Colbert Landfill Remediation Project Annual Report 2021

Progress Report for

May 2020 through June 2021

Prepared by:

Spokane County Landfill Closure
22515 N Elk-Chattaroy Rd
Colbert, WA 99005

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***Historical monitoring well analytical results and remedial progress reports can be found on the Spokane County Solid Waste Department website at:**

https://www.spokanecounty.org/4726/Colbert-Landfill

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1.0 Colbert Landfill Remediation Project Summary

The Colbert Landfill Superfund site is a closed, 40-acre, municipal solid waste landfill located approximately 15 miles north of Spokane, Washington, and about 2.5 miles north of Colbert, Washington. The landfill received waste from 1968 to 1986 when it became filled to capacity. Groundwater in the vicinity of the landfill was found to be contaminated with volatile organic compounds and in 1983, and the landfill was placed on the National Priorities List (NPL) by EPA. In 1989, a consent decree was executed to implement a site remedy. The site remedy includes:

- An available alternate water supply for residential wells impacted by groundwater contamination originating from the landfill.
- Institutional Controls
- Construction and operation of a pump and treat system to capture and prevent further spread of groundwater contaminants.
- Landfill closure according to the State of Washington regulations Minimal Functional Standards (WAC173-304).
- Monitoring of contaminants to protect human health and the environment at the site.

Construction of a pump and treat (P&T) system was completed in 1994. The P&T system operated successfully for 20 years. In 2014, an EPA-recommended shut-down test was initiated to determine if the facility was continuing to add any significant benefit to the clean-up.

The programs currently in place include a Shut-down Test (lower aquifer) for the pump and treat system; upper aquifer compliance groundwater monitoring (includes 1,4-dioxane monitoring and Minimal Functional Standards (MFS) monitoring of the upper aquifer); residential well monitoring (includes both upper and lower aquifers); supplemental sampling (includes both upper and lower aquifers); and landfill cover maintenance and monitoring. The groundwater monitoring programs and criteria are summarized below.

Current Monitoring Programs

Program	Aquifer	Parameters	Schedule
Shut-down Test	Lower	VOC's	Annual (Extraction wells Quarterly)
Upper Aquifer Compliance	Upper	VOC's	Annual (Extraction wells Quarterly)
1,4-Dioxane Sampling	Upper	1,4-Dioxane	Annual
MFS Monitoring	Upper	Cl/NH3/NO2/NH3/ SO4/Fe/Mn/Zn/TOC/COD	Annual
Residential Monitoring	Lower/ Upper	VOC's	Monthly/Quarterly/SemiAnnual/ Annual/BiAnnual
Supplemental Sampling	Lower/ Upper	VOC's	Every five years

Program Criteria

PROGRAM	CRITERIA	TCA	DCE	DCA	TCE	PCE	MC	1,4-Dioxane		Units
CONSENT DECREE	Performance	200	7	4050	5	0.7	2.5			ug/L
	Evaluation	200	7	4050	5	0.7	2.5	7		
SHUT-DOWN TEST	Action Level	130	4.55	2632	3.25	0.5	1.63			
	Evaluation	200	7	4050	5	0.7	2.5			
RESIDENTIAL										ug/L
Monthly sampling initiated, evaluated in 12 months	Action Level	130	4.55	2632	3.25	0.5	1.63			
Exceedance requires alternative drinking water source be supplied	MCL	200	7	4050	5	0.7	2.5			
		Cl	**Fe**	**Mn**	**Zn**	**TOC**	**COD**	**SO4**	**NO3**	
MFS	(mg/L)	250	0.3	0.05	5	NA	NA	250	10	mg/L

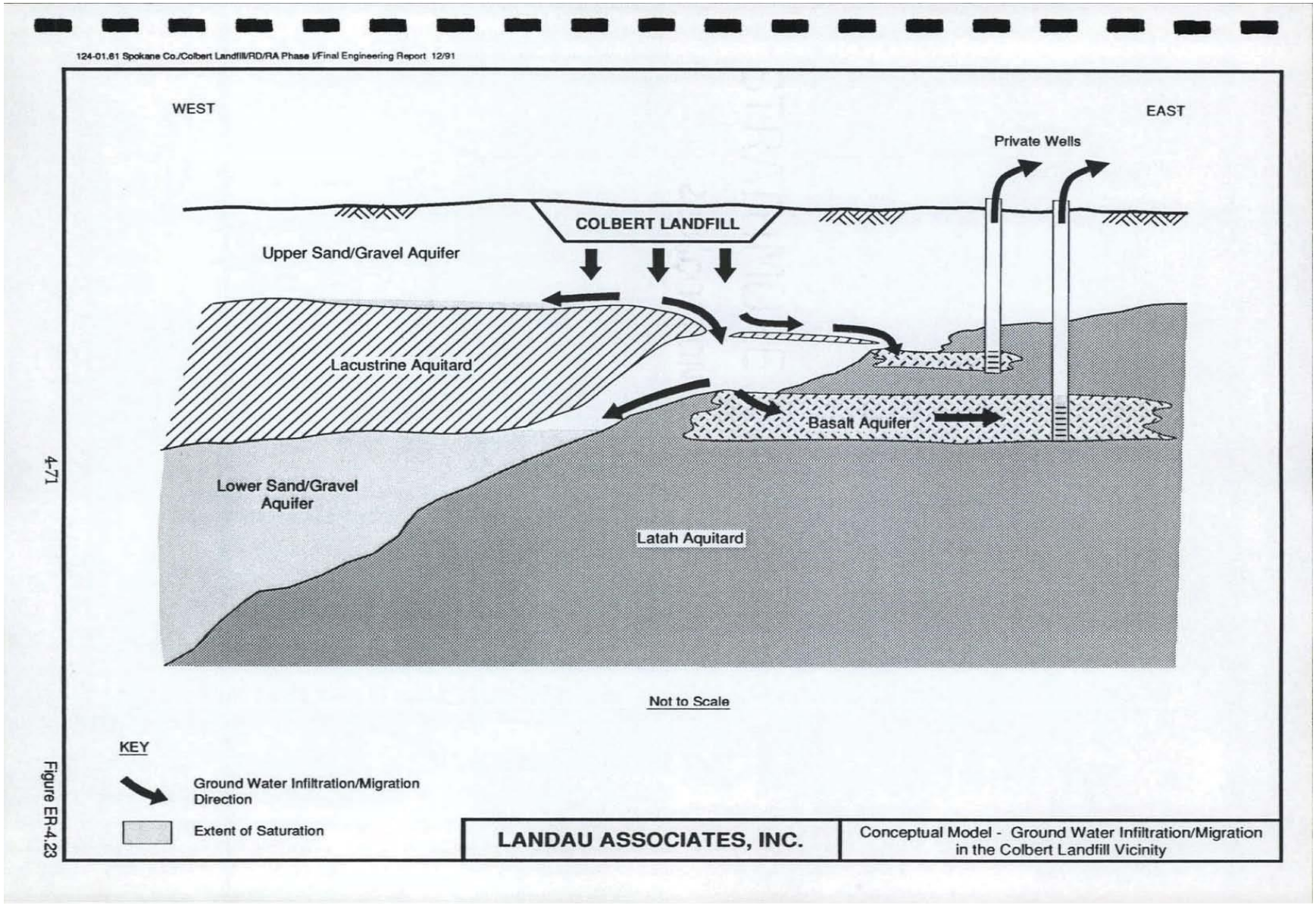
1.1 Geology/Hydrogeology

The geology beneath the Site consists of six vertically stratified and laterally discontinuous geologic units derived from glacial and fluvial material, modified by erosional (and possibly landslide) processes, overlaid on granitic bedrock. There are two primary aquifers that include the saturated portion of the Upper Sand and Gravel Unit and the saturated portion of the Lower Sand and Gravel Unit, which are separated by a Lacustrine Unit that serves as an aquitard. The Latah Formation serves as an aquitard that underlies the Lower Sand and Gravel Aquifer at most locations. A basalt unit forms a secondary aquifer interbedded in the Latah Aquitard and is referred to as the Basalt Aquifer. The Granite Unit is an aquitard that underlies the Latah Formation and serves as the lower boundary to the regional flow system. For more information, please refer to the Phase I Engineering Report (Landau Associates 1991).

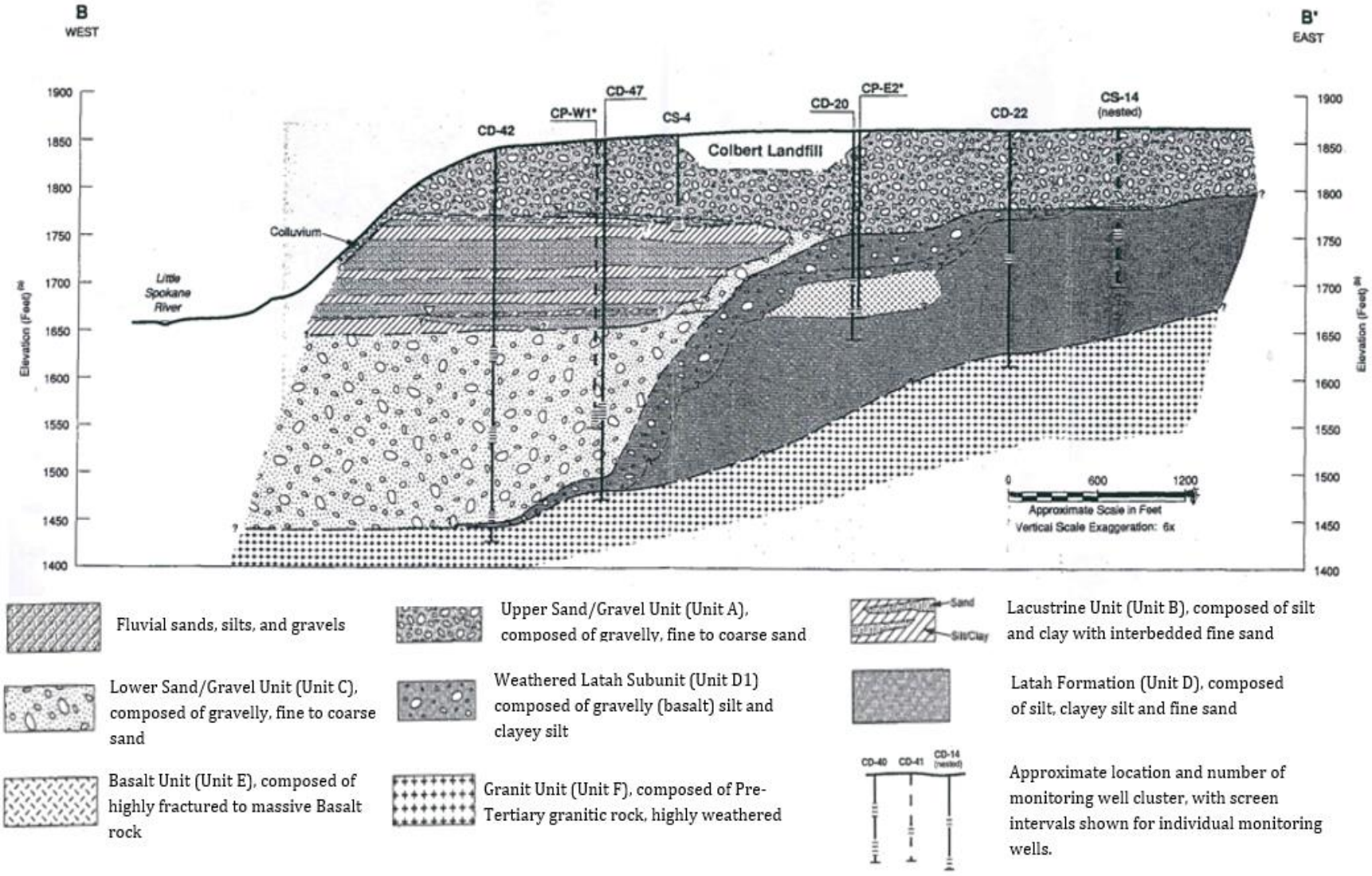
The Upper Sand and Gravel Unit aquifer (Upper Aquifer) is unconfined with a water table that lies approximately 90 ft below the ground surface. Groundwater flow in this aquifer is generally north to south, changing to the southeast approximately 1 mile south of the Site. The direction of flow appears to be influenced by the topography of the upper surface of the Lacustrine Aquitard (Landau Associates 1991).

The Lower Sand and Gravel Unit aquifer (Lower Aquifer) is confined to the west of the landfill and unconfined to the east of the landfill. To the west of the landfill, the Upper and Lower aquifers are separated by the Lacustrine unit, which causes the confined conditions in that area. Groundwater flow in the Lower Aquifer is predominantly toward the west with discharge to the Little Spokane River.

Colbert Landfill Hydrogeology/Groundwater Migration



Colbert Landfill Hydrogeology Overview



1.2 Shut-down Test-Lower Aquifer

A pump and treat system was successfully operated from 1994 through March 31, 2014, to prevent further spread of groundwater contamination emanating from the landfill. A shut-down test for the lower aquifer pump and treat system was deemed appropriate for the site after a Remedial System Evaluation (RSE) was performed as recommended in the 2009 Five Year Review (EPA). The RSE recommendation stated that with the extensive groundwater monitoring programs in place and with concentrations having decreased substantially after 20 years of operation, the current pump and treat system may not be adding significant benefit to the overall protectiveness of the remedy and that a shut-down test would help determine its efficacy. The shut-down test procedures are outlined in the *Final Work Plan, Groundwater Pump and Treat System Shut-down Test, Colbert Landfill CERCLA Site, Spokane County Utilities/ Landau Assoc. 2013*. See Section 2 of this report for more details. The upper aquifer monitoring wells are governed by the Consent Decree compliance, Post Closure (Minimal Functional Standards), and 1,4-dioxane sampling programs and are not included in the Shut-down test work plan. Shut-down testing results and information is presented in Section 2.0.

1.3 Upper Aquifer Monitoring

1.3.1 Compliance Monitoring (VOC's)

The compliance monitoring sampling program is outlined in the Consent Decree and performed according to the Colbert Landfill Operations and Maintenance manual *(Colbert Landfill Operations and Maintenance Manual, 1998*.). During the implementation of the lower aquifer system Shut-down Test, the compliance monitoring will only apply to the upper aquifer. Per conditions outlined in the consent decree (Appendix B, page V-7), the south system extraction wells are not required to be in operation and have been on stand-by status since 2004, and therefore are included in the compliance monitoring program. Compliance monitoring results and information is presented in Section 3.2.

1.3.2 1, 4-Dioxane Sampling

During the 2005 (3rd) Five Year Site Review, EPA specified an additional constituent (1,4-Dioxane) for evaluation at the Colbert Landfill site. After extensive monitoring in both the upper and lower aquifers, it was determined that an ongoing monitoring program would apply to selected wells in the upper aquifer only. The selected upper aquifer well locations are sampled for 1,4-dioxane according to the *1,4-Dioxane Work Plan for the Colbert Landfill (December 2007)*. 1,4-Dioxane analytical results and information is presented in Section 3.3.

1.3.3 Minimal Functional Standards (MFS) Post Closure

The landfill was closed pursuant to requirements of the Minimal Functional Standards for Solid Waste Handling (MFS, WAC173-304). Lower aquifer locations, as outlined in the MFS Groundwater Monitoring Plan (Landau Assoc., 1996), require no additional monitoring after the 2 year monitoring period, which ended in January 1999. Monitoring for the upper aquifer will continue according to the *Colbert Landfill Operations and Maintenance Manual, 1998*., and the *MFS Groundwater Monitoring Plan, 1996*. MFS analytical results and information is presented in Section 3.4.

1.4 Residential Well Monitoring

The Consent Decree specified that domestic wells within the vicinity of the landfill be monitored to protect human health. Domestic well locations and schedules for this program were selected by proximity to landfill contamination and are evaluated on a regular basis to accommodate any changes in groundwater contamination. This program includes well locations in both the upper and lower aquifers. Sampling for this program is done in accordance with the *Quality Assurance and Field Sampling Plan-Colbert Residential Well Sampling, 1991,* and is governed by the Consent Decree. Residential program analytical results and information is presented in Section 4.0.

1.5 Supplemental Sampling

Supplemental sampling occurs every five years and is intended to collect additional data from monitoring and residential wells not regularly sampled. Although there are no criteria for monitoring or reporting associated with supplemental sampling, data collected helps provide a more accurate snapshot of groundwater flow and contamination throughout the area. The next supplemental sampling event will occur in April 2022.

1.6 Landfill Operations and Maintenance

In 1997, the landfill closure construction (cover system and components) was completed as part of the MFS requirements. The landfill gas collection and treatment system is monitored and maintained on a regular basis as outlined in the *Operations and Maintenance Manual for Colbert Landfill Closure, CH2MHill, May 1997*. Landfill operations and maintenance information is presented in Section 6.0.

2.0 Shut-down Test

A shut-down test of the Colbert Landfill Groundwater Pump and Treat facility was initiated April 1, 2014, when all lower aquifer extraction wells were turned off and placed in standby mode. The shut-down test was deemed appropriate for the site after a Remedial System Evaluation (RSE) was performed as recommended in the 2009 Five Year Review (EPA). The shut-down test is performed according to the *Final Work Plan, Groundwater Pump and Treat System Shut-down Test, Colbert Landfill CERCLA Site, Spokane County Utilities/ Landau Assoc. 2013*.

2.1 Shut-down Testing Locations and Schedule

The lower aquifer wells selected as monitoring locations for the Colbert Landfill pump and treat system shut-down test include: the compliance monitoring well clusters (CD-41, CD-42, CD-43, CD-44, CD-45, and CD-48), monitoring well CD-49, and the lower aquifer extraction wells (CP-E1, CP-E2, CP-E3, CP-W1, CP-W2, and CP-W3). Locations are presented in Figure 2-1. Collection of groundwater samples (contaminant sampling) from the shut-down locations, along with the collection of water level measurements, was performed as outlined in Table 2-1.

2.2 Shut-down Test Monitoring

The lower aquifer extraction wells, the compliance monitoring well clusters (CD-41, CD-42, CD-43, CD-44, CD-45, and CD-48), and monitoring well CD-49 were sampled according to the *Colbert Landfill Operations and Maintenance Manual, 1998.* Field parameters were taken and VOC samples were collected.

2.2.1 Groundwater Elevations

Groundwater elevations for the reporting period are shown in Table 2-2 and Figure 2-2. Estimated groundwater contours and flow are shown in Figure 2-3 and Figure 2-4. Measurements were consistent and followed typical seasonal variation with levels slightly higher in the spring and slightly lower during the fall. Extraction well hydrographs show the increase in groundwater levels at the immediate vicinity of those wells in April 2014 when the system was shut down.

2.2.2 Field Parameters

Field parameters taken at the shut-down test locations are shown in Table 2-2. The highest conductivities were mostly seen in the east system extraction wells. Conductivity values in monitoring wells ranged from 278 to 1180 umhos/cm. Measurements of pH ranged from 6.67 to 8.19, with the lowest pH values generally found in the east system extraction wells.

2.2.3 Constituents of Concern (COC's)

Constituent of concern concentrations for Shut-down Test locations are presented in Table 2-4 and Table 2-5. COC Concentrations versus time graphs for Shut-down locations are presented in Figure 2-5 through Figure 2-12. Estimated COC plume boundaries and COC detections in the lower aquifer are presented in Figure 2-13 through Figure 2-23. All detected concentrations found in the shut-down test compliance wells were well below any applicable criteria. Criteria are shown in Table 2-3

The COC's found in the shut-down program criteria-dependent wells were low concentrations of TCA, DCA, and DCE. Analytical results from the shut-down program criteria-dependent wells are shown in Table 2-4. Time versus concentration plots are found in Figure 2-5 through Figure 2-8. Although the concentrations found in the wells were far below any criteria, monitoring wells CD-49 and CD-43C1 were kept on a quarterly sampling schedule to better evaluate the increasing TCA concentrations, which is currently on a consistent decreasing trend.

Lower aquifer extraction wells are not criteria-dependent locations, and therefore actions during the shut-down test are not governed by COC concentrations in these wells. Analytical results from the extraction wells are shown in Table 2-5. Time versus concentration plots are found in Figure 2-9 through Figure 2-12. In general, concentrations of COC's have remained relatively stable in the east system wells, with the exception of CP-E2, in which most COC concentrations are on a slow increasing trend. Although there were significant increases in concentrations for TCA, TCE, and DCA at CP-W3 since the shutdown that peaked around 2017, concentrations appear to be on a decreasing trend or stabilizing at lower concentrations. Concentrations in CP-W2, after noticeably decreasing three months after the wells were inactivated, have remained relatively low.

2.3 Data Evaluation

Data indicates a slight shift in plume concentrations toward the western edge of the landfill, evident by the emerging concentrations of TCA and DCE found in CD-49, increasing concentrations for TCA in CD-43C1, and increasing concentrations (rebound) found in CP-W3. Supplemental sampling wells in the center of the landfill showed significant TCA concentrations and indicated a more connective plume than historically mapped.

2.4 Program Changes or Modifications

Criteria Exceedances in the lower aquifer are presented in Table 2-6 (Consent Decree criteria) and Table 2-7 (updated criteria values from the Colbert Landfill 6th Five-year Review, which includes an increase for Trichloroethene [PCE] from the performance standard in the ROD [0.7 µg/L] to the current MCL [5µg/L], and a decrease for 1,1-Dichloroethane [1,1-DCA] to the regional screening level [RSL] of 2.6 µg/L). No criteria were exceeded during the reporting period, except for several extraction wells, which are not criteria dependent.

As stated in the work plan, sampling at the lower aquifer compliance monitoring wells is now on an annual schedule and will be sampled again in April 2022. The exceptions to this are monitoring well CD-49 and cluster well CD-43C1. Quarterly sampling will continue at CD-49 and CD-43C1 to monitor the increasing trend in concentrations. Per the EPA's Optimization Report (2017) recommendations, the sampling frequency at well clusters CD-43 and CD-42 will be re-evaluated. Since concentrations in the vicinity of CD-40 and CP-W3 appear to be stable or on a decreasing trend, the sampling plan to monitor the area around CD-49/CP-W3 will continue its current course until any significant changes occur. Quarterly sampling will continue at the extraction wells, as running the wells periodically will assist with preventive maintenance and provide indicators for any possible changes in COC concentrations near the landfill boundaries.

2.5 Cost Savings

Typical electrical costs associated with operating the pump-and-treat system for the lower aquifer on a continual basis for one year were approximately $59,000. From May 2020 through April 2021, the cost for electricity at the facility during the fourth year of the shut-down test was $15,817. Increases in lab costs were minimal when compared to the savings in electricity.

