|------------------------------|------|-----------------------------|--------------|-----------|-----------|
|                              |      | LALF12                      | LALF19       | LALF22    | LALF23    |
| Chemical Name                | Unit | 2/6/2019                    | 1/31/2019    | 1/31/2019 | 1/31/2019 |
| 1,1-Dichloroethene (1,1-DCE) | ug/l | <0.105                      | <0.105       | <0.105    | <0.105    |
| Chloride                     | mg/l | 39.00                       | 21.00        | 41.00     | 27.00     |
| cis-1,2-Dichloroethene       | ug/l | <0.19                       | <0.19        | <0.19     | <0.19     |
| Iron                         | mg/l | <0.00435                    | <0.00435     | <0.00435  | <0.00435  |
| Manganese                    | mg/l | <b>0.910</b>                | <b>0.230</b> | <0.0007   | 0.19      |
| Methylene Chloride (DCM)     | ug/l | <0.105                      | <0.105       | <0.105    | <0.105    |
| Nitrogen, Nitrate (As N)     | mg/l | <0.285                      | <0.285       | 5.20      | 1.30      |
| Nitrogen, Total              | mg/l | <0.5                        | <0.5         | 5.20      | 1.40      |
| Tetrachloroethene (PCE)      | ug/l | 1.10                        | <0.075       | <0.075    | <0.075    |
| Total Dissolved Solids       | mg/l | 700.00                      | 428.00       | 647.00    | 528.00    |
| trans-1,2-Dichloroethene     | ug/l | <0.09                       | <0.09        | <0.09     | <0.09     |
| Trichloroethene (TCE)        | ug/l | <0.13                       | <0.13        | <0.13     | <0.13     |
| Vinyl chloride               | ug/l | <0.06                       | <0.06        | <0.06     | <0.06     |

**Items in Red and Bold are above Standard**

Notes: Non-detects are shown as  
less than half the detection limit  
µg/L = micrograms per liter  
mg/L = milligrams per liter



Table 7  
H01 2019 Non Regulatory Sampling 1,4-Dioxane

|             |          | 1,4-Dioxane |
|-------------|----------|-------------|
| Location ID | Date     | ug/l        |
| LALF03      | 2/6/2019 | <0.5        |
| LALF06      | 2/5/2019 | <0.5        |
| LALF09      | 2/7/2019 | <0.5        |
| LALF10      | 2/7/2019 | <0.5        |
| LALF12      | 2/6/2019 | <0.5        |
| LALF13      | 2/6/2019 | 10          |
| LALF18      | 2/6/2019 | <0.5        |

Notes: Non-detects are shown as less than half the detection limit  
µg/l = micrograms per liter



Table 8  
Semi-Annual Soil Vapor Probe Sampling Analytical Detections

|                                    | <b>Location ID</b> | <b>M20</b>       | <b>M21</b>       |
|------------------------------------|--------------------|------------------|------------------|
| <b>Analyte</b>                     | <b>Sample Date</b> | <b>2/21/2019</b> | <b>2/21/2019</b> |
| Dichlorodifluoromethane            | ug/m3              | 26               | 9.4              |
| Trichloroethene                    | ug/m3              | ND               | 4.4              |
| 1,2,4-Trimethylbenzene             | ug/m3              | 2.8              | 6.3              |
| Ethylbenzene                       | ug/m3              | 2.3              | 4.5              |
| Toluene                            | ug/m3              | 21               | 8.4              |
| Tetrachloroethene                  | ug/m3              | 37               | 8.2              |
| Carbon tetrachloride               | ug/m3              | 5.4              | ND               |
| Acetone                            | ug/m3              | 39               | 15               |
| Chloroform                         | ug/m3              | 4.4              | 2                |
| Benzene                            | ug/m3              | 1.6              | ND               |
| Chloromethane                      | ug/m3              | 1.8              | ND               |
| Methylene chloride                 | ug/m3              | 44               | 7.4              |
| Trichlorofluoromethane (Freon 11)  | ug/m3              | 4.2              | 2.7              |
| Benzyl Chloride                    | ug/m3              | ND               | 2.7              |
| Freon 113                          | ug/m3              | ND               | 7.5              |
| Tetrahydrofuran                    | ug/m3              | 20               | 38               |
| n-Hexane                           | ug/m3              | 14               | 5.5              |
| Cyclohexane                        | ug/m3              | 2                | ND               |
| m,p-Xylene                         | ug/m3              | 6.7              | 12               |
| Heptane                            | ug/m3              | 1.8              | ND               |
| 2,2,4-Trimethylpentane             | ug/m3              | 2.9              | ND               |
| Ethanol                            | ug/m3              | 53               | 15               |
| 2-Propanol                         | ug/m3              | 17               | ND               |
| ORTHO-XYLENE (1,2-Dimethylbenzene) | ug/m3              | 2.6              | 4.5              |
| TPH                                | ug/m3              | 600              | 550              |