Typical Annual Electrical Costs		**$60,000**
Electrical Costs for Fourth Year of Shut-down Test		-$15,817
Estimated Total Cost Savings		$44,183

Figure 2-1 Shut-down Test Locations

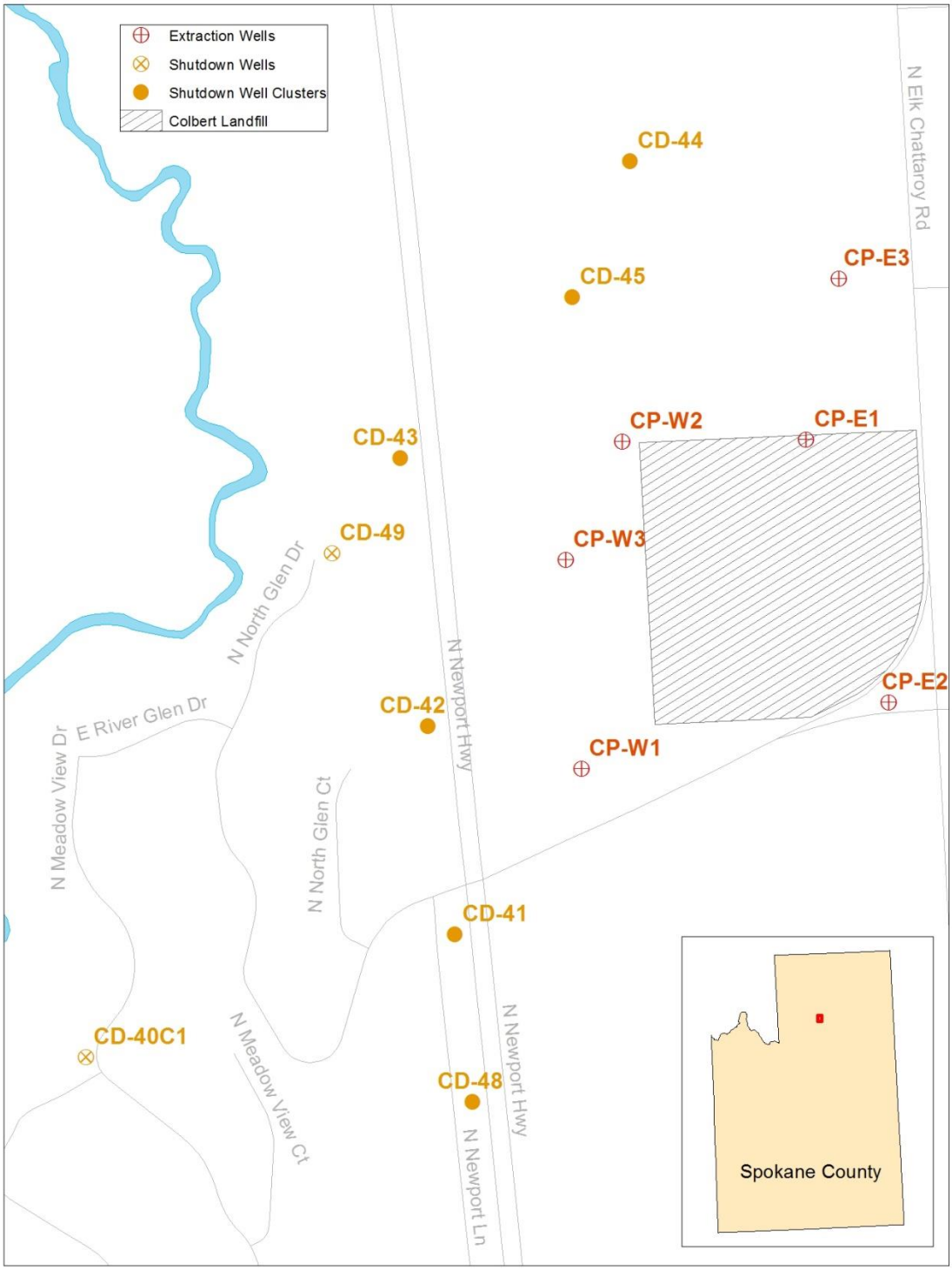
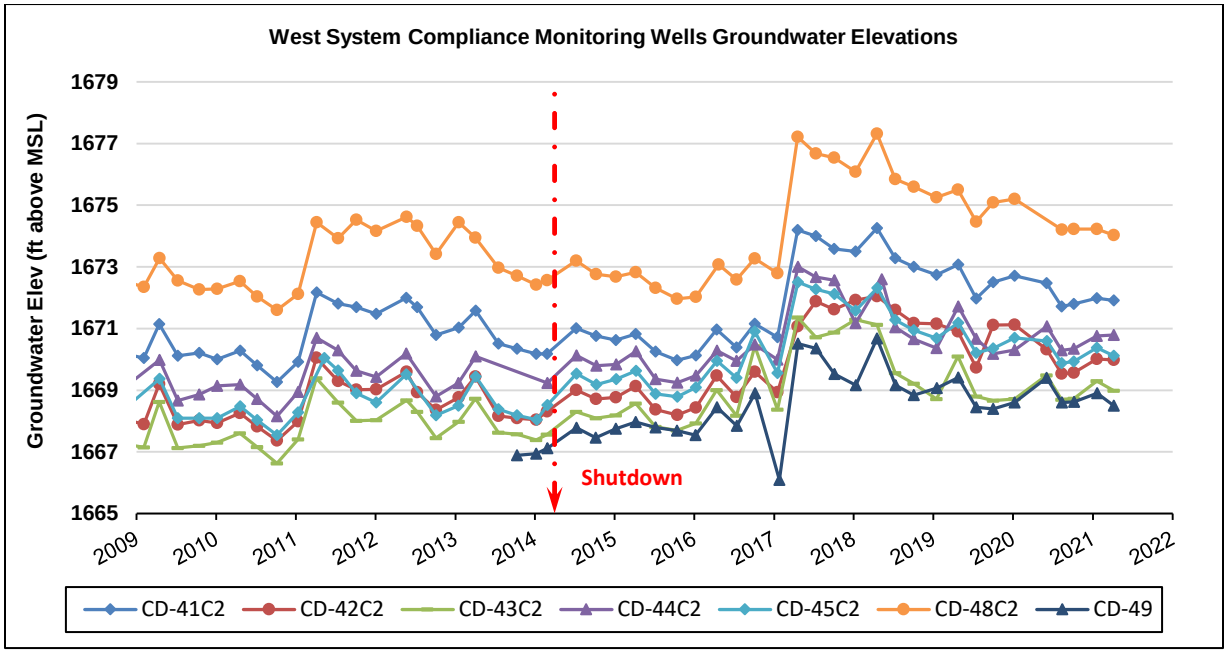


Table 2-1 Colbert Landfill Shut-down Test Sampling Schedule (May 2020 - June 2021)

System	Well ID	Monitoring Frequency		Shut-down Criteria Applies?
		Water Levels	Sampling	
West	CD-40C1	Quarterly	Annual	Yes
	CD-41C2	Quarterly	Annual	
	CD-41C3	Quarterly	Annual	
	CD-42C1	Quarterly	Annual	Yes
	CD-42C2	Quarterly	Annual	
	CD-42C3	Quarterly	Annual	
	CD-43C1	Quarterly	Quarterly	Yes
	CD-43C2	Quarterly	Annual	
	CD-43C3	Quarterly	Annual	
	CD-44C1	Quarterly	Annual	Yes
	CD-44C2	Quarterly	Annual	
	CD-44C3	Quarterly	Annual	
	CD-45C1	Quarterly	Annual	Yes
	CD-45C2	Quarterly	Annual	
	CD-45C3	Quarterly	Annual	
	CD-48C1	Quarterly	Annual	Yes
	CD-48C2	Quarterly	Annual	
	CD-48C3	Quarterly	Annual	
	CD-49	Quarterly	Quarterly	Yes
	CP-W1	Quarterly	Quarterly	No
	CP-W2	Quarterly	Quarterly	
	CP-W3	Quarterly	Quarterly	
East	CP-E1	Quarterly	Quarterly	No
	CP-E2	Quarterly	Quarterly	
	CP-E3	Quarterly	Quarterly	

Changes to the program are highlighted in **RED**

Figure 2-2 Lower Aquifer Groundwater Elevations



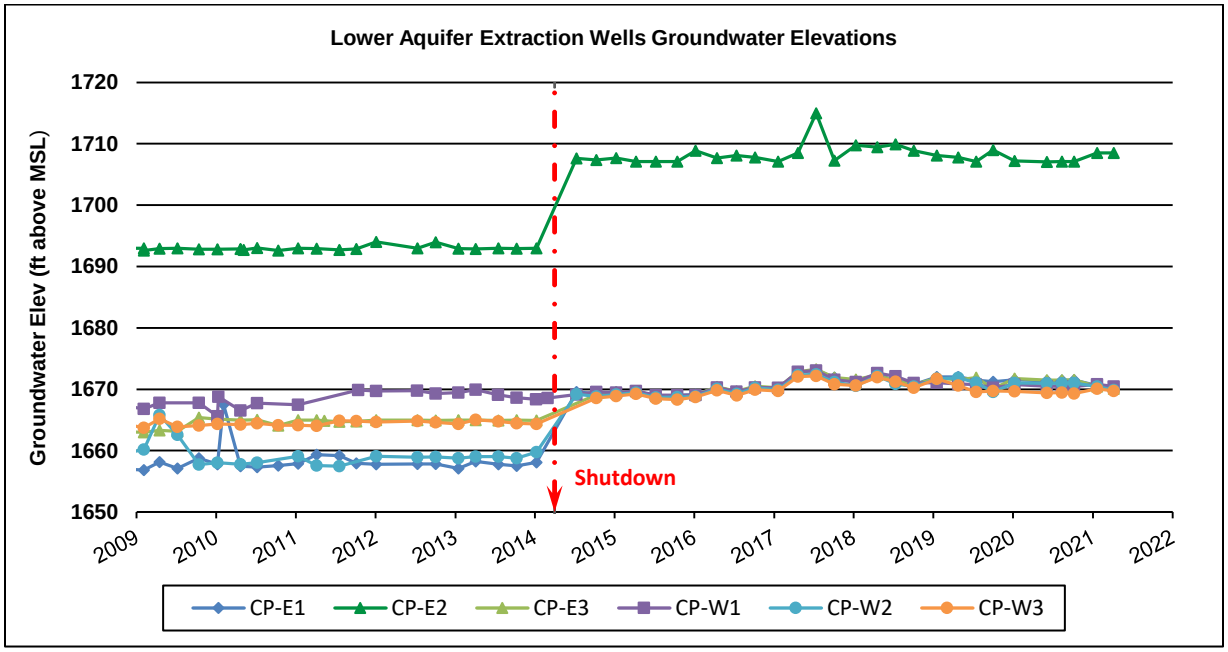


Figure 2-3 Lower Aquifer Groundwater Contours

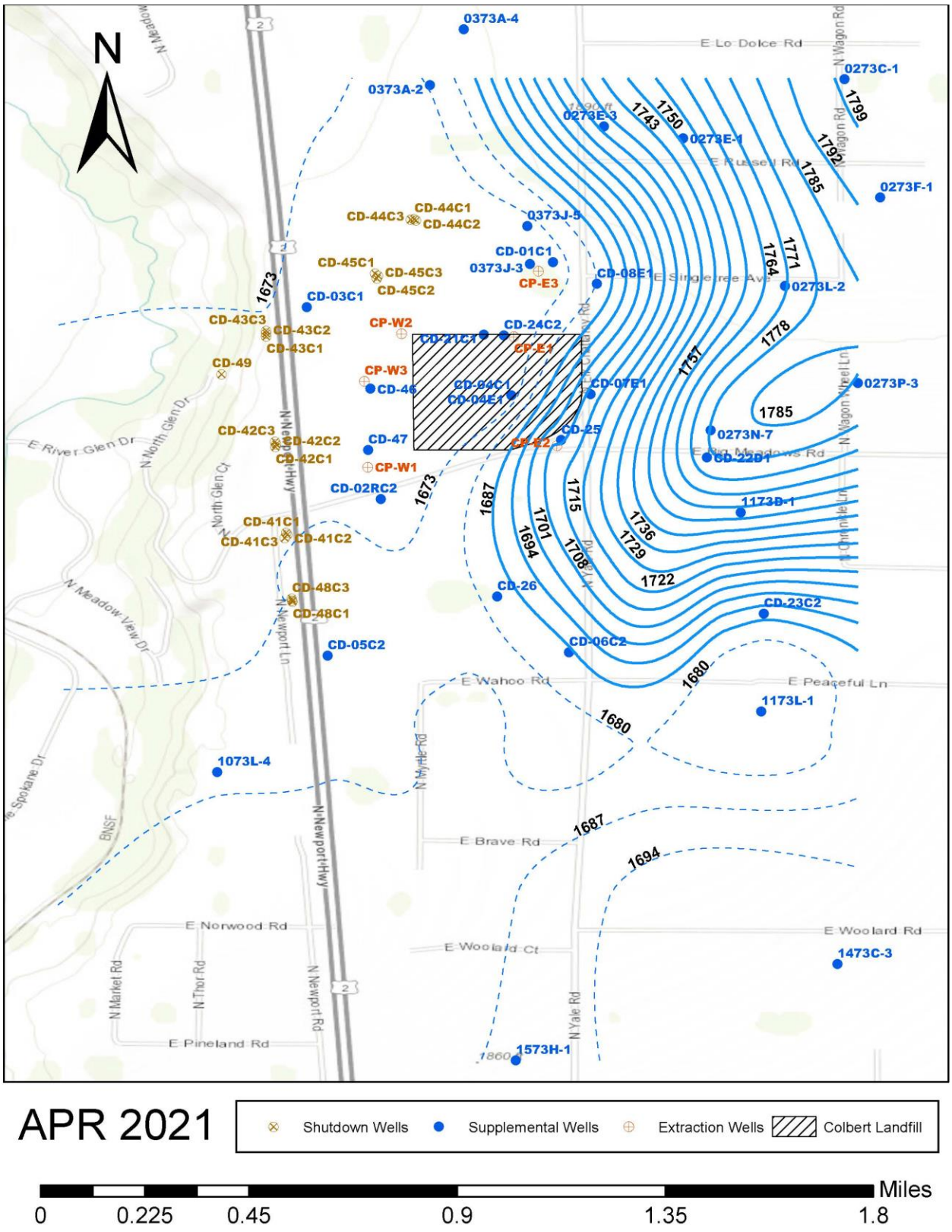


Figure 2-4 Lower Aquifer Groundwater Elevation Map

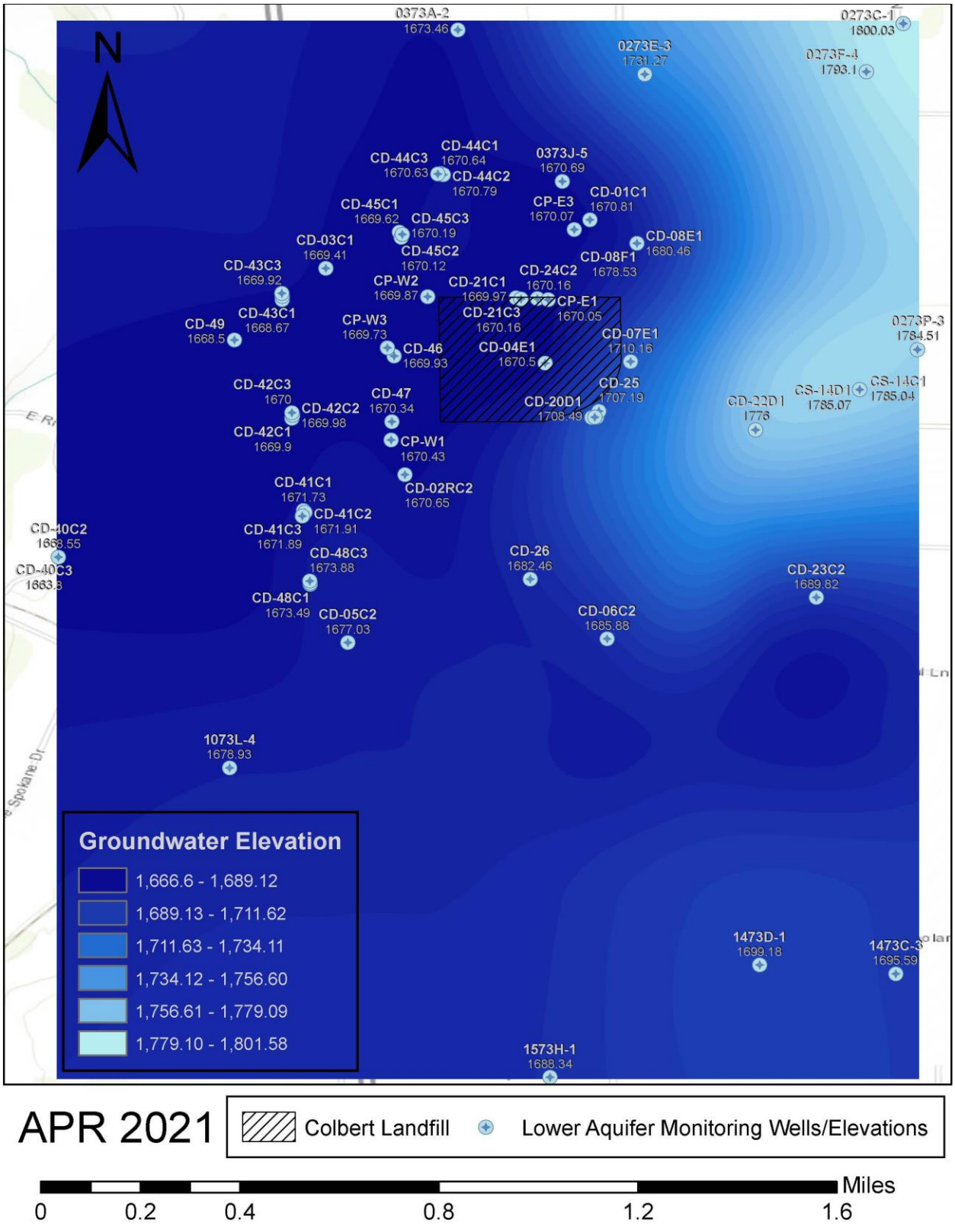


Table 2-2 Shut-down Test Location Field Parameters

StationID	SampleDate	WtrElev	Temp	PH	Conductivity	Turbidity	Aquifer	Program
CD-41C1	4/6/2021	1671.73	11.8	7.89	372	0.11	lower	SD
CD-41C2	4/6/2021	1671.91	11.8	8.01	390	0.09	lower	SD
CD-41C3	4/6/2021	1671.89	12	7.9	429	0.08	lower	SD
CD-42C1	8/12/2020	1669.76	12.2	7.89	479	0.02	lower	SD
CD-42C1	4/6/2021	1669.9	12	7.91	435	0.07	lower	SD
CD-42C2	4/6/2021	1669.98	11.7	7.97	430	0.09	lower	SD
CD-42C3	4/6/2021	1670	12	7.98	378	0.25	lower	SD
CD-43C1	8/12/2020	1668.49	10.8	8.02	480	0.03	lower	SD
CD-43C1	10/6/2020	1668.25	10.4	8.04	451	0.13	lower	SD
CD-43C1	1/20/2021	1668.96	11.1	7.92	470	0.21	lower	SD
CD-43C1	4/6/2021	1668.67	10.2	8.03	457	0.11	lower	SD
CD-43C2	4/6/2021	1668.98	10.1	8.19	342	0.13	lower	SD
CD-43C3	4/6/2021	1669.92	11.2	8.01	278	0.22	lower	SD
CD-44C1	4/7/2021	1670.64	16.1	7.04	461	0.21	lower	SD
CD-44C2	4/7/2021	1670.79	11.6	6.97	435	0.09	lower	SD
CD-44C3	4/7/2021	1670.63	11.9	7.17	432	1.07	lower	SD
CD-45C1	4/7/2021	1669.62	10	7.73	482	0.15	lower	SD
CD-45C2	4/7/2021	1670.12	10.7	7.74	436	0.08	lower	SD
CD-45C3	4/7/2021	1670.19	10.4	8.05	374	0.15	lower	SD
CD-48C1	4/6/2021	1673.49	12.1	7.86	457	0.18	lower	SD
CD-48C2	8/12/2020	1674.21	11.8	7.95	451	0.47	lower	SD
CD-48C2	4/6/2021	1674.03	11.6	7.96	424	0.38	lower	SD
CD-48C3	8/12/2020	1674.07	12	7.93	477	0.15	lower	SD
CD-48C3	4/6/2021	1673.88	11.8	7.92	423	0.11	lower	SD
CD-49	8/12/2020	1668.6	13.2	7.95	484	0.14	lower	SD
CD-49	10/6/2020	1668.62	12.9	7.95	437	0.11	lower	SD
CD-49	1/20/2021	1668.9	12.9	7.82	470	0.19	lower	SD
CD-49	4/7/2021	1668.5	12.2	7.98	475	0.18	lower	SD
CP-E1	8/12/2020	1671.46	12	6.89	1092	1.1	lower	SD
CP-E1	10/6/2020	1671.49	11.5	6.92	1092	1.13	lower	SD
CP-E1	1/20/2021	1670.59	12.1	7.05	986	1.16	lower	SD
CP-E1	4/7/2021	1670.05	12.3	6.98	939	1.11	lower	SD
CP-E2	8/12/2020	1707.11	12	6.69	1180	1.21	lower	SD
CP-E2	10/6/2020	1707.12	11	6.67	1173	1.49	lower	SD
CP-E2	1/20/2021	1708.49	11.3	7.21	1083	4.19	lower	SD
CP-E2	4/7/2021	1708.52	12.6	7.18	992	1.17	lower	SD
CP-E3	8/12/2020	1671.49	12	7.06	941	1.39	lower	SD
CP-E3	10/6/2020	1671.53	11.4	7.07	942	1.29	lower	SD
CP-E3	1/20/2021	1670.47	11.9	7.24	927	1.28	lower	SD
CP-E3	4/7/2021	1670.07	11.3	7.27	853	1.26	lower	SD
CP-W1	8/12/2020	1670.51	11.9	6.91	1085	1.09	lower	SD
CP-W1	10/6/2020	1670.43	11	6.97	1086	1.11	lower	SD
CP-W1	1/20/2021	1670.83	10.3	7.84	487	0.49	lower	SD
CP-W1	4/7/2021	1670.43	11.3	7.85	493	1.02	lower	SD
CP-W2	8/12/2020	1670.98	11.9	7.61	600	0.89	lower	SD
CP-W2	10/6/2020	1671.02	11	7.71	537	0.9	lower	SD
CP-W2	1/20/2021	1670.45	10.2	7.67	638	0.93	lower	SD
CP-W2	4/7/2021	1669.87	10.5	7.59	675	0.83	lower	SD
CP-W3	8/12/2020	1669.44	11.9	7.13	952	1.81	lower	SD
CP-W3	10/6/2020	1669.31	11	7.19	943	0.98	lower	SD
CP-W3	1/20/2021	1670.1	10.5	7.67	640	1.73	lower	SD
CP-W3	4/7/2021	1669.73	11.2	7.5	622	1.64	lower	SD

Temp=degrees C; Conductivity=umhos/cm; Turbidity= NTU

Table 2-3 Colbert Landfill Shut-down Test Criteria

Groundwater monitoring associated with the P&T system currently includes water level measurements and groundwater quality monitoring at extraction and compliance monitoring wells in accordance with the Quality Assurance Project Plan (QAPP; Landau Associates 1992b) to meet the criteria established in the Consent Decree. The purpose of this monitoring is to evaluate the performance of the P&T system in preventing the spread of contaminated groundwater downgradient from the capture zone for the West System. Compliance monitoring wells are currently sampled on an annual basis and the extraction wells are sampled on a quarterly basis. The consent decree evaluation criteria and action level criteria for the shut-down test are presented below:

SHUT-DOWN TEST CRITERIA		
COC	**ACTION LEVEL CRITERIA (ug/L)**	**CONSENT DECREE EVALUATION CRITERIA (ug/L)**
TCA	**130**	**200**
DCA	**2632**	**4050**
DCE	**4.55**	**7**
MC	**1.6**	**2.5**
PCE	**0.5**	**0.7**
TCE	**3.25**	**5**

Table 2-4 Shut-down Test Compliance Well Analytical Results (reported in ug/L)

StationID	SampleDate	DCA	DCE	MC	PCE	TCA	TCE
CD-40C1	4/7/2021	**1.34**	**0.91**	<0.5	<0.5	**1.28**	<0.5
CD-41C1	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-41C2	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-41C3	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-42C1	8/12/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-42C1	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-42C2	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-42C3	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-43C1	8/12/2020	<0.5	<0.5	<0.5	<0.5	**5.18**	<0.5
CD-43C1	10/6/2020	<0.5	<0.5	<0.5	<0.5	**5.36**	<0.5
CD-43C1	1/20/2021	<0.5	<0.5	<0.5	<0.5	**4.73**	<0.5
CD-43C1	4/6/2021	<0.5	<0.5	<0.5	<0.5	**3.52**	<0.5
CD-43C2	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-43C3	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-44C1	4/7/2021	<0.5	**0.6**	<0.5	<0.5	**2.25**	<0.5
CD-44C2	4/7/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-44C3	4/7/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-45C1	4/7/2021	<0.5	<0.5	<0.5	<0.5	**1.64**	<0.5
CD-45C2	4/7/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-45C3	4/7/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-48C1	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-48C2	8/12/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-48C2	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-48C3	8/12/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-48C3	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CD-49	8/12/2020	<0.5	**1.45**	<0.5	<0.5	**1.2**	<0.5
CD-49	10/6/2020	<0.5	**1.36**	<0.5	<0.5	**1.13**	<0.5
CD-49	1/20/2021	<0.5	**1.31**	<0.5	<0.5	**1.18**	<0.5
CD-49	4/7/2021	<0.5	**1.18**	<0.5	<0.5	**1.34**	<0.5

***Bold** indicates a value greater than non-detection.

Table 2-5 Lower Aquifer Extraction Well Analytical Results (reported in ug/L)

StationID	SampleDate	DCA	DCE	MC	PCE	TCA	TCE
CP-E1	8/12/2020	**8.23**	**16.9**	<0.5	**1.32**	**8.56**	**7.56**
CP-E1	10/6/2020	**8.21**	**17.5**	<0.5	**1.51**	**8.86**	**7.64**
CP-E1	1/20/2021	**8.32**	**18.2**	<0.5	**1.48**	**8.21**	**7.74**
CP-E1	4/7/2021	**7.84**	**16.5**	<0.5	**1.5**	**7.81**	**7.42**
CP-E2	8/12/2020	**31.6**	**123**	<0.5	<0.5	**42.6**	**166**
CP-E2	10/6/2020	**29**	**131**	<0.5	**1.08**	**44.9**	**164**
CP-E2	1/20/2021	**35.4**	**120**	<0.5	**1.03**	**41**	**156**
CP-E2	4/7/2021	**33.5**	**132**	<0.5	**0.99**	**40.1**	**158**
CP-E3	8/12/2020	**2.13**	**6.4**	<0.5	<0.5	**4.6**	**2.39**
CP-E3	10/6/2020	**2.1**	**6.67**	<0.5	<0.5	**4.92**	**2.3**
CP-E3	1/20/2021	**1.98**	**7.78**	<0.5	<0.5	**5.16**	**2**
CP-E3	4/7/2021	**1.95**	**7.83**	<0.5	<0.5	**5.1**	**2.14**
CP-S1	8/12/2020	**0.69**	<0.5	<0.5	<0.5	<0.5	**1.06**
CP-S1	10/6/2020	**0.78**	<0.5	<0.5	<0.5	**0.53**	**1.07**
CP-S1	1/20/2021	**0.8**	<0.5	<0.5	<0.5	**0.71**	**1.27**
CP-S1	4/7/2021	**0.65**	<0.5	<0.5	<0.5	**0.64**	**1.17**
CP-S4	8/12/2020	**2.31**	<0.5	<0.5	**0.54**	**0.53**	**1.82**
CP-S4	10/6/2020	**2.27**	<0.5	<0.5	**0.55**	<0.5	**1.61**
CP-S4	1/20/2021	**2.22**	<0.5	<0.5	**0.56**	**0.56**	**1.99**
CP-S4	4/6/2021	**1.95**	<0.5	<0.5	<0.5	<0.5	**1.78**
CP-S5	8/12/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S5	10/6/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S5	1/20/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S5	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S6	8/12/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S6	10/6/2020	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S6	1/20/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-S6	4/6/2021	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
CP-W1	8/12/2020	<0.5	**2.89**	<0.5	<0.5	**2.44**	<0.5
CP-W1	10/6/2020	<0.5	**2.73**	<0.5	<0.5	**2.11**	<0.5
CP-W1	1/20/2021	<0.5	**2.79**	<0.5	<0.5	**2.02**	<0.5
CP-W1	4/7/2021	<0.5	**2.68**	<0.5	<0.5	**1.9**	<0.5
CP-W2	8/12/2020	**2.58**	**1.54**	<0.5	<0.5	**11.8**	**2.83**
CP-W2	10/6/2020	**1.74**	**2.09**	<0.5	<0.5	**16.9**	<0.5
CP-W2	1/20/2021	**2.09**	**2.65**	<0.5	<0.5	**19.4**	<0.5
CP-W2	4/7/2021	**2.16**	**3.7**	<0.5	<0.5	**19.6**	<0.5
CP-W3	8/12/2020	**7.98**	**19.6**	<0.5	<0.5	**38.3**	**27.5**
CP-W3	10/6/2020	**8.29**	**19.6**	<0.5	<0.5	**37.1**	**18**
CP-W3	1/20/2021	**7.3**	**21.1**	<0.5	<0.5	**35.3**	**29.2**
CP-W3	4/7/2021	**7.98**	**20.9**	<0.5	<0.5	**36.8**	**30.3**

***Bold** indicates a value greater than non-detection.

Table 2-6 Shutdown Program Criteria Exceedances (Consent Decree criteria)

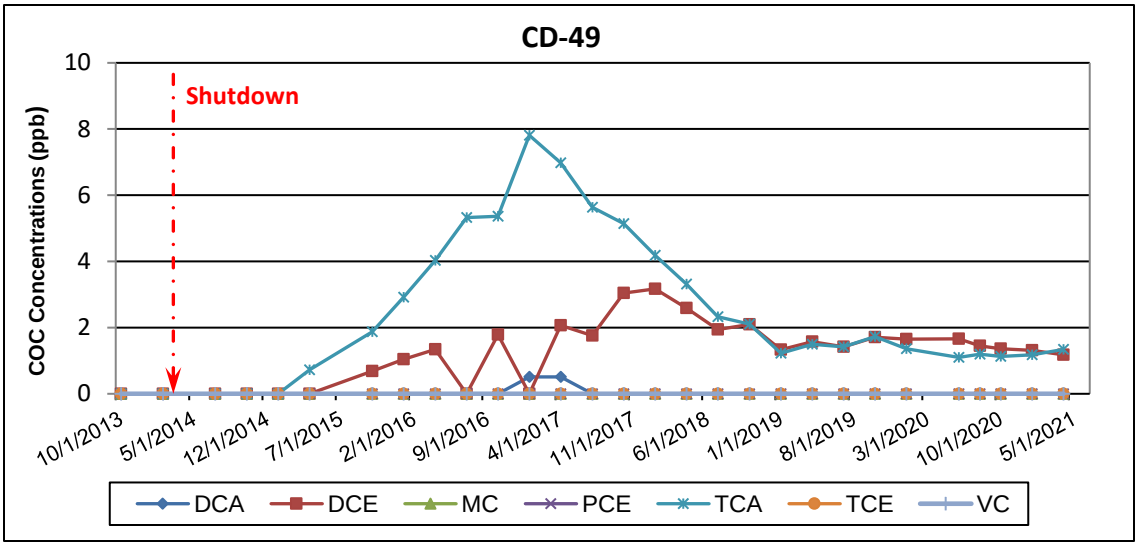
StationID	SampleDate	Aquifer	Program	Analyte	Result	Units	Flag
CP-E1	8/12/2020	lower	SD	1,1-Dichloroethene	16.9	ug/L	Exceedance
CP-E1	10/6/2020	lower	SD	1,1-Dichloroethene	17.5	ug/L	Exceedance
CP-E1	1/20/2021	lower	SD	1,1-Dichloroethene	18.2	ug/L	Exceedance
CP-E1	4/7/2021	lower	SD	1,1-Dichloroethene	16.5	ug/L	Exceedance
CP-E1	8/12/2020	lower	SD	Tetrachloroethene	1.32	ug/L	Exceedance
CP-E1	10/6/2020	lower	SD	Tetrachloroethene	1.51	ug/L	Exceedance
CP-E1	1/20/2021	lower	SD	Tetrachloroethene	1.48	ug/L	Exceedance
CP-E1	4/7/2021	lower	SD	Tetrachloroethene	1.5	ug/L	Exceedance
CP-E1	8/12/2020	lower	SD	Trichloroethene	7.56	ug/L	Exceedance
CP-E1	10/6/2020	lower	SD	Trichloroethene	7.64	ug/L	Exceedance
CP-E1	1/20/2021	lower	SD	Trichloroethene	7.74	ug/L	Exceedance
CP-E1	4/7/2021	lower	SD	Trichloroethene	7.42	ug/L	Exceedance
CP-E2	8/12/2020	lower	SD	1,1-Dichloroethene	123	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	1,1-Dichloroethene	129	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	1,1-Dichloroethene	131	ug/L	Exceedance
CP-E2	1/20/2021	lower	SD	1,1-Dichloroethene	120	ug/L	Exceedance
CP-E2	4/7/2021	lower	SD	1,1-Dichloroethene	132	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	Tetrachloroethene	1.08	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	Tetrachloroethene	1.05	ug/L	Exceedance
CP-E2	1/20/2021	lower	SD	Tetrachloroethene	1.03	ug/L	Exceedance
CP-E2	4/7/2021	lower	SD	Tetrachloroethene	0.99	ug/L	Exceedance
CP-E2	8/12/2020	lower	SD	Trichloroethene	166	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	Trichloroethene	162	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	Trichloroethene	164	ug/L	Exceedance
CP-E2	1/20/2021	lower	SD	Trichloroethene	156	ug/L	Exceedance
CP-E2	4/7/2021	lower	SD	Trichloroethene	158	ug/L	Exceedance
CP-E3	1/20/2021	lower	SD	1,1-Dichloroethene	7.78	ug/L	Exceedance
CP-E3	4/7/2021	lower	SD	1,1-Dichloroethene	7.83	ug/L	Exceedance
CP-W3	8/12/2020	lower	SD	1,1-Dichloroethene	19.6	ug/L	Exceedance
CP-W3	10/6/2020	lower	SD	1,1-Dichloroethene	19.6	ug/L	Exceedance
CP-W3	1/20/2021	lower	SD	1,1-Dichloroethene	21.1	ug/L	Exceedance
CP-W3	4/7/2021	lower	SD	1,1-Dichloroethene	20.9	ug/L	Exceedance
CP-W3	8/12/2020	lower	SD	Trichloroethene	27.5	ug/L	Exceedance
CP-W3	10/6/2020	lower	SD	Trichloroethene	18	ug/L	Exceedance
CP-W3	1/20/2021	lower	SD	Trichloroethene	29.2	ug/L	Exceedance
CP-W3	4/7/2021	lower	SD	Trichloroethene	30.3	ug/L	Exceedance

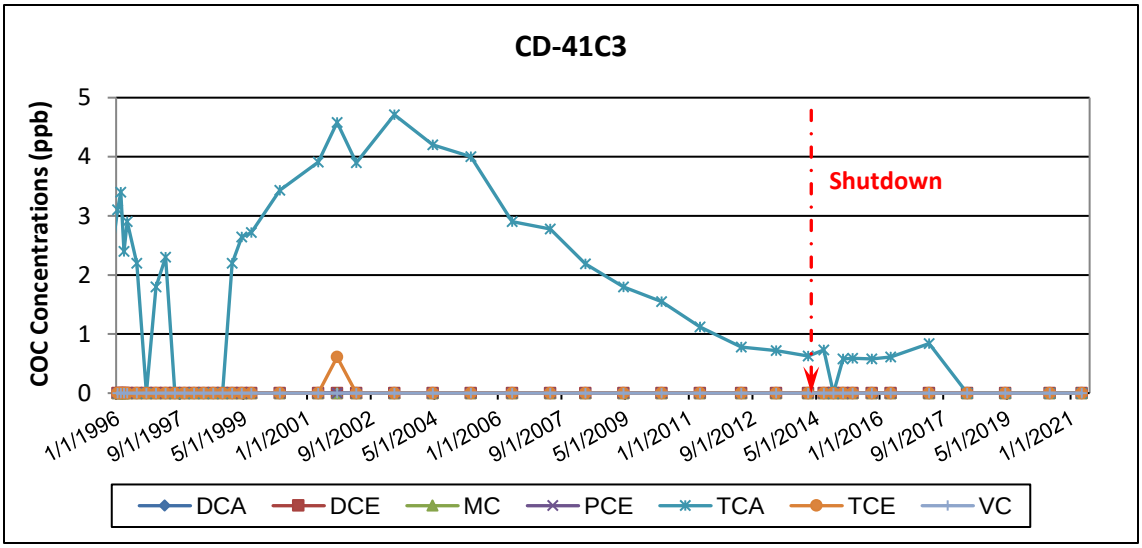
Table 2-7 Shutdown Program Criteria Exceedances (*updated criteria values)

*Increase for Trichloroethene (PCE) from the performance standard in the ROD (0.7 µg/L) to the current MCL (5µg/L), and a decrease for 1,1-Dichloroethane (1,1-DCA) to the regional screening level (RSL) of 2.6 µg/L.

StationID	SampleDate	Aquifer	Program	Analyte	Result	Units	Flag
CP-E1	8/12/2020	lower	SD	1,1-Dichloroethane	8.23	ug/L	Exceedance
CP-E1	10/6/2020	lower	SD	1,1-Dichloroethane	8.21	ug/L	Exceedance
CP-E1	1/20/2021	lower	SD	1,1-Dichloroethane	8.32	ug/L	Exceedance
CP-E1	4/7/2021	lower	SD	1,1-Dichloroethane	7.84	ug/L	Exceedance
CP-E1	8/12/2020	lower	SD	1,1-Dichloroethene	16.9	ug/L	Exceedance
CP-E1	10/6/2020	lower	SD	1,1-Dichloroethene	17.5	ug/L	Exceedance
CP-E1	1/20/2021	lower	SD	1,1-Dichloroethene	18.2	ug/L	Exceedance
CP-E1	4/7/2021	lower	SD	1,1-Dichloroethene	16.5	ug/L	Exceedance
CP-E1	8/12/2020	lower	SD	Trichloroethene	7.56	ug/L	Exceedance
CP-E1	10/6/2020	lower	SD	Trichloroethene	7.64	ug/L	Exceedance
CP-E1	1/20/2021	lower	SD	Trichloroethene	7.74	ug/L	Exceedance
CP-E1	4/7/2021	lower	SD	Trichloroethene	7.42	ug/L	Exceedance
CP-E2	8/12/2020	lower	SD	1,1-Dichloroethane	31.6	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	1,1-Dichloroethane	29	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	1,1-Dichloroethane	27.9	ug/L	Exceedance
CP-E2	1/20/2021	lower	SD	1,1-Dichloroethane	35.4	ug/L	Exceedance
CP-E2	4/7/2021	lower	SD	1,1-Dichloroethane	33.5	ug/L	Exceedance
CP-E2	8/12/2020	lower	SD	1,1-Dichloroethene	123	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	1,1-Dichloroethene	129	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	1,1-Dichloroethene	131	ug/L	Exceedance
CP-E2	1/20/2021	lower	SD	1,1-Dichloroethene	120	ug/L	Exceedance
CP-E2	4/7/2021	lower	SD	1,1-Dichloroethene	132	ug/L	Exceedance
CP-E2	8/12/2020	lower	SD	Trichloroethene	166	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	Trichloroethene	162	ug/L	Exceedance
CP-E2	10/6/2020	lower	SD	Trichloroethene	164	ug/L	Exceedance
CP-E2	1/20/2021	lower	SD	Trichloroethene	156	ug/L	Exceedance
CP-E2	4/7/2021	lower	SD	Trichloroethene	158	ug/L	Exceedance
CP-E3	1/20/2021	lower	SD	1,1-Dichloroethene	7.78	ug/L	Exceedance
CP-E3	4/7/2021	lower	SD	1,1-Dichloroethene	7.83	ug/L	Exceedance
CP-W3	8/12/2020	lower	SD	1,1-Dichloroethane	7.98	ug/L	Exceedance
CP-W3	10/6/2020	lower	SD	1,1-Dichloroethane	8.29	ug/L	Exceedance
CP-W3	1/20/2021	lower	SD	1,1-Dichloroethane	7.3	ug/L	Exceedance
CP-W3	4/7/2021	lower	SD	1,1-Dichloroethane	7.98	ug/L	Exceedance
CP-W3	8/12/2020	lower	SD	1,1-Dichloroethene	19.6	ug/L	Exceedance
CP-W3	10/6/2020	lower	SD	1,1-Dichloroethene	19.6	ug/L	Exceedance
CP-W3	1/20/2021	lower	SD	1,1-Dichloroethene	21.1	ug/L	Exceedance
CP-W3	4/7/2021	lower	SD	1,1-Dichloroethene	20.9	ug/L	Exceedance
CP-W3	8/12/2020	lower	SD	Trichloroethene	27.5	ug/L	Exceedance
CP-W3	10/6/2020	lower	SD	Trichloroethene	18	ug/L	Exceedance
CP-W3	1/20/2021	lower	SD	Trichloroethene	29.2	ug/L	Exceedance
CP-W3	4/7/2021	lower	SD	Trichloroethene	30.3	ug/L	Exceedance

Figure 2-5 Lower Aquifer Individual Monitoring Well COC Concentrations





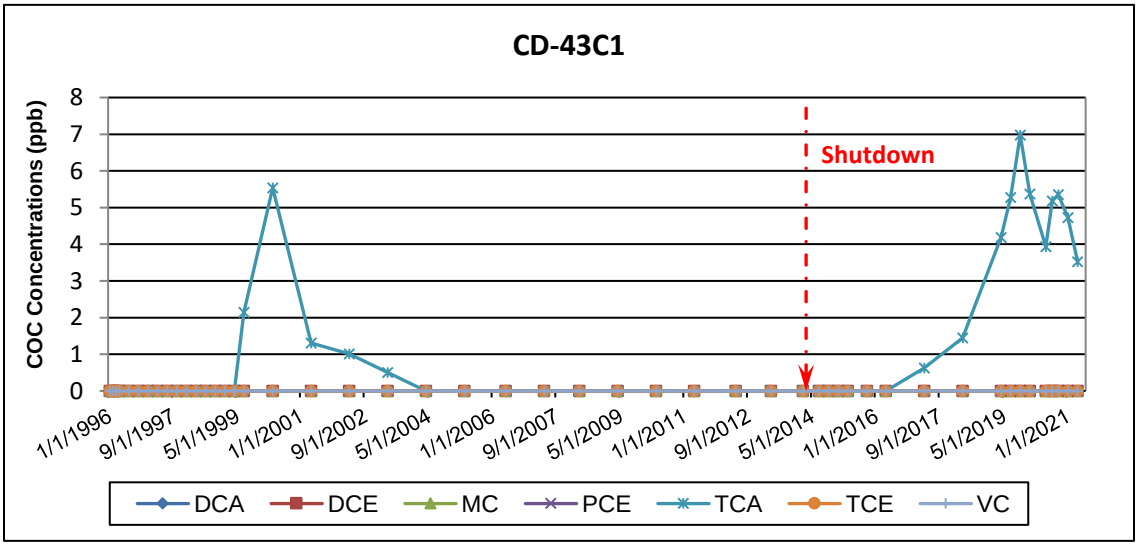
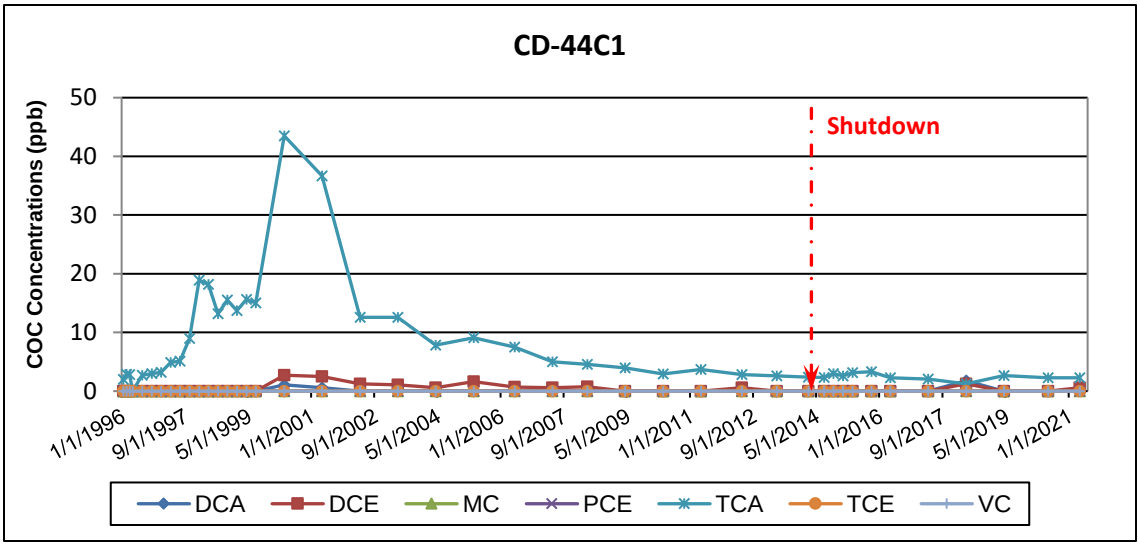
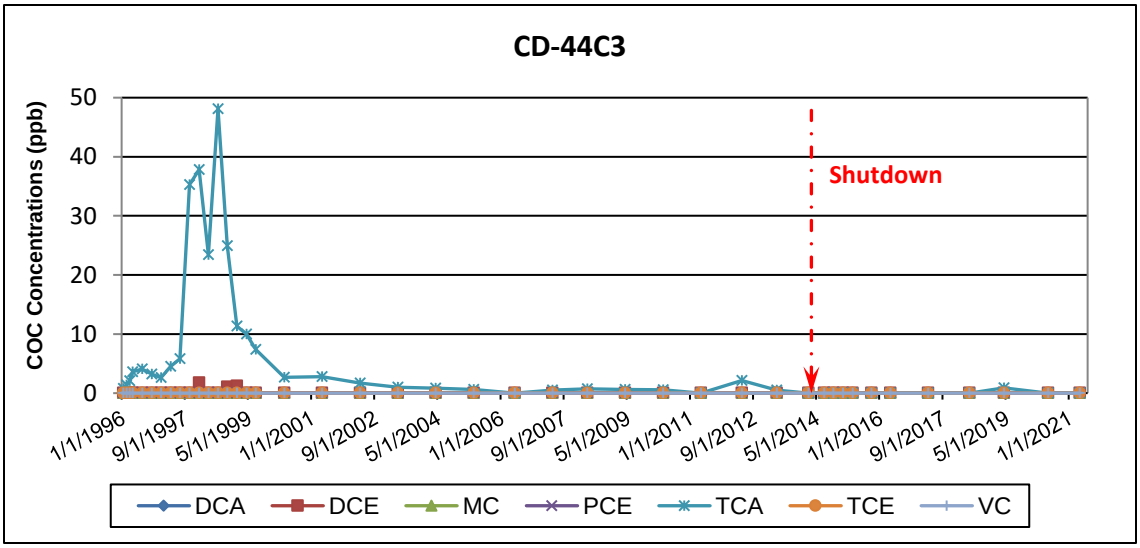