ND=Non detect



Table 9  
Semi-Annual SVE and Flare Analytical Detections

|                                     | Location ID | FLARESTATION | SVEINLET  |
|-------------------------------------|-------------|--------------|-----------|
|                                     | Sample Date | 2/21/2019    | 2/21/2019 |
| cis-1,2-Dichloroethene              | ug/m3       | 1800         | 200       |
| trans-1,2-Dichloroethene            | ug/m3       | 130          | 43        |
| Vinyl chloride                      | ug/m3       | 5000         | 520       |
| DICHLORODIFLUOROMETHANE             | ug/m3       | ND           | 340       |
| 1,2-Dichloropropane                 | ug/m3       | 360          | 330       |
| 2-BUTANONE (MEK)                    | ug/m3       | 310          | 35        |
| Trichloroethene                     | ug/m3       | 1300         | 460       |
| NAPHTHALENE                         | ug/m3       | ND           | 17        |
| 1,2-Dichlorobenzene                 | ug/m3       | ND           | 7.8       |
| 1,2,4-Trimethylbenzene              | ug/m3       | ND           | 240       |
| ISOPROPYLBENZENE                    | ug/m3       | 8.9          | 190       |
| Ethylbenzene                        | ug/m3       | 570          | 210       |
| 1,4-Dichlorobenzene                 | ug/m3       | ND           | 170       |
| 1,2-Dibromoethane                   | ug/m3       | 4.8          | ND        |
| 1,2-Dichloroethane                  | ug/m3       | 25           | 10        |
| 1,3,5-Trimethylbenzene              | ug/m3       | ND           | 110       |
| Toluene                             | ug/m3       | 5900         | 730       |
| Chlorobenzene                       | ug/m3       | ND           | 38        |
| Tetrachloroethene                   | ug/m3       | 2200         | 27000     |
| Methyl T-Butyl Ether (MTBE)         | ug/m3       | 8.1          | 7         |
| ACETONE                             | ug/m3       | 34000        | 100       |
| CHLOROFORM                          | ug/m3       | 16           | ND        |
| Benzene                             | ug/m3       | 800          | 130       |
| 1,1,1-Trichloroethane               | ug/m3       | ND           | 5.5       |
| CHLOROMETHANE                       | ug/m3       | 12           | ND        |
| CHLOROETHANE                        | ug/m3       | 58           | 7.7       |
| Methylene chloride                  | ug/m3       | 510          | 77        |
| CARBON DISULFIDE                    | ug/m3       | 24           | 3.1       |
| 1,1-DICHLOROETHANE                  | ug/m3       | 240          | 320       |
| 1,1-Dichloroethene                  | ug/m3       | 40           | 130       |
| TRICHLOROFLUOROMETHANE (FREON 11)   | ug/m3       | 76           | 62        |
| 1,4-Dioxane                         | ug/m3       | ND           | 6.2       |
| VINYL ACETATE                       | ug/m3       | 10           | ND        |
| Vinyl bromide                       | ug/m3       | 2.4          | ND        |
| 4-Ethyltoluene                      | ug/m3       | ND           | 25        |
| Freon 113                           | ug/m3       | 80           | 580       |
| Freon 114 Dichlorotetrafluoroethane | ug/m3       | 500          | 93        |
| Tetrahydrofuran                     | ug/m3       | 130          | 160       |
| n-Hexane                            | ug/m3       | 140          | 200       |
| Cyclohexane                         | ug/m3       | 100          | 500       |
| Propene                             | ug/m3       | 1600         | 260       |
| m,p-Xylene                          | ug/m3       | 2300         | 720       |
| Heptane                             | ug/m3       | 98           | 200       |
| 2,2,4-Trimethylpentane              | ug/m3       | ND           | 190       |
| Ethanol                             | ug/m3       | 4700         | 25        |
| 2-Propanol                          | ug/m3       | 4100         | ND        |
| ORTHO-XYLENE (1,2-Dimethylbenzene)  | ug/m3       | 670          | 230       |
| TPH                                 | ug/m3       | 50000        | 47000     |

ND=Non detect

Table 10  
 Mass of Chlorinated Alkenes Removed from the Source Zone by the Flare and SVE

| Location                        |            | Flare       | SVE          |
|---------------------------------|------------|-------------|--------------|
| <b>Average Flow</b>             | CFM        | 267.2       | 595.6        |
| Tetrachloroethene               | ug/m3      | 2200.0      | 27000.0      |
| <b>Tetrachloroethene</b>        | <b>lbs</b> | <b>9.6</b>  | <b>261.5</b> |
| Trichloroethene                 | ug/m3      | 1300.0      | 460.0        |
| <b>Trichloroethene</b>          | <b>lbs</b> | <b>5.7</b>  | <b>4.5</b>   |
| cis-1,2-Dichloroethene          | ug/m3      | 1800.0      | 200.0        |
| <b>cis-1,2-Dichloroethene</b>   | <b>lbs</b> | <b>7.8</b>  | <b>1.9</b>   |
| Vinyl chloride                  | ug/m3      | 5000.0      | 520.0        |
| <b>Vinyl chloride</b>           | <b>lbs</b> | <b>21.7</b> | <b>5.0</b>   |
| trans-1,2-Dichloroethene        | ug/m3      | 130.0       | 43.0         |
| <b>trans-1,2-Dichloroethene</b> | <b>lbs</b> | <b>0.6</b>  | <b>0.4</b>   |
| Methylene chloride              | ug/m3      | 510.0       | 77.0         |
| <b>Methylene chloride</b>       | <b>lbs</b> | <b>2.2</b>  | <b>0.7</b>   |
| <b>Total</b>                    | <b>lbs</b> | <b>47.5</b> | <b>274.1</b> |

|  | Tetrachloroethene | Trichloroethene | cis-1,2-Dichloroethene | Vinyl chloride | trans-1,2-Dichloroethene | Methylene chloride |
|--|-------------------|-----------------|------------------------|----------------|--------------------------|--------------------|
|  | lbs               | lbs             | lbs                    | lbs            | lbs                      | lbs                |
| <b>Total (lbs)</b>                     | <b>271.11</b>     | <b>10.11</b>    | <b>9.76</b>            | <b>26.77</b>   | <b>0.98</b>              | <b>2.96</b>        |
| <b>Total Chlorinated Alkenes (lbs)</b> | <b>321.69</b>     |                 |                        |                |                          |                    |

lbs = pounds  
 CFM=Cubic Feet per minute  
 ug/m3= micrograms per cubic meter  
 1 ug/m3 = 6.23x10<sup>-11</sup> lbs/ft3