Figure 2-6 Lower Aquifer Individual Monitoring Well COC Concentrations





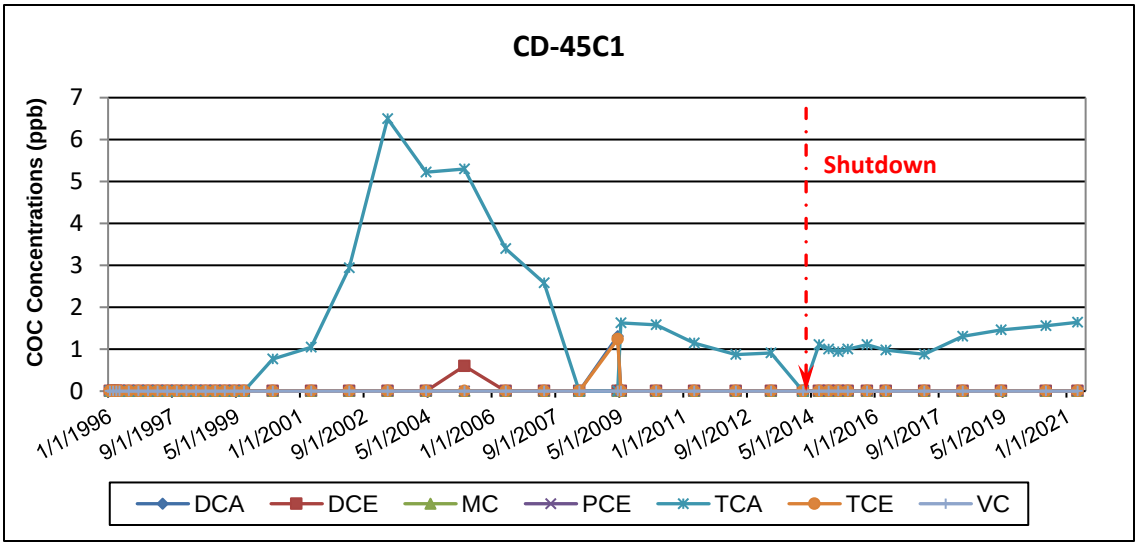
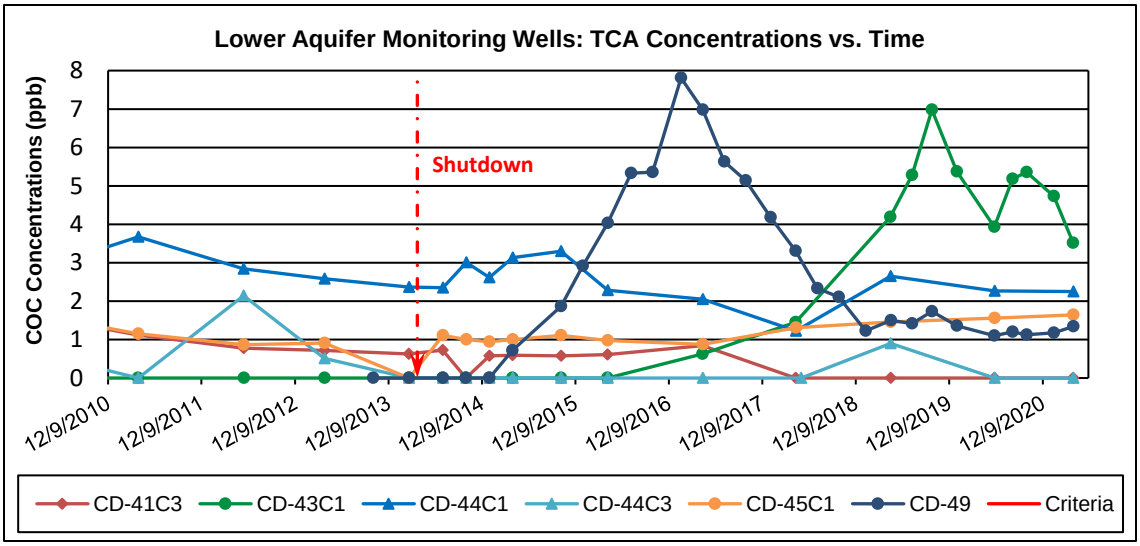
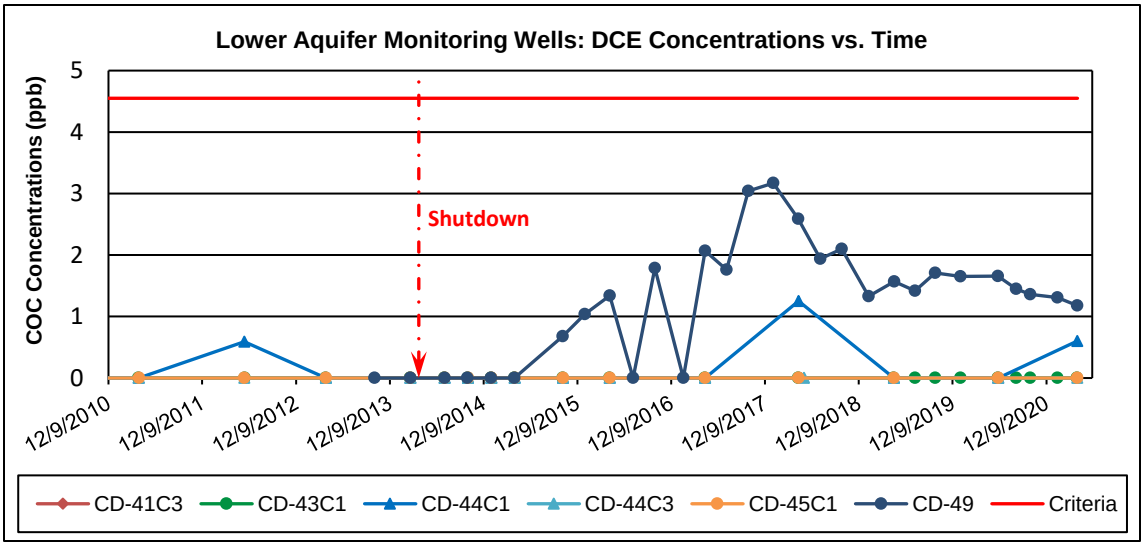


Figure 2-7 Lower Aquifer Monitoring Well Individual COC Concentrations





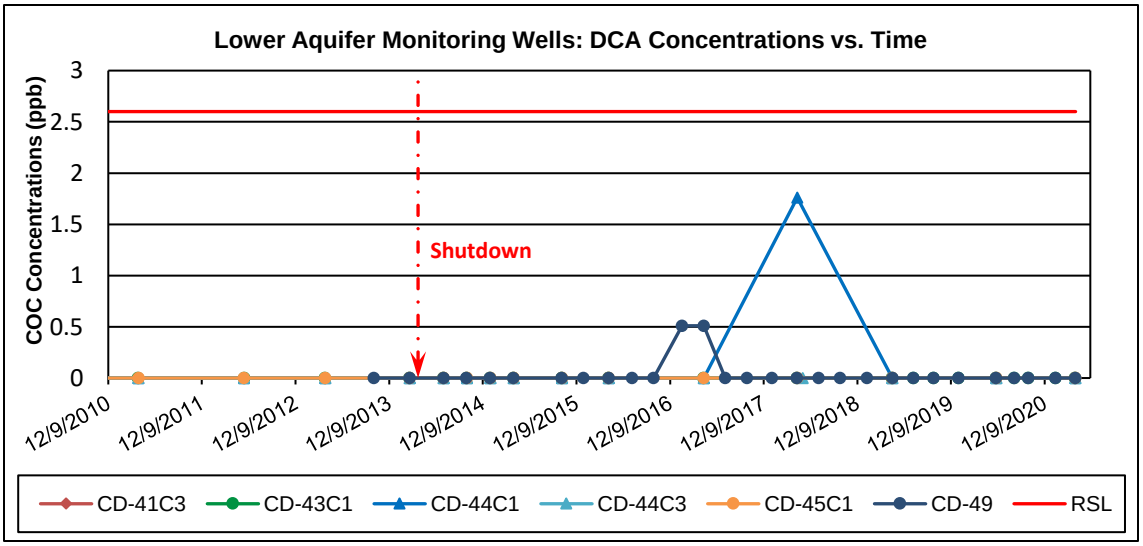
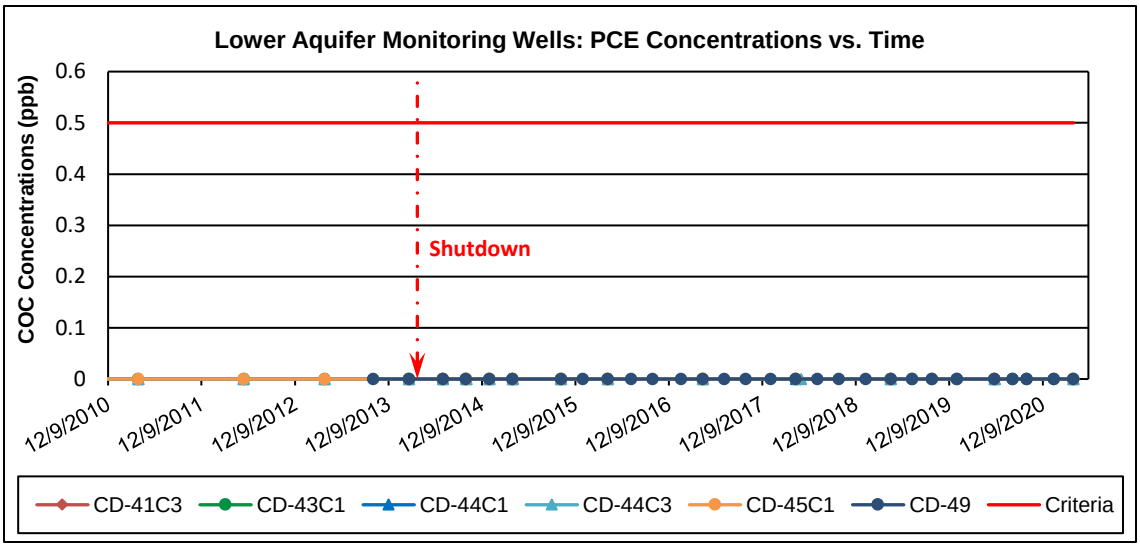


Figure 2-8 Lower Aquifer Monitoring Well Individual COC Concentrations



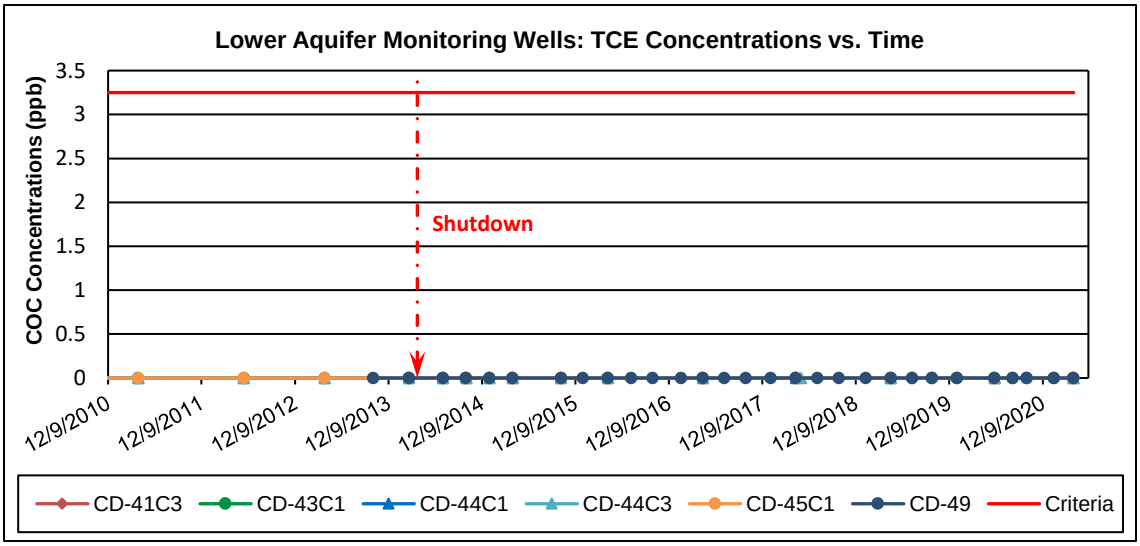
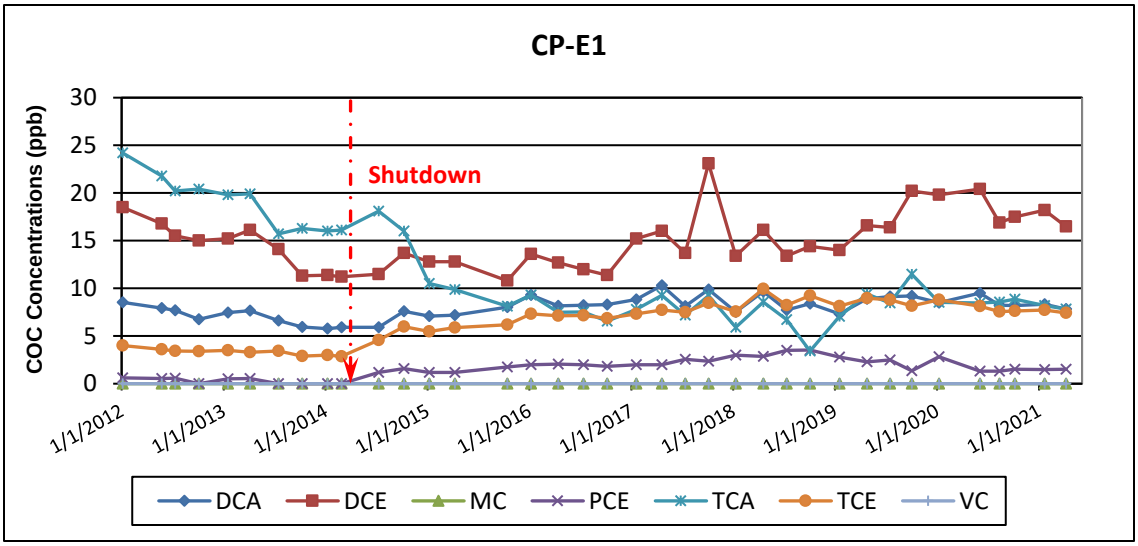
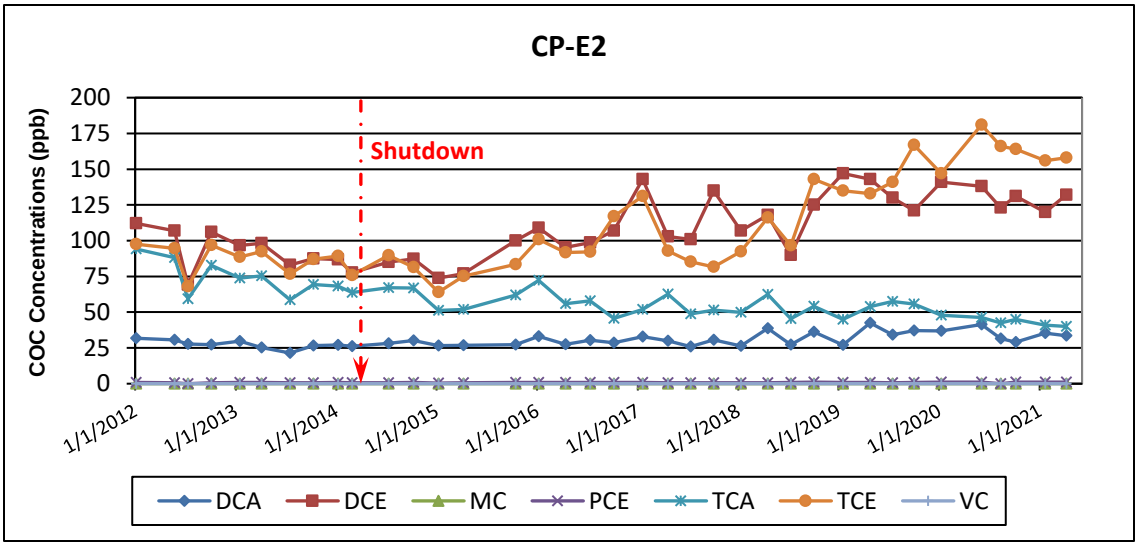


Figure 2-9 Lower Aquifer Individual Extraction Well COC Concentrations





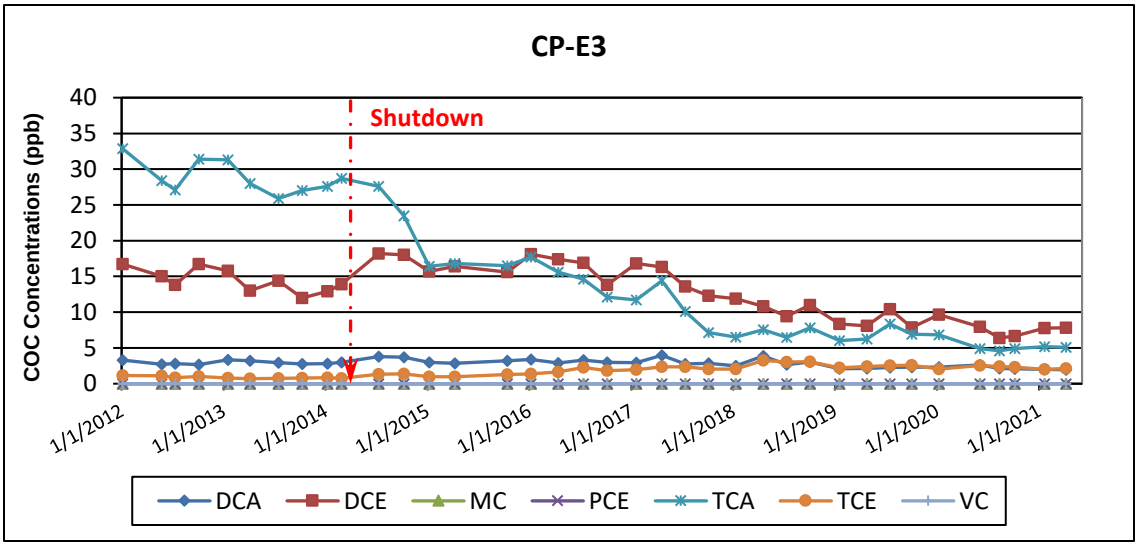
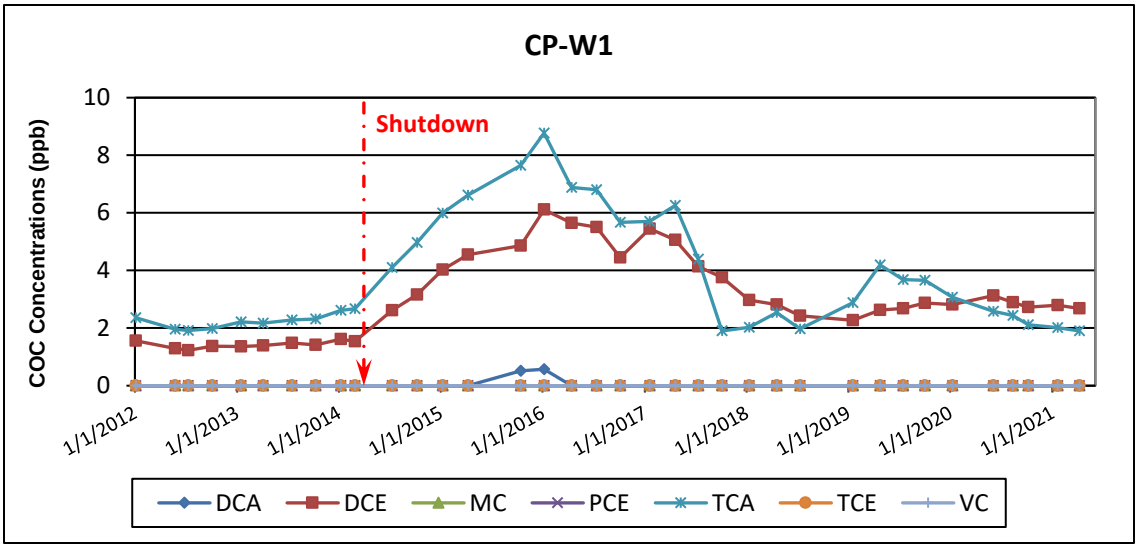
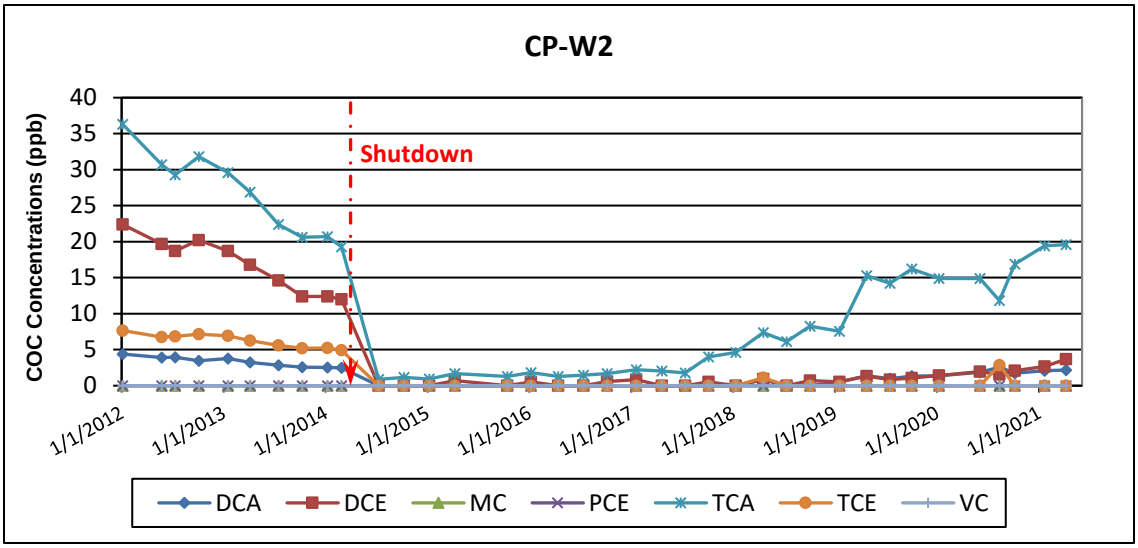


Figure 2-10 Lower Aquifer Individual Extraction Well COC Concentrations





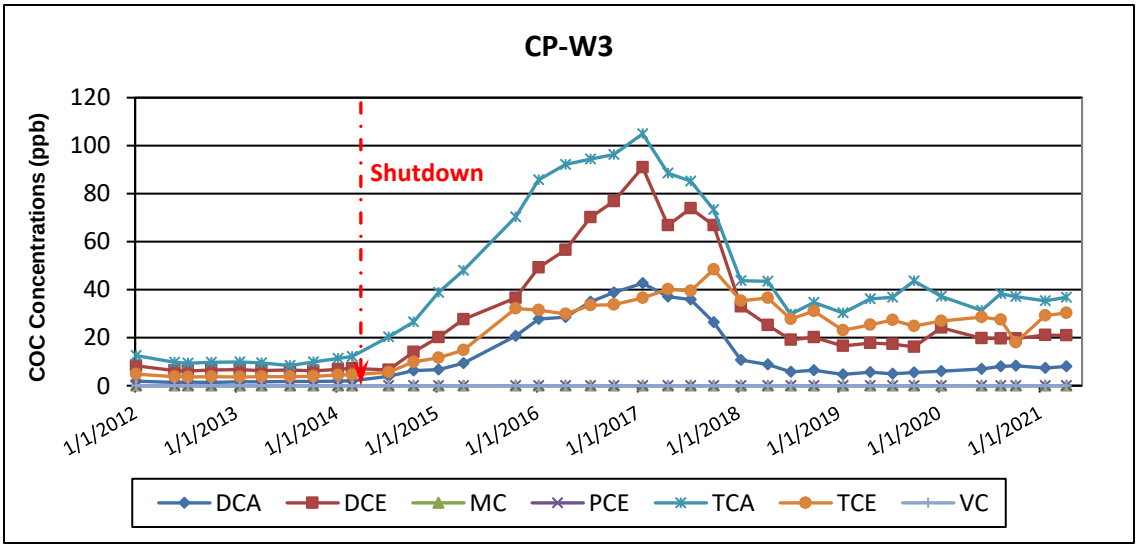
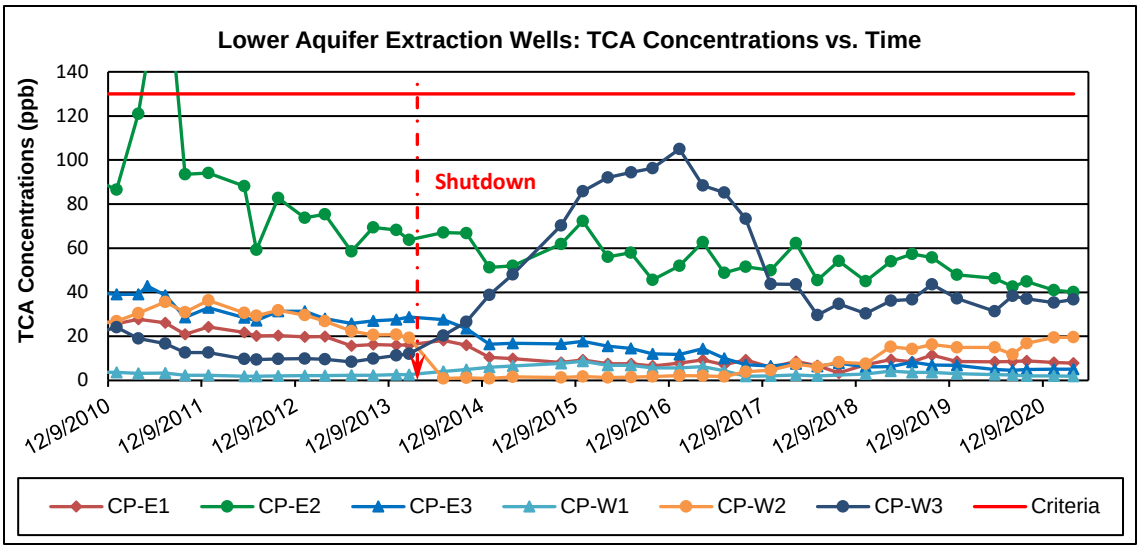
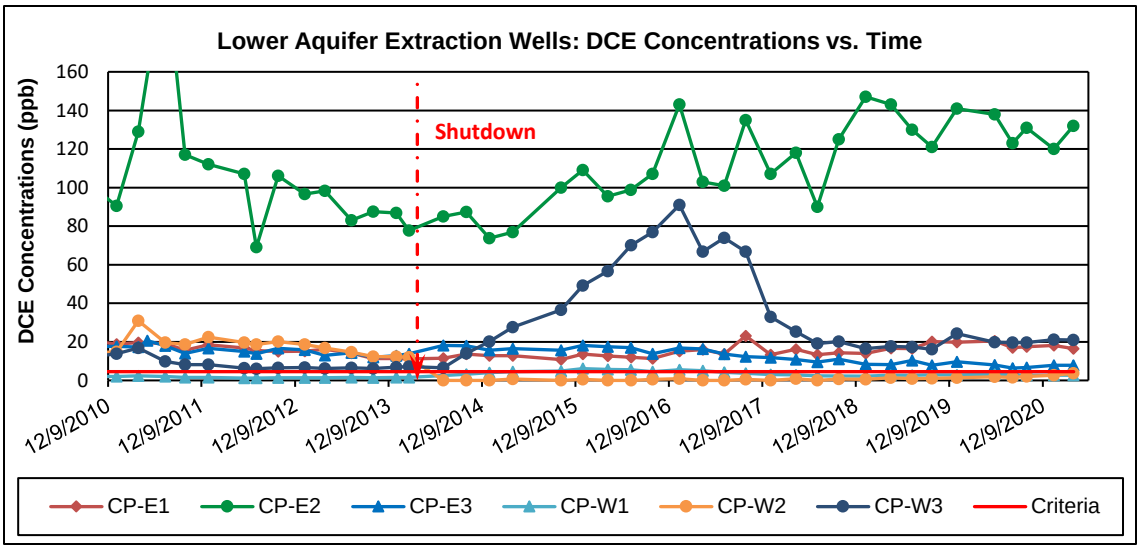


Figure 2-11 Lower Aquifer Extraction Well Individual COC Concentrations





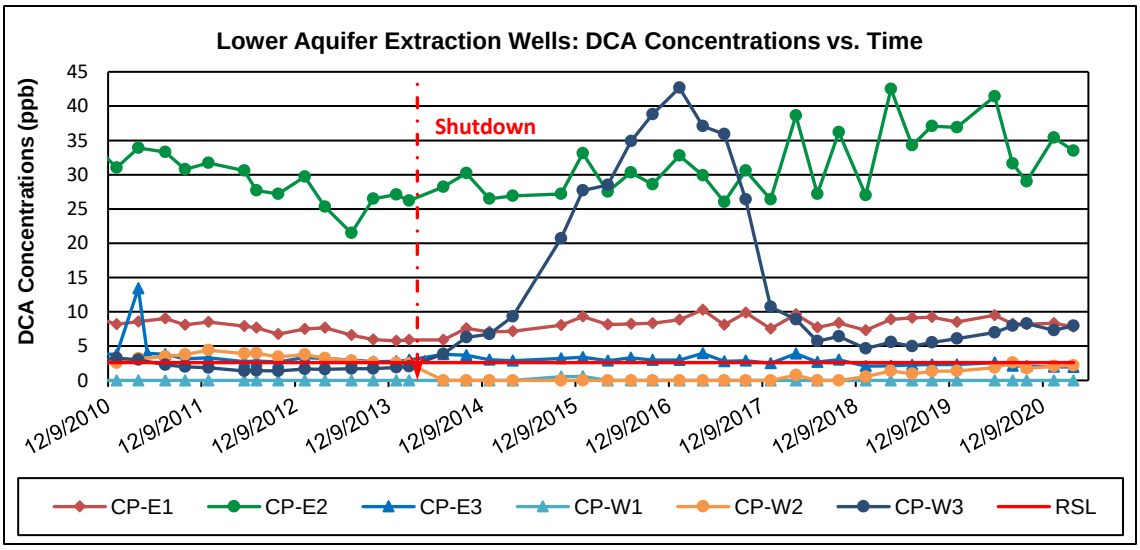
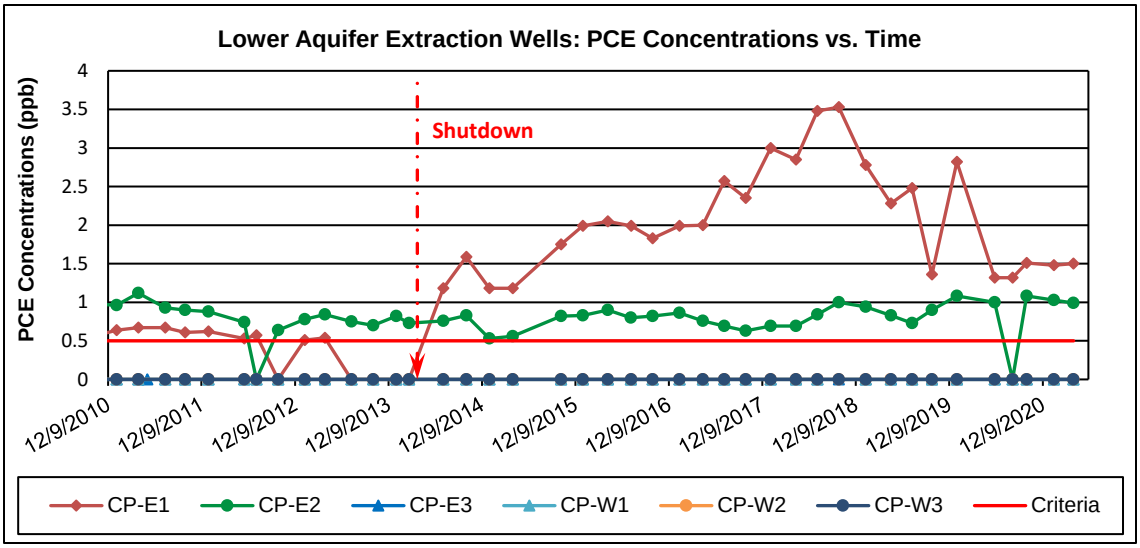


Figure 2-12 Lower Aquifer Extraction Well Individual COC Concentrations



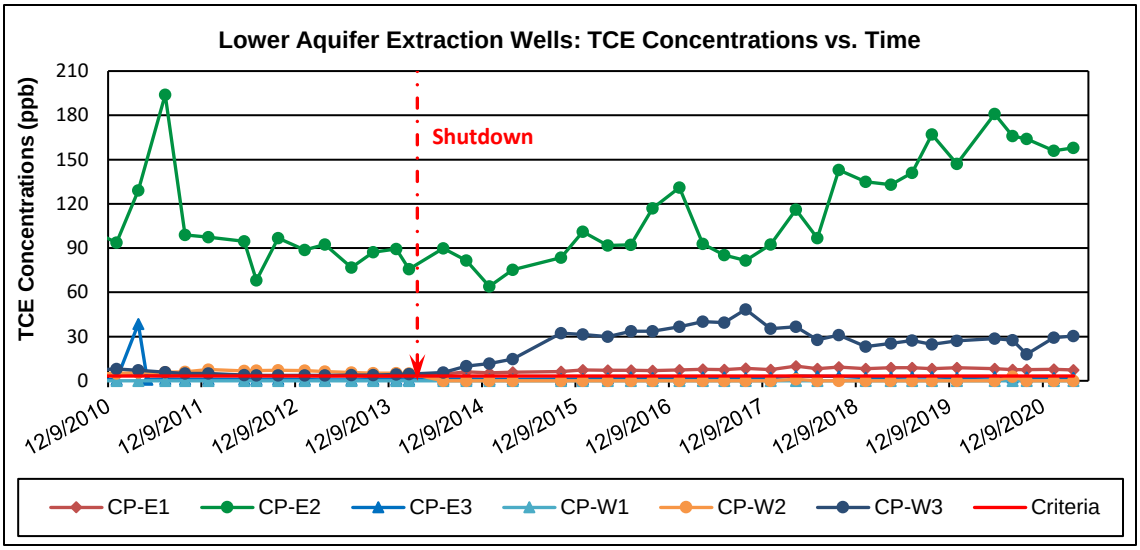


Figure 2-13 Lower Aquifer Estimated TCA Plume

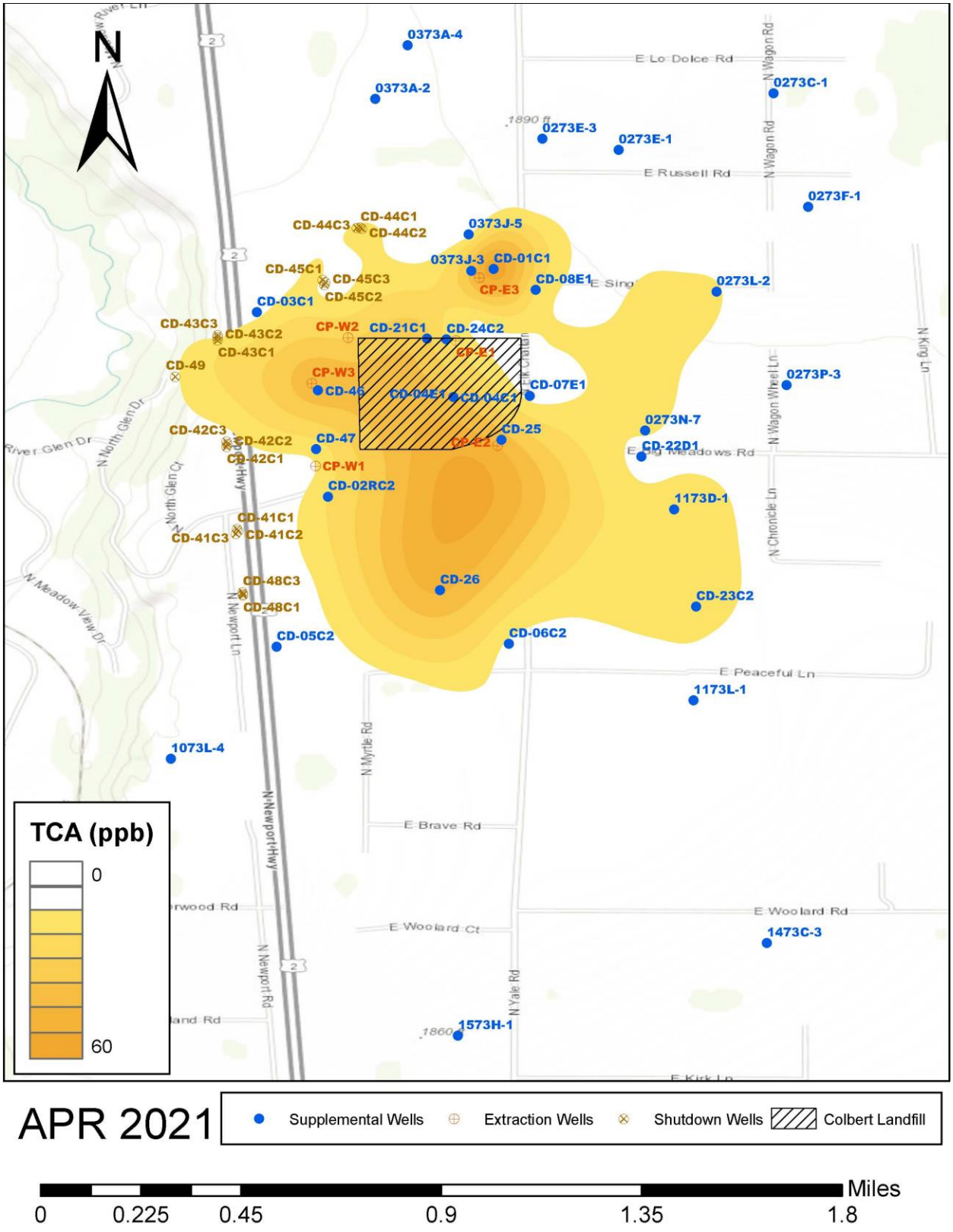


Figure 2-14 Lower Aquifer TCA Detections Map

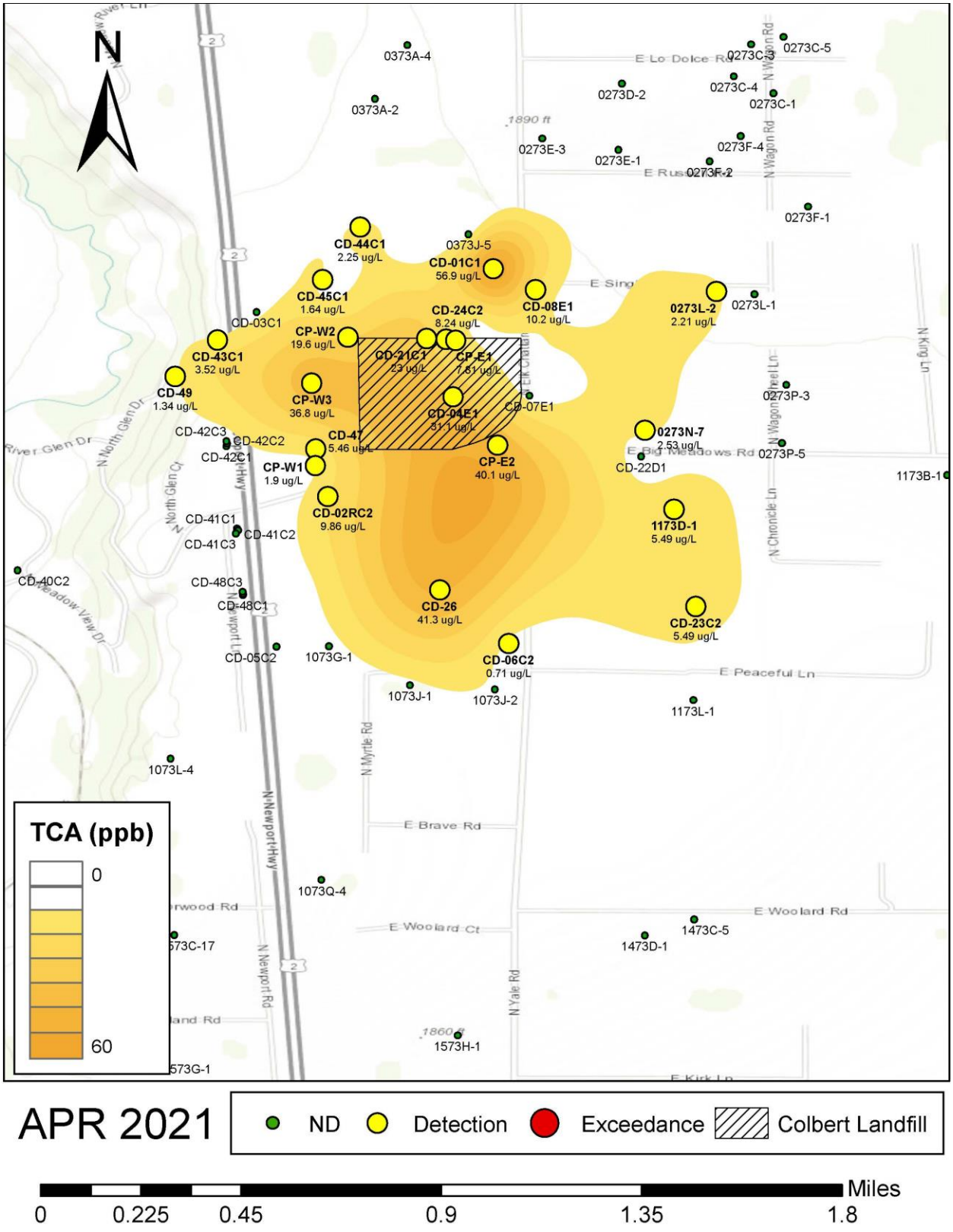


Figure 2-15 Lower Aquifer Estimated DCA Plume

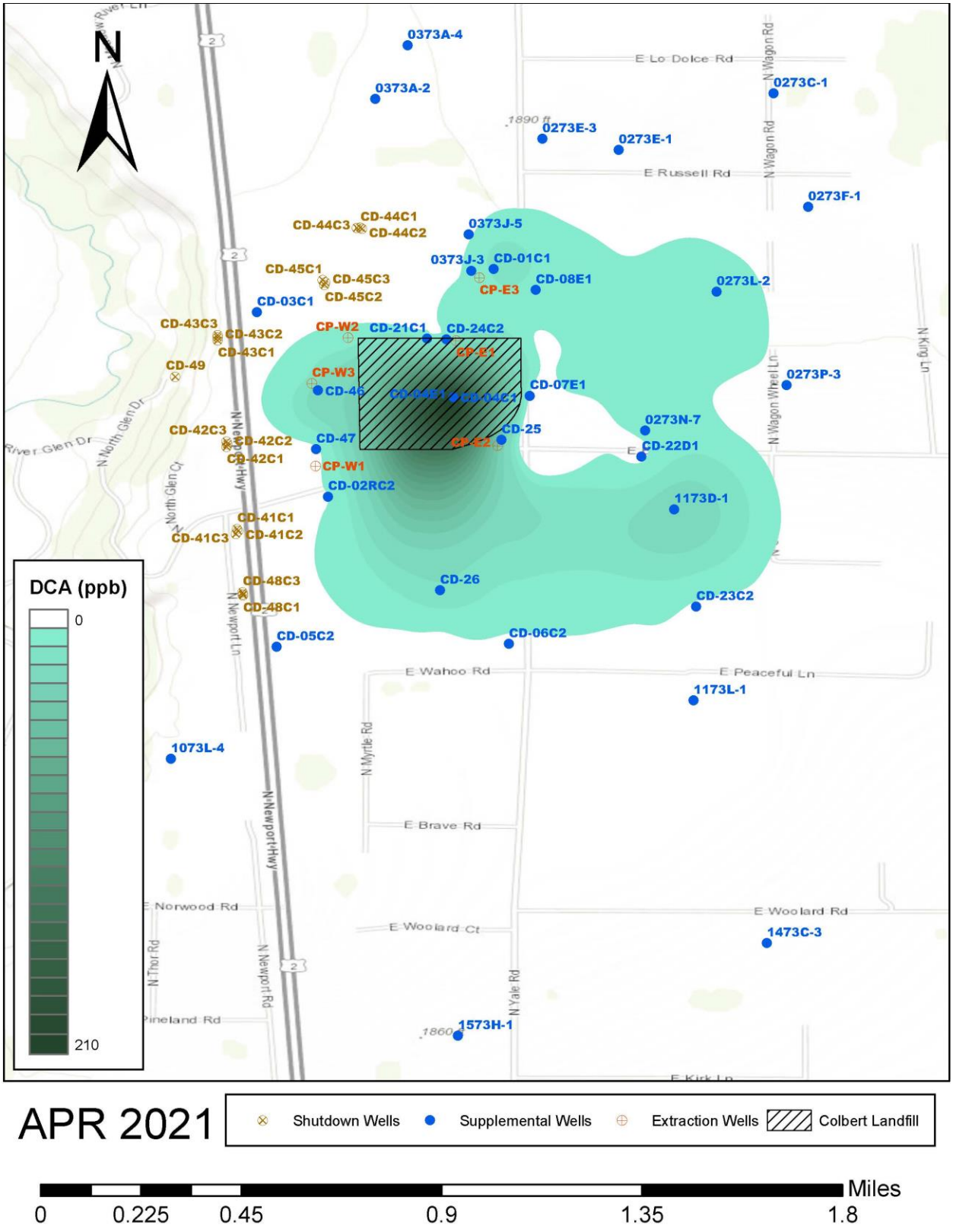


Figure 2-16 Lower Aquifer DCA Detections Map

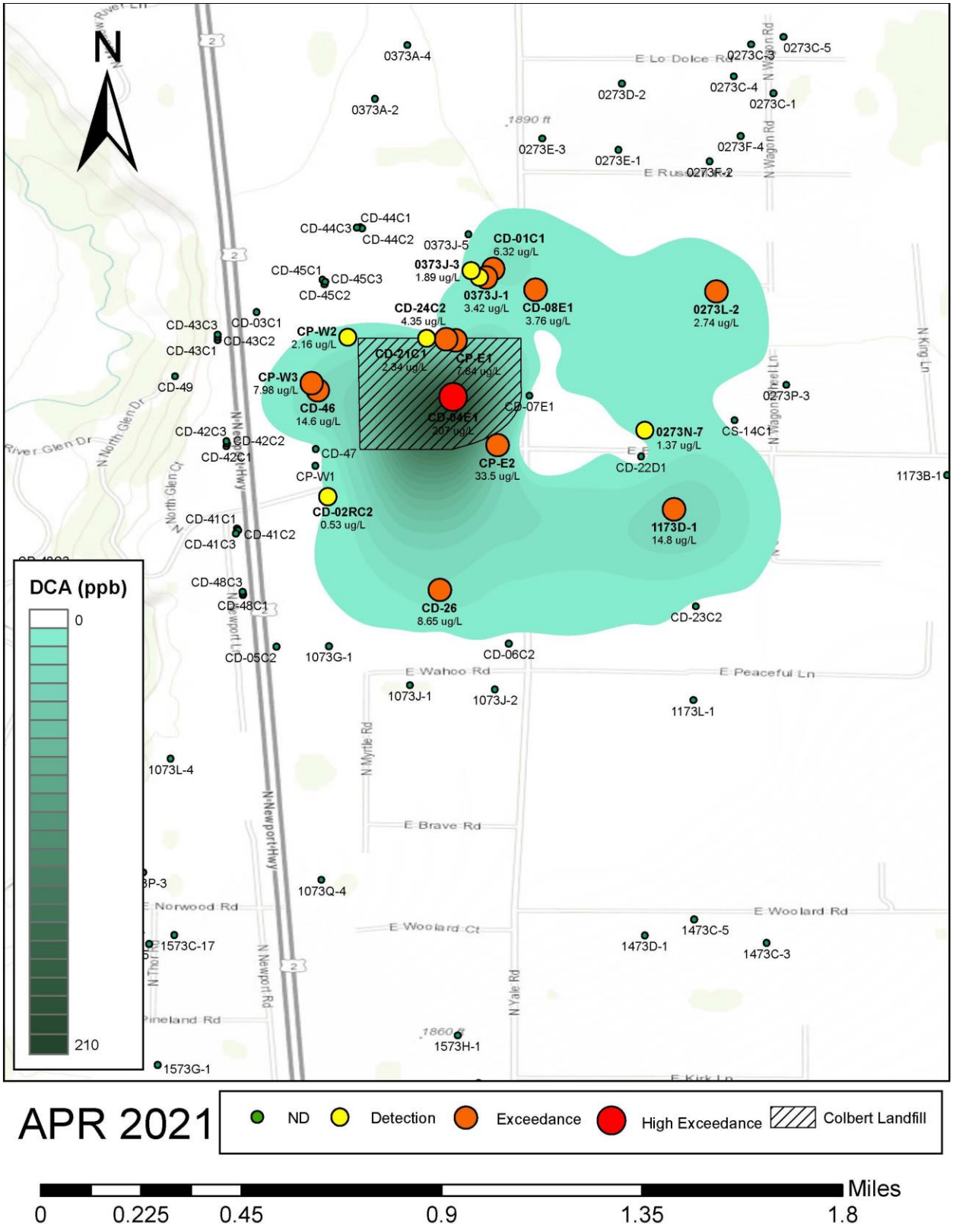


Figure 2-17 Lower Aquifer Estimated DCE Plume

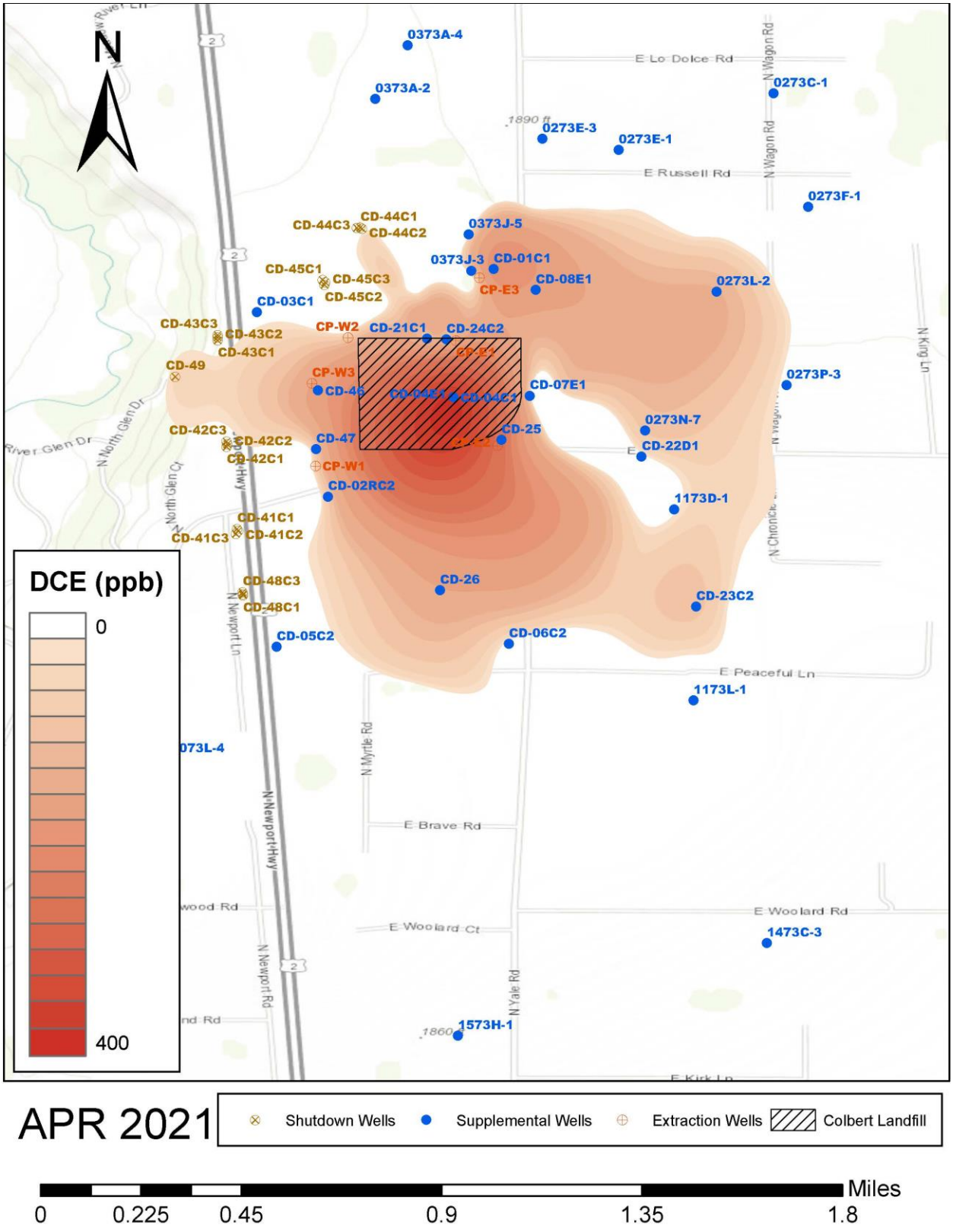


Figure 2-18 Lower Aquifer DCE Detections Map

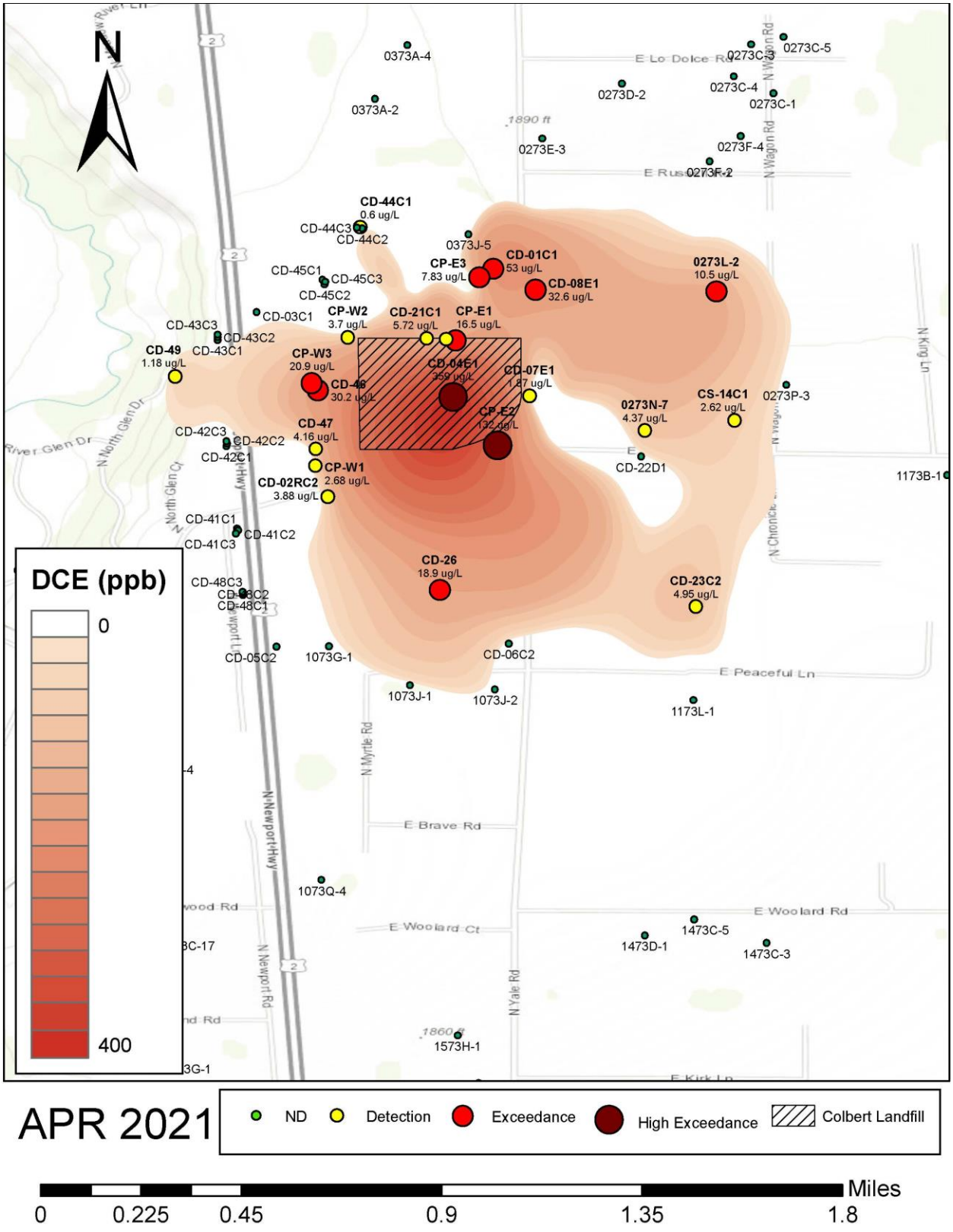


Figure 2-19 Lower Aquifer Estimated PCE Plume

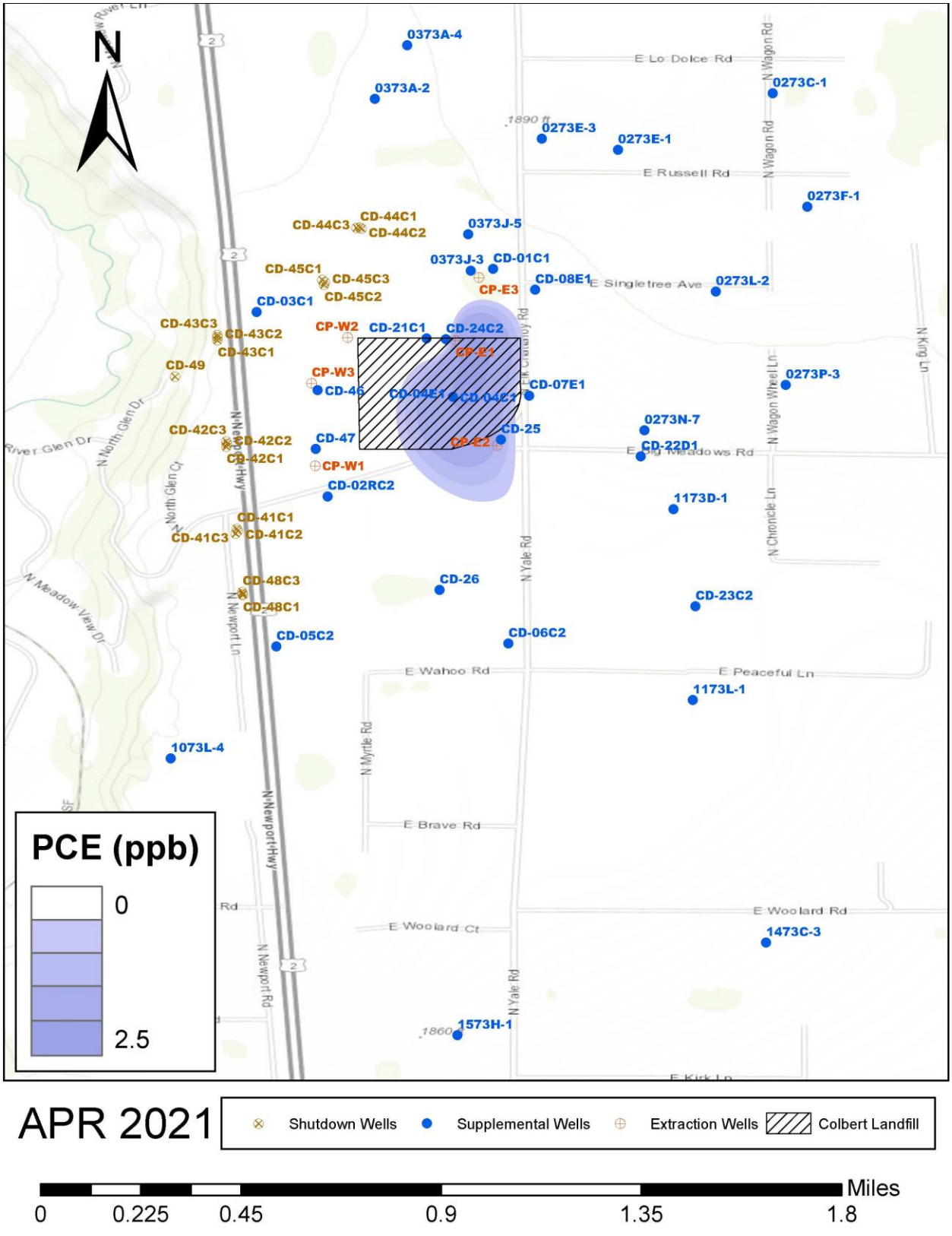


Figure 2-20 Lower Aquifer PCE Detections Map

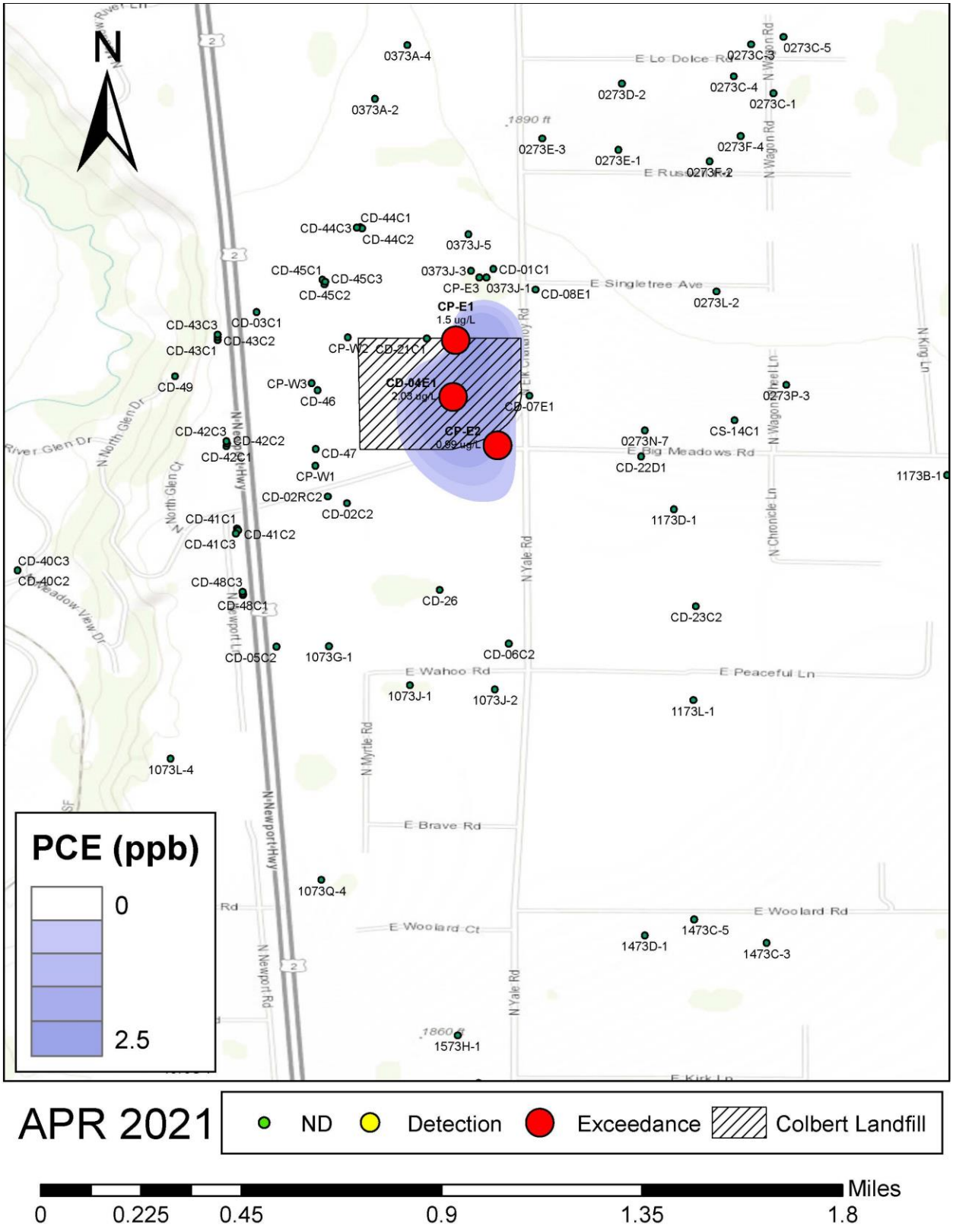


Figure 2-21 Lower Aquifer Estimated TCE Plume

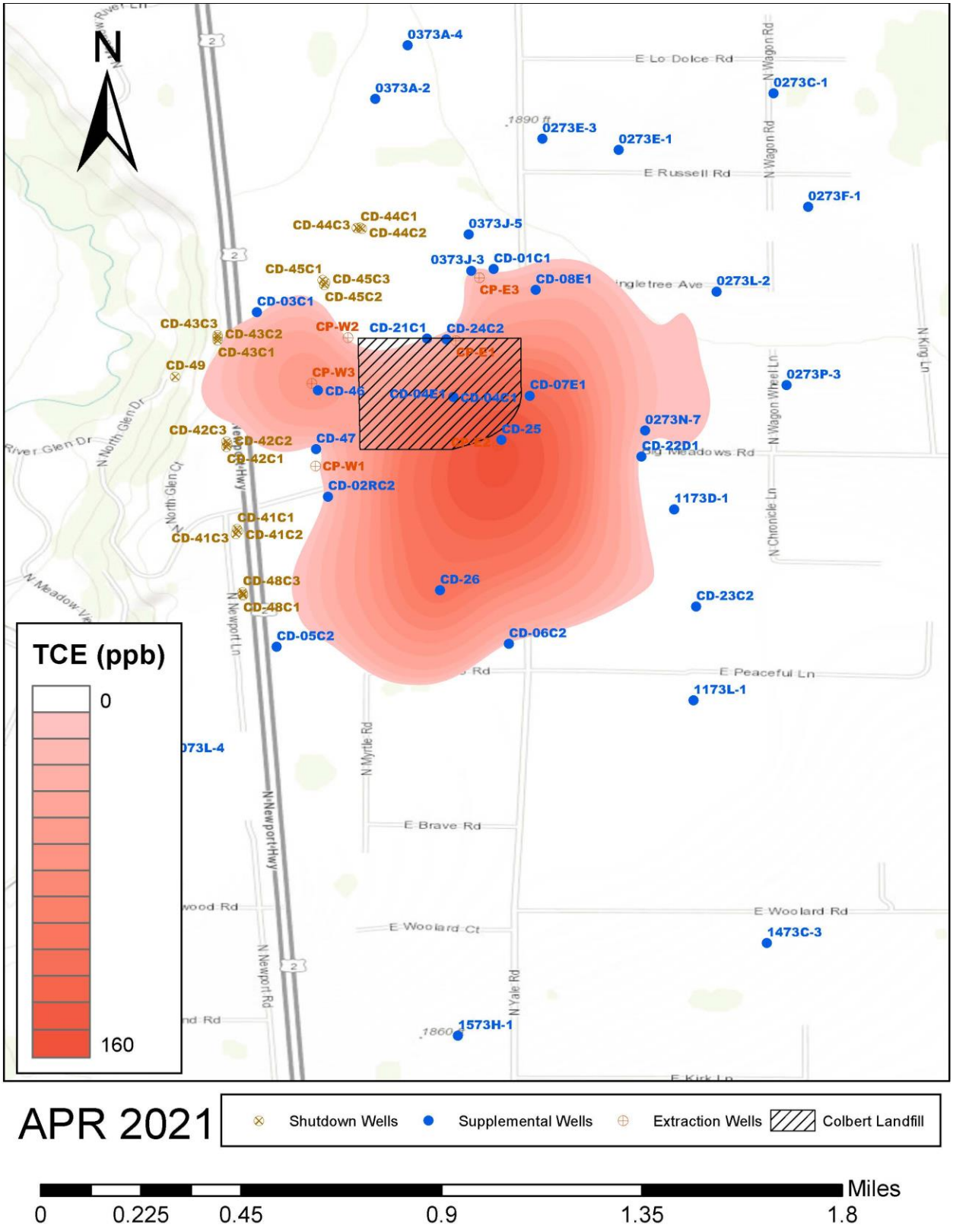


Figure 2-22 Lower Aquifer TCE Detections Map

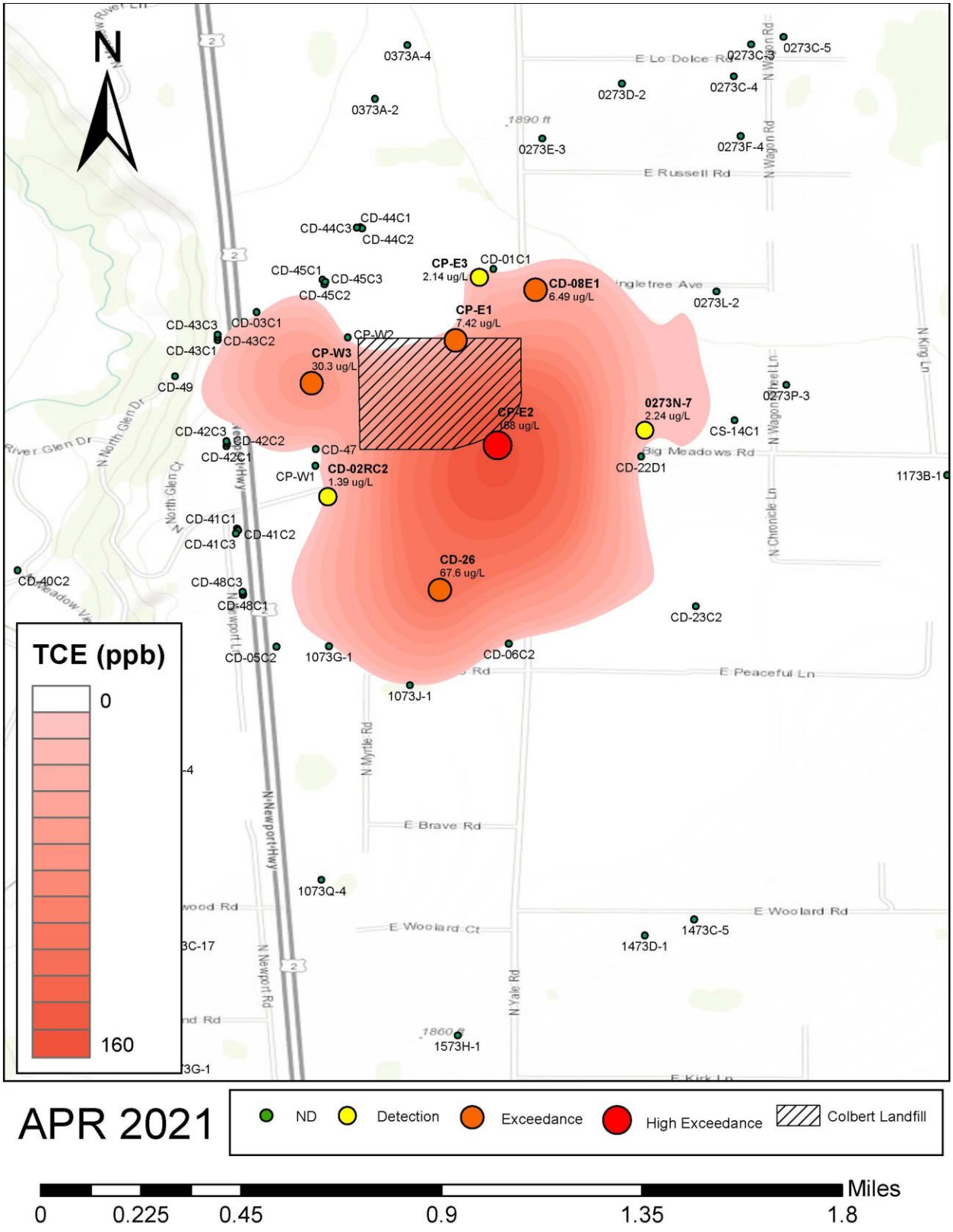
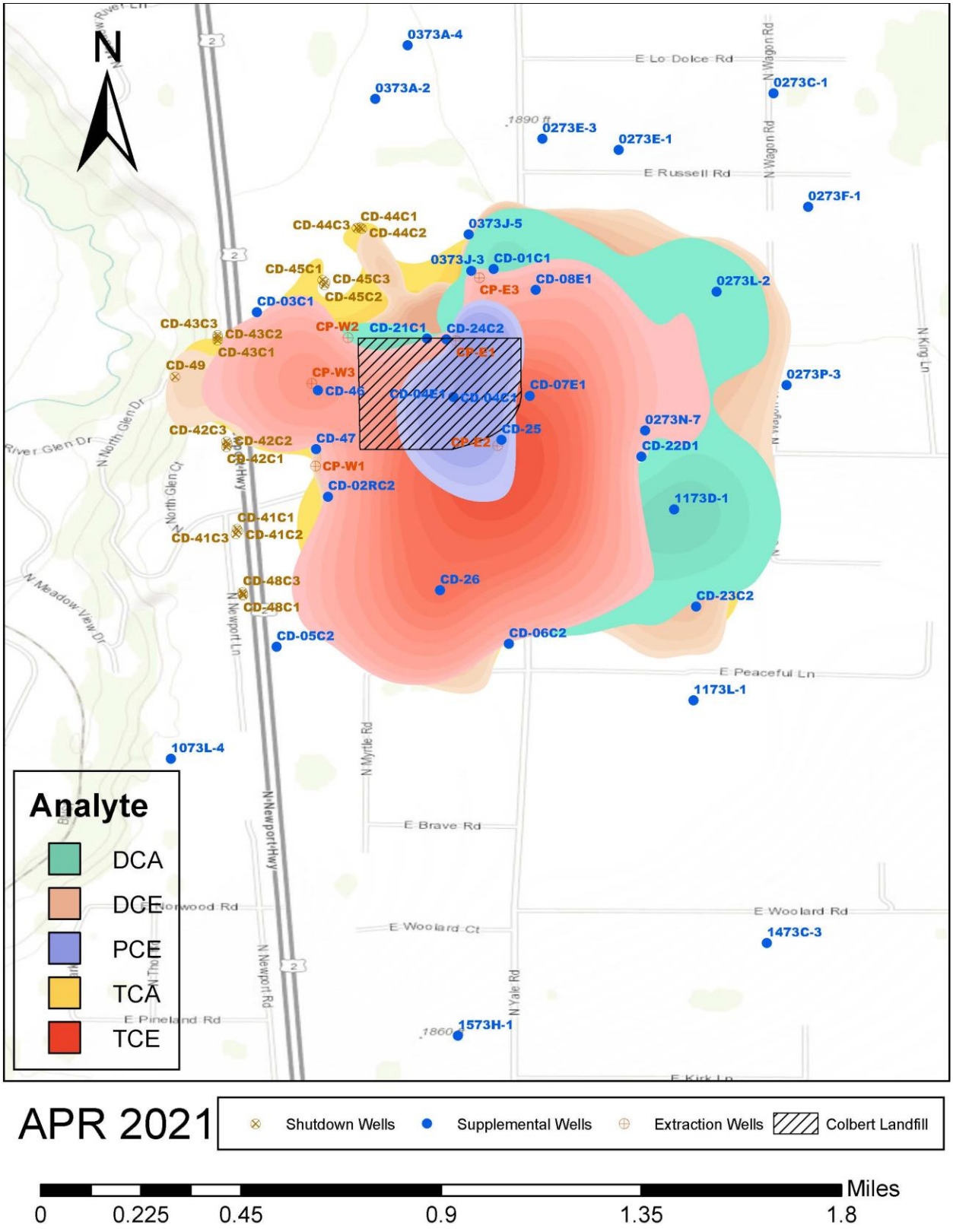


Figure 2-23 Lower Aquifer All Analytes Estimated Plume Map



3.0 Upper Aquifer Monitoring

The upper aquifer monitoring program includes the sampling of compliance indicator COC's (VOC's), 1,4-dioxane sample collection, and MFS sampling from selected monitoring wells. Table 3-1 presents all wells located in the upper aquifer monitoring program and the sample analyses assigned to each well. Upper aquifer monitoring locations are presented in Figure 3-1. All upper aquifer monitoring occurs on an annual basis with the exception of extraction wells, which are operated and sampled quarterly.

3.1 Field Data and Groundwater Elevations

All upper aquifer compliance monitoring field parameters and groundwater elevations for this reporting period are shown in Table 3-3. Conductivity values ranged from 335 to 776 umhos/cm. Field pH values ranged from 6.78 to 8.08. The highest Conductivity values and some of the lowest pH values seem to be located in the southern extraction wells. Upper aquifer groundwater elevation contours/flow paths and elevation maps are presented in Figure 3-3 and Figure 3-4.

3.2 Compliance Monitoring (VOC's)

All wells in the upper aquifer have VOC samples collected from them and analyzed, even though the VOC analysis is not required in the MFS or 1,4-Dioxane work plan specifications.

3.2.1 Chemical Data

Constituent of concern concentrations at the south system extraction wells are presented in Table 3-4. Selected upper aquifer wells COC concentrations versus time are presented in Figure 3-6 and Figure 3-7. Upper aquifer COC estimated plume boundaries and COC detection maps are shown in Figure 3-8 through Figure 3-18.

3.2.2 Criteria

Criteria for the upper aquifer programs are presented in Table 3-2. All criteria exceedances in the upper aquifer programs are presented in Table 3-5 (Consent Decree criteria) and Table 3-6 (updated criteria values from the Colbert Landfill 6th Five-year Review, which includes an increase for Trichloroethene [PCE] from the performance standard in the ROD [0.7 µg/L] to the current MCL [5µg/L], and a decrease for 1,1-Dichloroethane [1,1-DCA] to the regional screening level [RSL] of 2.6 µg/L). There were no criteria exceedances in the upper aquifer during this reporting period.

3.3 1,4-Dioxane Sampling

As outlined in the *1,4-Dioxane Workplan for the Colbert Landfill (December 2007)*, five locations were selected for one year of Quarterly 1,4-dioxane sampling to further evaluate the extent of this analyte as well as protect residential wells at the Colbert Landfill site (see Table 3-1). In April 2009, that sample event concluded the year of quarterly sampling at these locations. Since then, Spokane County has continued sampling these wells on an annual basis. The 2021 1,4-dioxane sampling was performed during the month of April.

3.3.1 Chemical Data

The results for the 1,4-dioxane sampling during this reporting period are shown in Table 3-7. Concentrations versus time are presented in Figure 3-5. None of the wells listed on the 1,4-Dioxane monitoring plan exceeded any criteria during the annual sampling event in April 2021.

3.4 Upper Aquifer Minimal Functional Standards (MFS) Monitoring

Upper aquifer locations designated in the MFS groundwater monitoring program were sampled in April 2021.

3.4.1 Chemical Data

Concentrations of analytes tested for under MFS monitoring were consistent with previous results (see Figure 3-19 and Figure 3-20). None of the metals in the MFS wells had any concentrations above the reporting limit during this reporting period.

3.4.2 Criteria

None of the MFS sampling locations exceeded any of the applicable criteria during this reporting period.

3.4.3 Statistical Analysis

The MFS Groundwater Monitoring Plan (Landau Assoc., 1996) requires three statistical methods to be used when evaluating groundwater Quality in accordance with MFS requirements. Time series plots were performed and discussed previously. Box plots were required after one year of data was collected. Box plots are presented in Figure 3-23.

The third statistical method required is the Mann-Whitney nonparametric significance test. The summary results for this test are presented in Table 3-8. Although lower aquifer locations are no longer scheduled for sampling, previous results are shown here as well. A statistically significant change (less than 0.05 level of significance) from this test indicates that a difference may exist between background and downgradient wells but does not differentiate between sets. While it is true that a difference in nitrate and chloride concentrations may exist between background and downgradient wells, when taking time series plots and box plots into consideration, it is not likely these differences were due to influence by the landfill.

Table 3-1 Upper Aquifer Monitoring Programs and Locations

Program	Schedule	Parameters	Wells
Compliance Monitoring	Annual Quarterly at extraction wells	VOC's	CD-31A1, CD-34A1, CD-36A1, CD-37A1, CD-38A1, CP-S1, CP-S3, CP-S4, CP-S5, CP-S6
1,4-Dioxane Sampling	Annual	1,4-Dioxane	CP-S1, 1073D-1*, 1473M-1*, 1573A-1*, CD-40C1**
MFS Monitoring	Annual	Cl/NH3/NO2/NH3/SO4 /Fe/Mn/Zn/TOC/COD	CD-03A1, CD-60A1, CD-61A1, CS-04A1

* Residential use wells

**Well considered to be screened in the fluvial aquifer and COC source is from upper aquifer west of Hwy 2 (see *Phase 1 Engineering Report. Landau Assoc, 1991*.)

Table 3-2 Upper Aquifer Criteria

PROGRAM	CRITERIA	TCA	DCE	DCA	TCE	PCE	MC	1,4-Dioxane		Units
CONSENT DECREE	Performance	200	7	4050	5	0.7	2.5			ug/L
(Compliance)	Evaluation	200	7	4050	5	0.7	2.5	7		
		Cl	**Fe**	**Mn**	**Zn**	**TOC**	**COD**	**SO4**	**NO3**	
MFS	(mg/L)	250	0.3	0.05	5	NA	NA	250	10	mg/L

Figure 3-1 Upper Aquifer Compliance Monitoring Locations

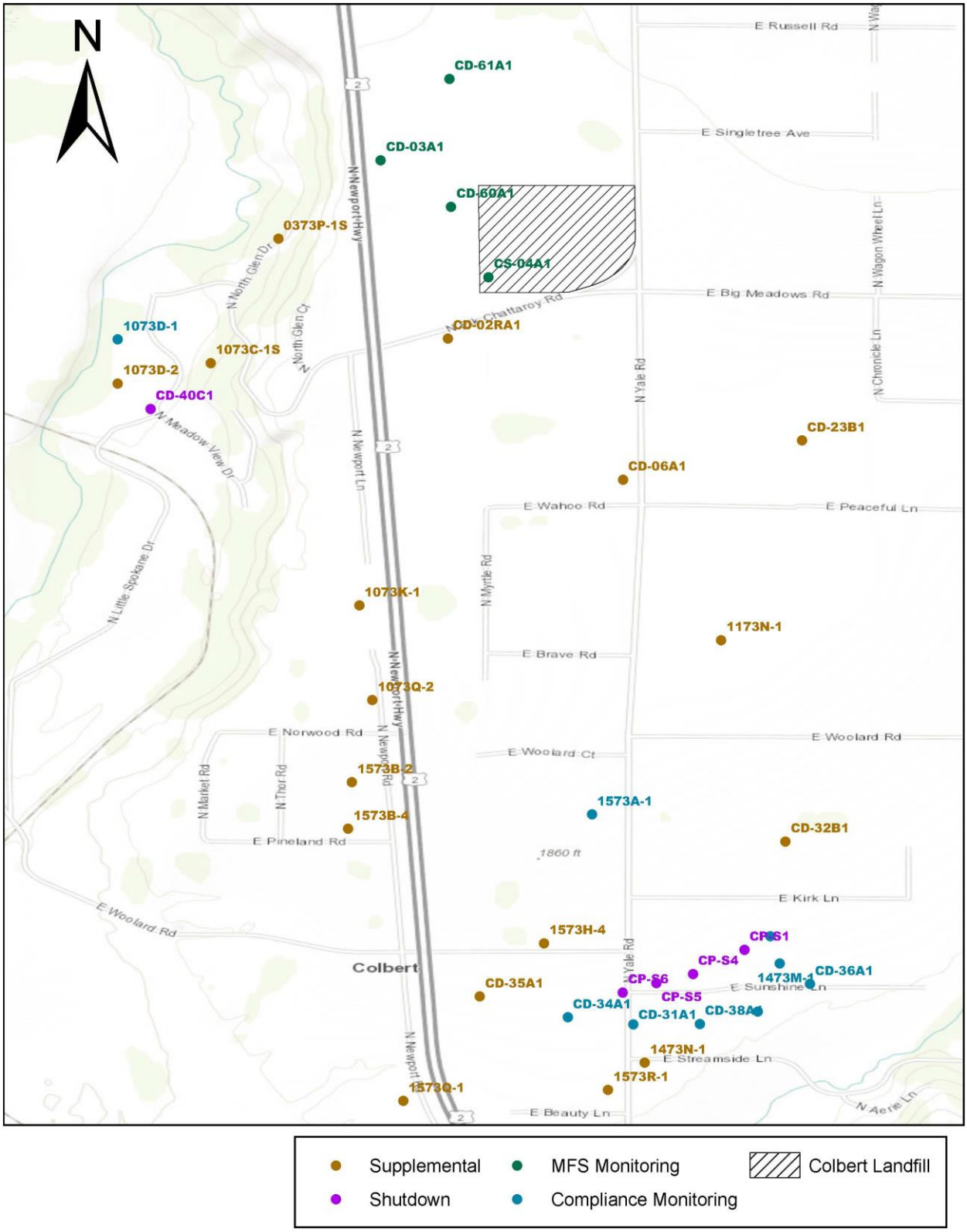
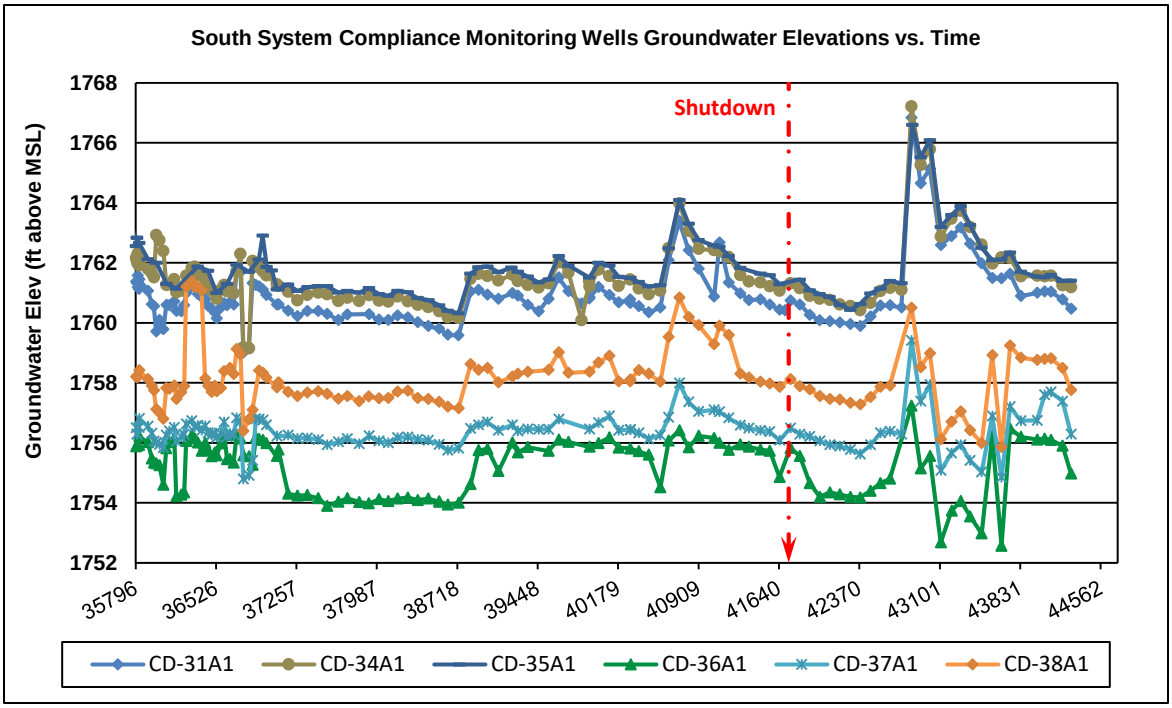


Table 3-3 Upper Aquifer Field Parameters

SampleDate	StationID	WtrElev	Temp	PH	Conductivity	Turbidity	Aquifer	Program
4/7/2021	1073D-1		11.2	8.08	375	0.21	upper	CCM
4/7/2021	1473M-1		10.8	7.76	574	0.19	upper	CCM
4/7/2021	1573A-1	1761.22	11.4	7.8	506	0.31	upper	CCM
4/6/2021	CD-31A1	1760.47	10	7.61	606	0.18	upper	CCM
4/6/2021	CD-34A1	1761.18	9.5	7.56	611	0.6	upper	CCM
4/6/2021	CD-36A1	1754.98	9.7	7.84	598	0.2	upper	CCM
4/6/2021	CD-37A1	1756.29	10.5	7.5	649	0.16	upper	CCM
4/6/2021	CD-38A1	1757.76	10.1	7.64	564	0.31	upper	CCM
4/6/2021	CP-S3	1759.68	12.1	7.54	621	0.92	upper	CCM
4/8/2021	CD-03A1	1773.51	9	7.68	374	0.54	upper	MFS
4/8/2021	CD-60A1	1772.83	9.9	7.14	439	0.13	upper	MFS
4/8/2021	CD-61A1	1774.19	9.7	7.57	335	0.16	upper	MFS
4/8/2021	CS-04A1		9.1	6.78	674	0.6	upper	MFS
4/7/2021	CD-40C1	1662.2	9.5	7.88	561	0.2	upper	SD
4/7/2021	CD-40C1	1662.2	9.5	7.88	561	0.2	upper	SD
8/12/2020	CP-S1	1762.33	11.8	7.51	561	0.89	upper	SD
10/6/2020	CP-S1	1761.76	11.4	7.48	563	0.79	upper	SD
1/20/2021	CP-S1	1759.4	11.9	7.42	567	0.92	upper	SD
4/7/2021	CP-S1	1759.37	9.7	7.55	548	0.79	upper	SD
8/12/2020	CP-S4	1764.37	11.7	7.28	770	0.66	upper	SD
10/6/2020	CP-S4	1764.13	11.4	7.37	776	0.67	upper	SD
1/20/2021	CP-S4	1760.31	9.8	7.36	737	0.6	upper	SD
4/6/2021	CP-S4	1760.13	10.3	7.38	683	0.7	upper	SD
8/12/2020	CP-S5		11.7	7.34	693	0.51	upper	SD
10/6/2020	CP-S5		11.4	7.47	687	0.59	upper	SD
1/20/2021	CP-S5		9.6	7.4	643	0.71	upper	SD
4/6/2021	CP-S5		10.5	7.37	677	0.46	upper	SD
8/12/2020	CP-S6	1765.65	11.6	7.26	681	0.41	upper	SD
10/6/2020	CP-S6	1764.92	11.4	7.32	681	0.47	upper	SD
1/20/2021	CP-S6	1760.86	9.9	7.38	669	0.36	upper	SD
4/6/2021	CP-S6	1761.05	10.5	7.42	648	0.36	upper	SD

Temp=degrees C; Conductivity=umhos/cm; Turbidity= NTU

Figure 3-2 Upper Aquifer Groundwater Elevations vs. Time



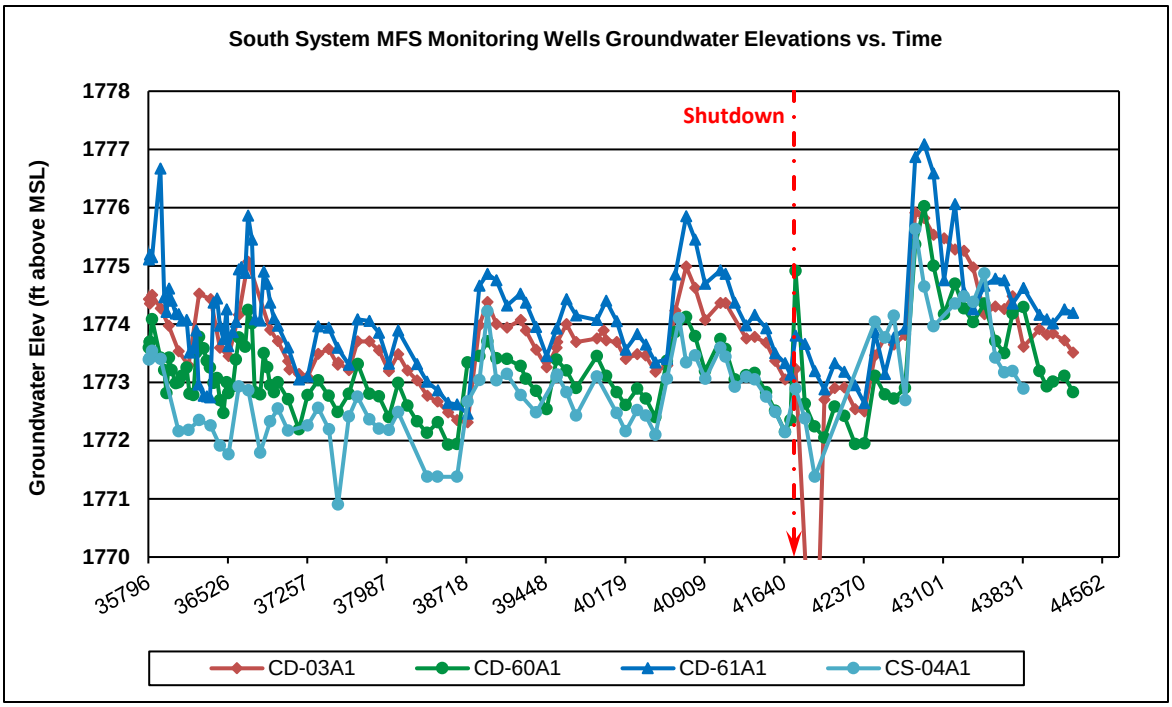


Figure 3-3 Upper Aquifer Estimated Groundwater Elevation Contours

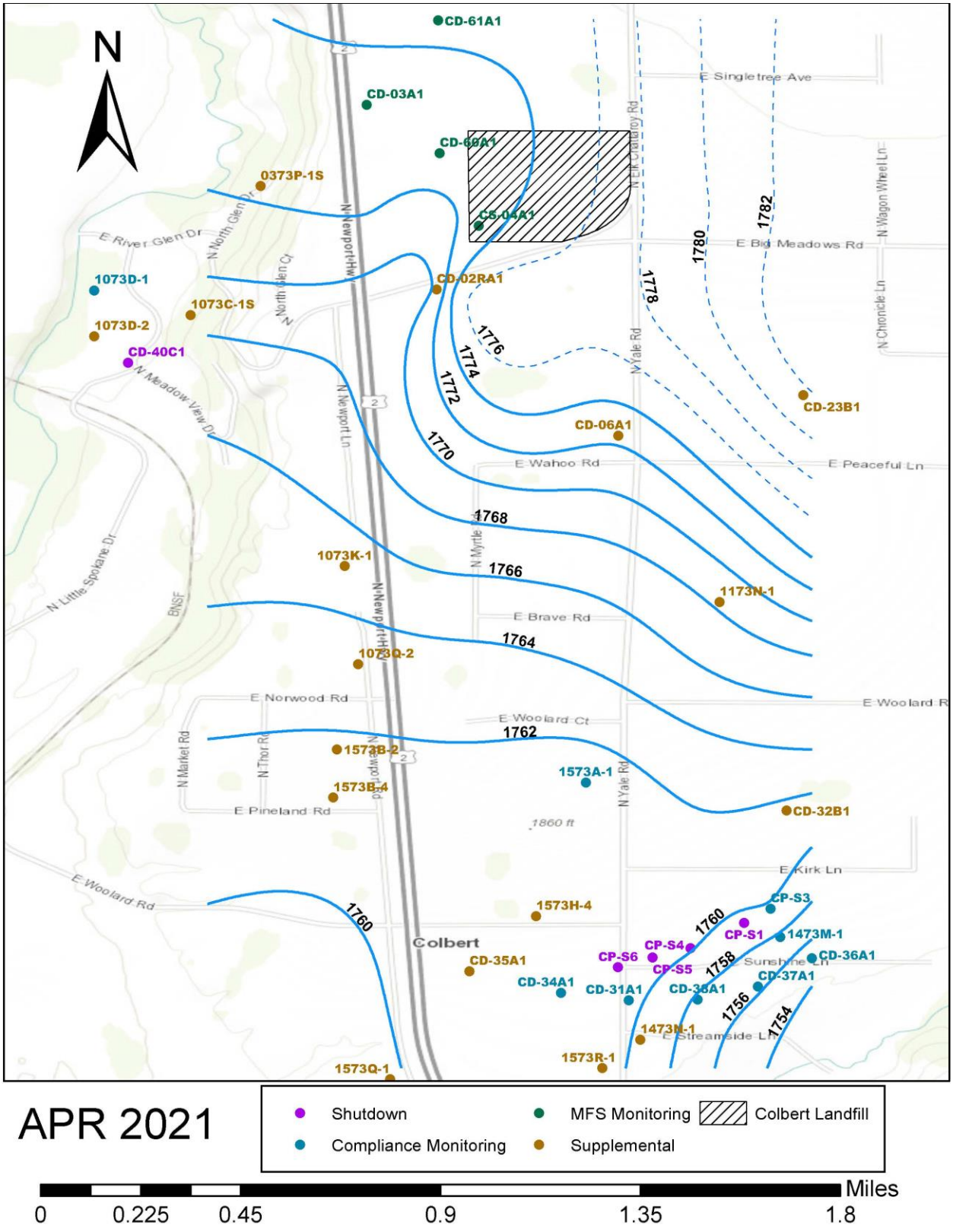


Figure 3-4 Upper Aquifer Groundwater Elevation Map

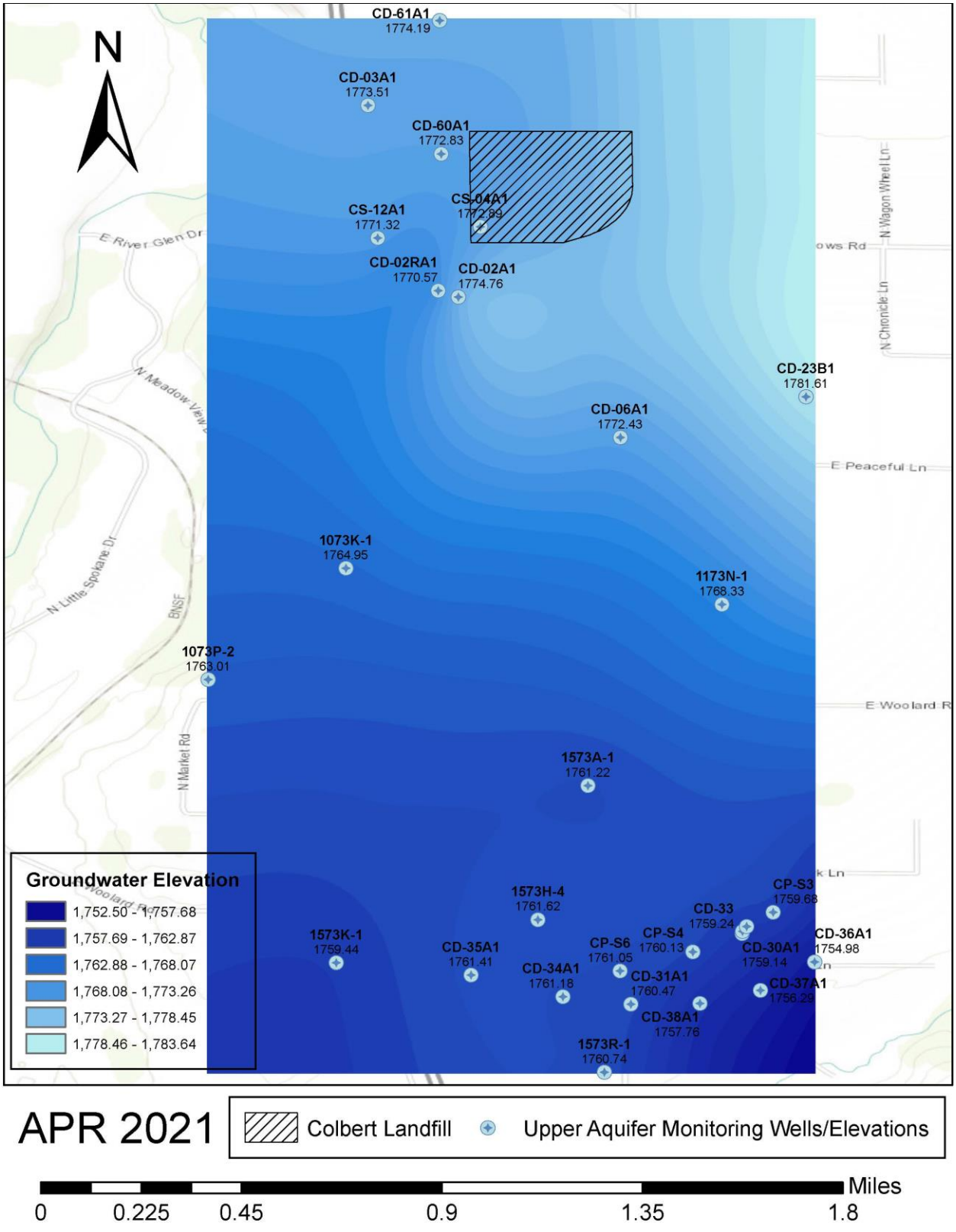


Table 3-4 Upper Aquifer Groundwater Monitoring Result

				ug/L						mg/L								
StationID	Aquifer	Program	SampleDate	DCA	DCE	MC	PCE	TCA	TCE	Cl	COD	Fe	Mn	N-NH3	N-NO3	SO4	TOC	Zn
1573A-1	upper	CCM	4/7/2021	0.59	<0.50	<0.50	<0.50	0.91	0.6									
CD-31A1	upper	CCM	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CD-34A1	upper	CCM	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CD-36A1	upper	CCM	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CD-37A1	upper	CCM	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CD-38A1	upper	CCM	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S3	upper	CCM	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CD-03A1	upper	MFS	4/8/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.63	<0.50	<0.50	<0.50	<0.50	0.497	5.79	<0.50	<0.50
CD-60A1	upper	MFS	4/8/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.13	<0.50	<0.50	<0.50	<0.50	<0.50	5.91	1.23	<0.50
CD-61A1	upper	MFS	4/8/2021	<0.50	<0.50	<0.50	<0.50	1.23	<0.50	0.87	<0.50	<0.50	<0.50	<0.50	0.253	9.81	<0.50	<0.50
CS-04A1	upper	MFS	4/8/2021	1.26	<0.50	<0.50	<0.50	<0.50	0.55	5.25	<0.50	<0.50	<0.50	<0.50	4.91	11.1	<0.50	<0.50
CD-40C1	upper	SD	4/7/2021	1.34	0.91	<0.50	<0.50	1.28	<0.50									
CP-S1	upper	SD	8/12/2020	0.69	<0.50	<0.50	<0.50	<0.50	1.06									
CP-S1	upper	SD	10/6/2020	0.78	<0.50	<0.50	<0.50	0.53	1.07									
CP-S1	upper	SD	1/20/2021	0.8	<0.50	<0.50	<0.50	0.71	1.27									
CP-S1	upper	SD	4/7/2021	0.65	<0.50	<0.50	<0.50	0.64	1.17									
CP-S4	upper	SD	8/12/2020	2.31	<0.50	<0.50	0.54	0.53	1.82									
CP-S4	upper	SD	10/6/2020	2.27	<0.50	<0.50	0.55	<0.50	1.61									
CP-S4	upper	SD	1/20/2021	2.22	<0.50	<0.50	0.56	0.56	1.99									
CP-S4	upper	SD	4/6/2021	1.95	<0.50	<0.50	<0.50	<0.50	1.78									
CP-S5	upper	SD	8/12/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S5	upper	SD	10/6/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S5	upper	SD	1/20/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S5	upper	SD	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S6	upper	SD	8/12/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S6	upper	SD	10/6/2020	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S6	upper	SD	1/20/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									
CP-S6	upper	SD	4/6/2021	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50									

Table 3-5 Upper Aquifer Criteria Exceedances (Consent Decree criteria)

There were no Consent Decree criteria exceedances during this reporting period.

StationID	SampleDate	Aquifer	Program	Analyte	Result	Units	Flag

Table 3-6 Shutdown Program Criteria Exceedances (*updated criteria values)

*Increase for Trichloroethene (PCE) from the performance standard in the ROD (0.7 µg/L) to the current MCL (5µg/L), and a decrease for 1,1-Dichloroethane (1,1-DCA) to the regional screening level (RSL) of 2.6 µg/L.

There were no Consent Decree criteria exceedances during this reporting period.

StationID	SampleDate	Aquifer	Program	Analyte	Result	Units	Flag

Table 3-7 1,4-Dioxane Monitoring Results

StationID	Aquifer	Analyte	SampleDate	Result	Units	Reporting Limit	Qualifier
1073D-1	upper	1,4-Dioxane	4/7/2021	0.5	ug/L	0.2	
1473M-1	upper	1,4-Dioxane	4/7/2021	0.2	ug/L	0.2	U
1573A-1	upper	1,4-Dioxane	4/7/2021	0.3	ug/L	0.2	
CD-40C1	upper	1,4-Dioxane	4/7/2021	4.2	ug/L	0.2	
CP-S1	upper	1,4-Dioxane	4/7/2021	0.7	ug/L	0.2	

Figure 3-5 1,4-Dioxane Concentrations vs. Time

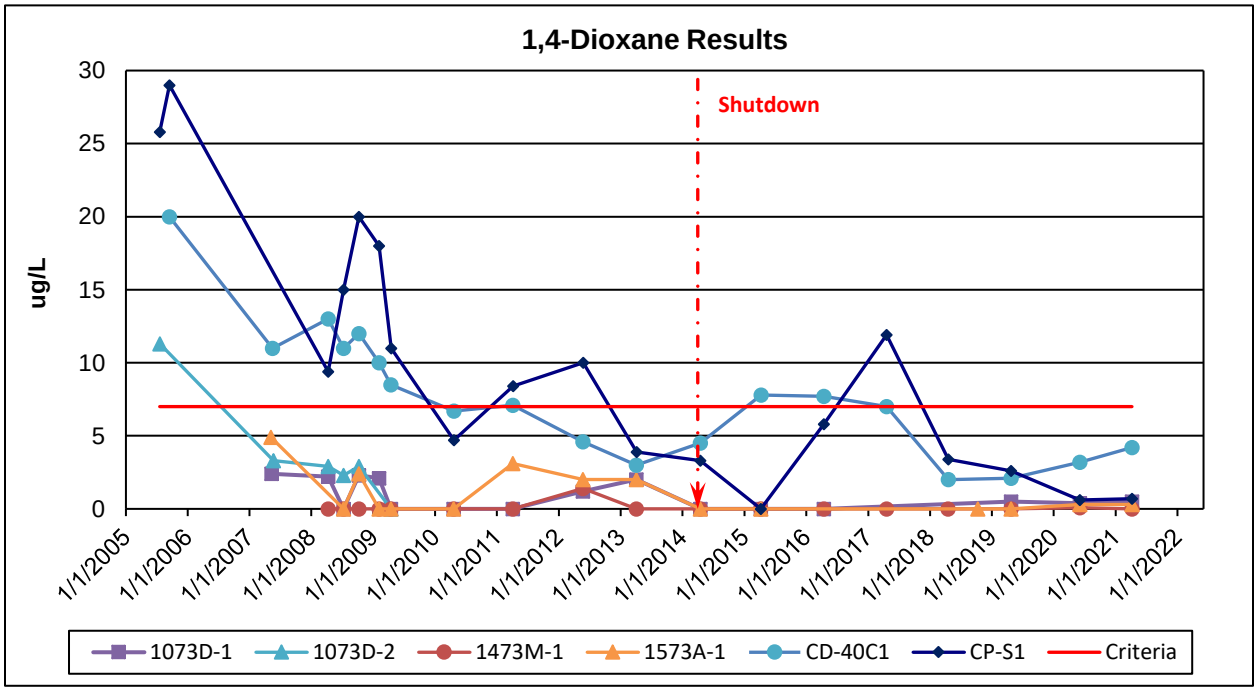
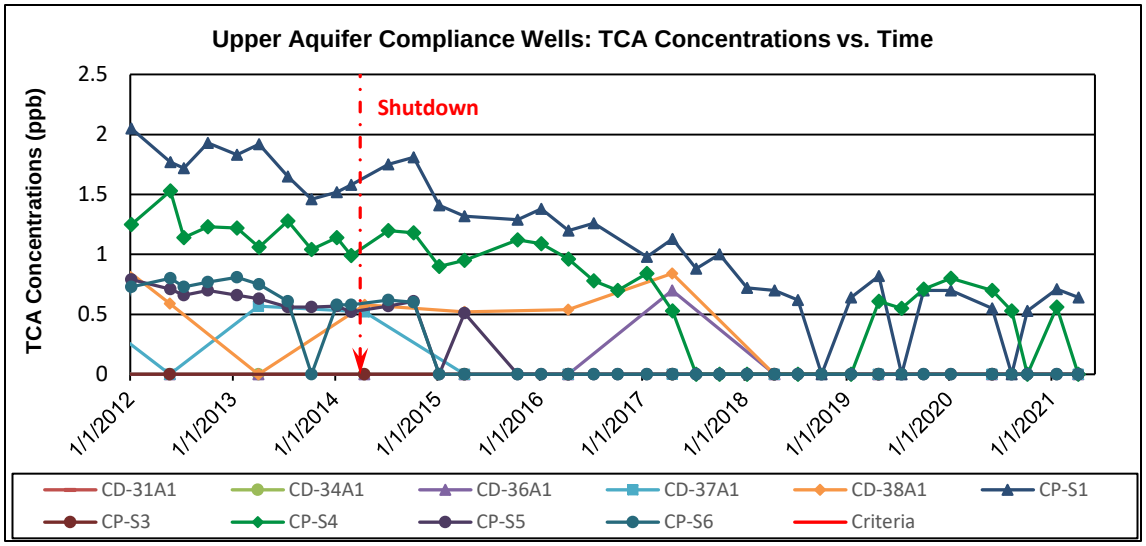
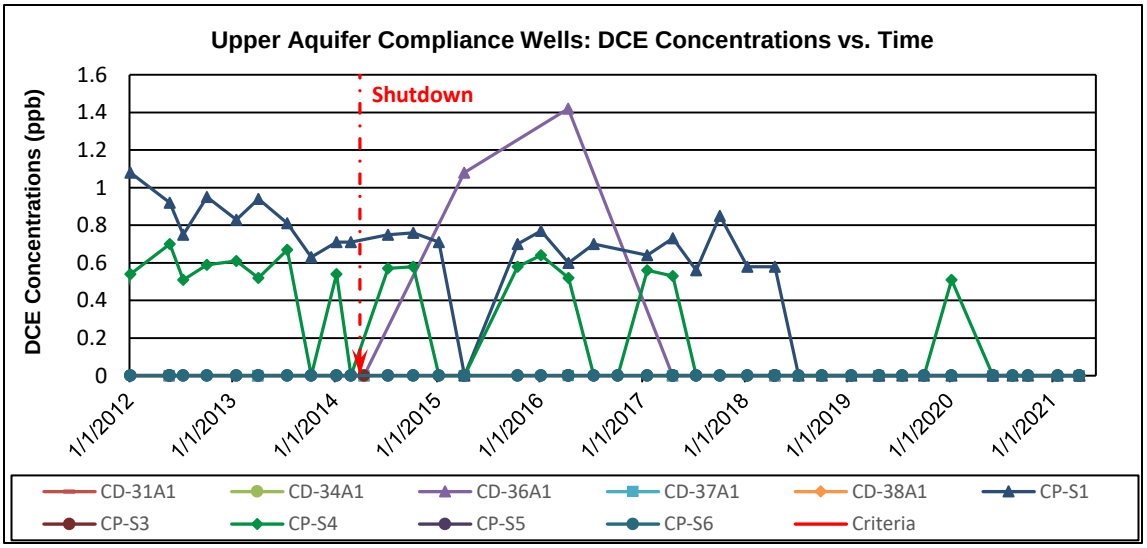


Figure 3-6 Upper Aquifer Compliance Wells COC Concentrations vs. Time





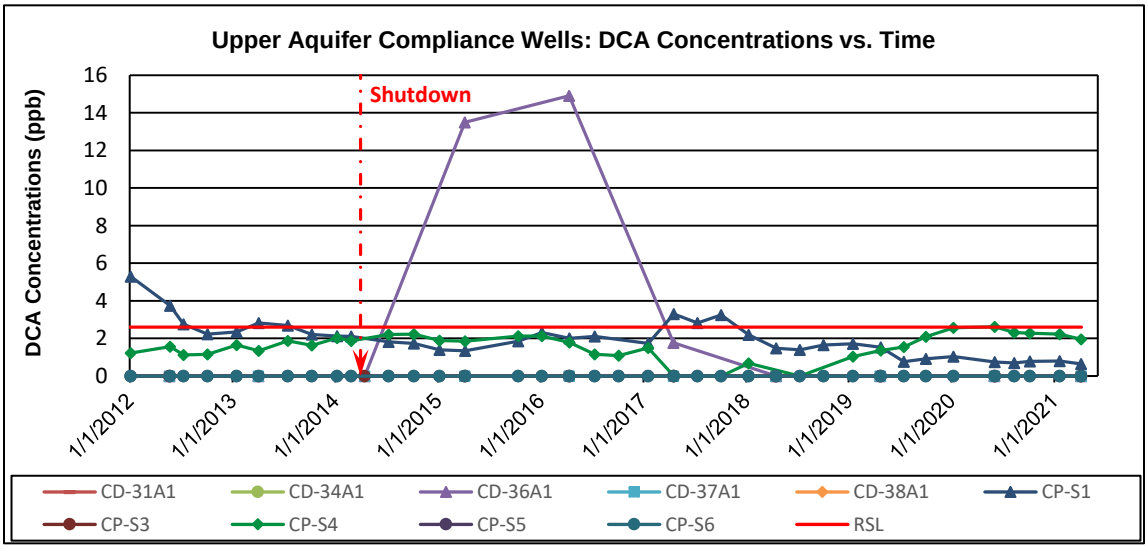
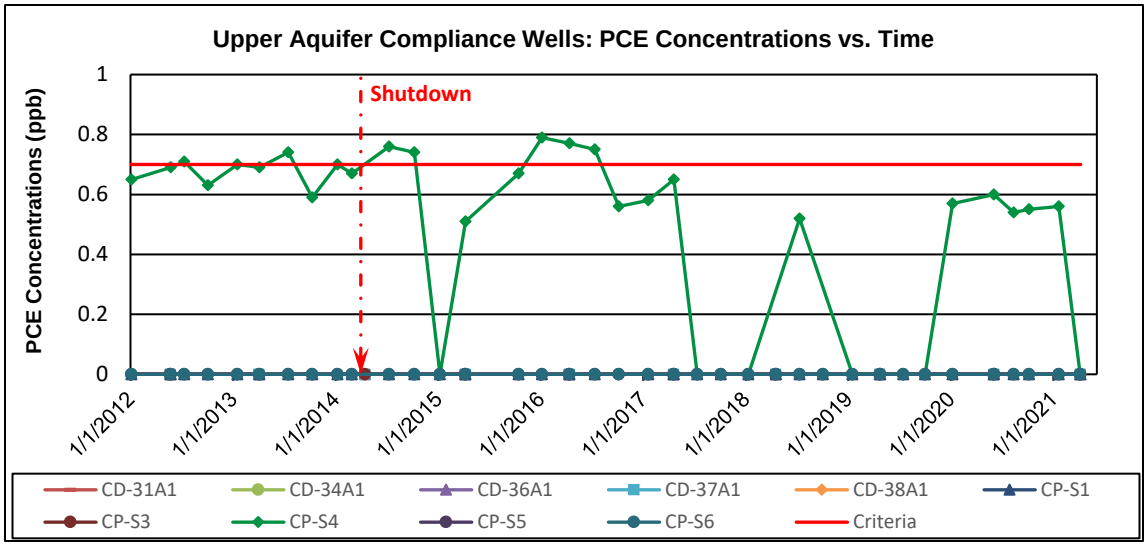


Figure 3-7 Upper Aquifer Compliance Wells COC Concentrations vs. Time



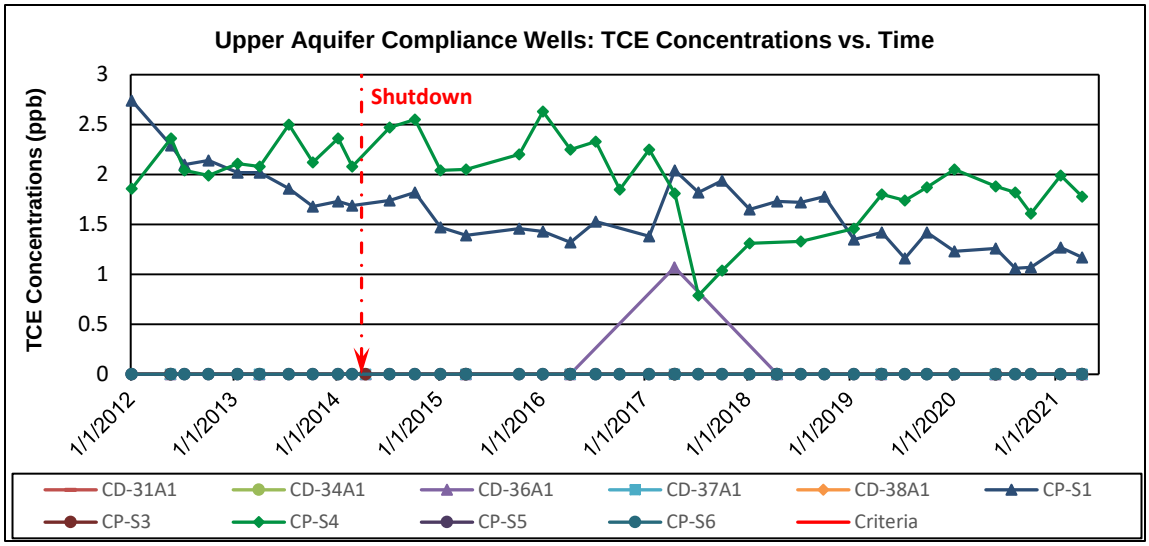


Figure 3-8 Upper Aquifer Estimated TCA Plume

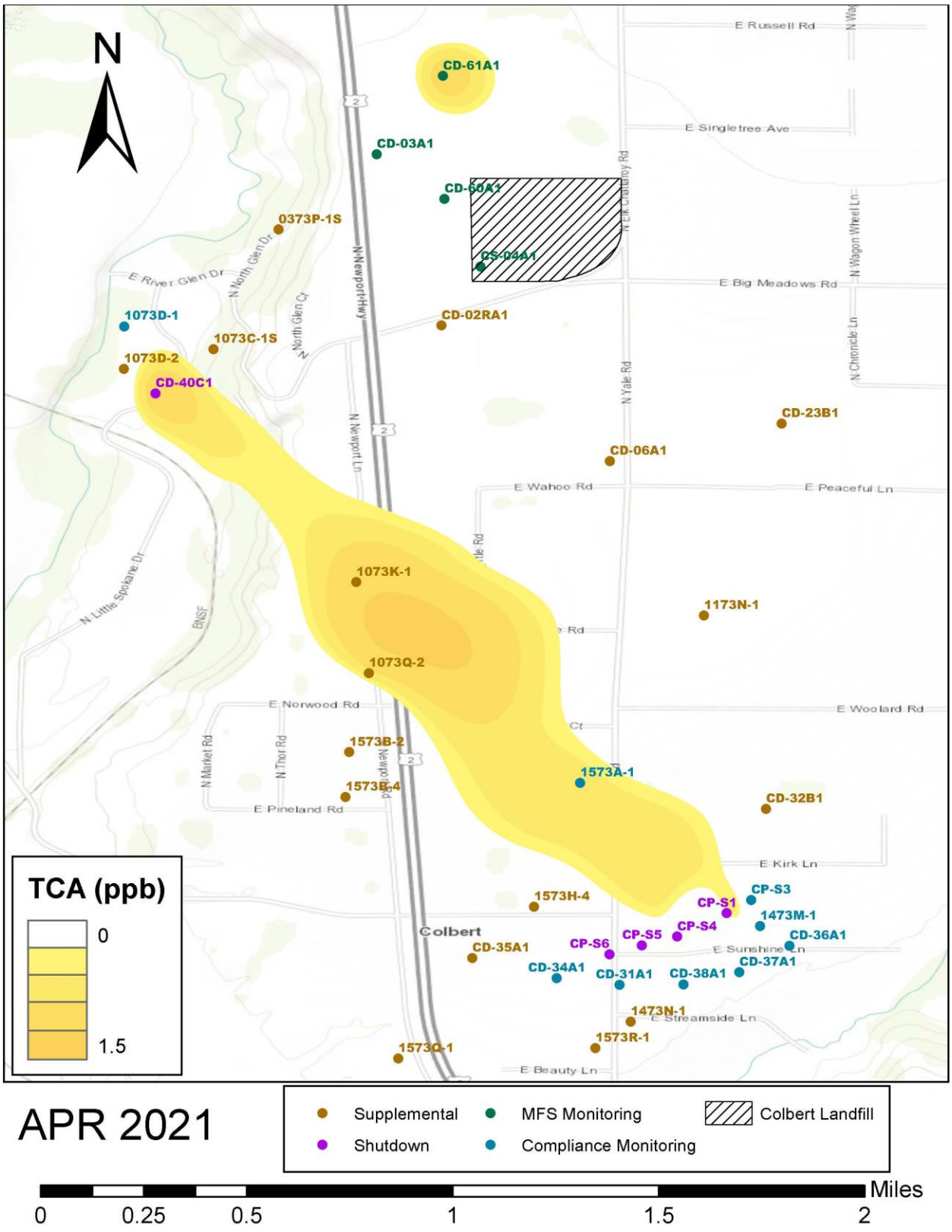


Figure 3-9 Upper Aquifer TCA Detections Map

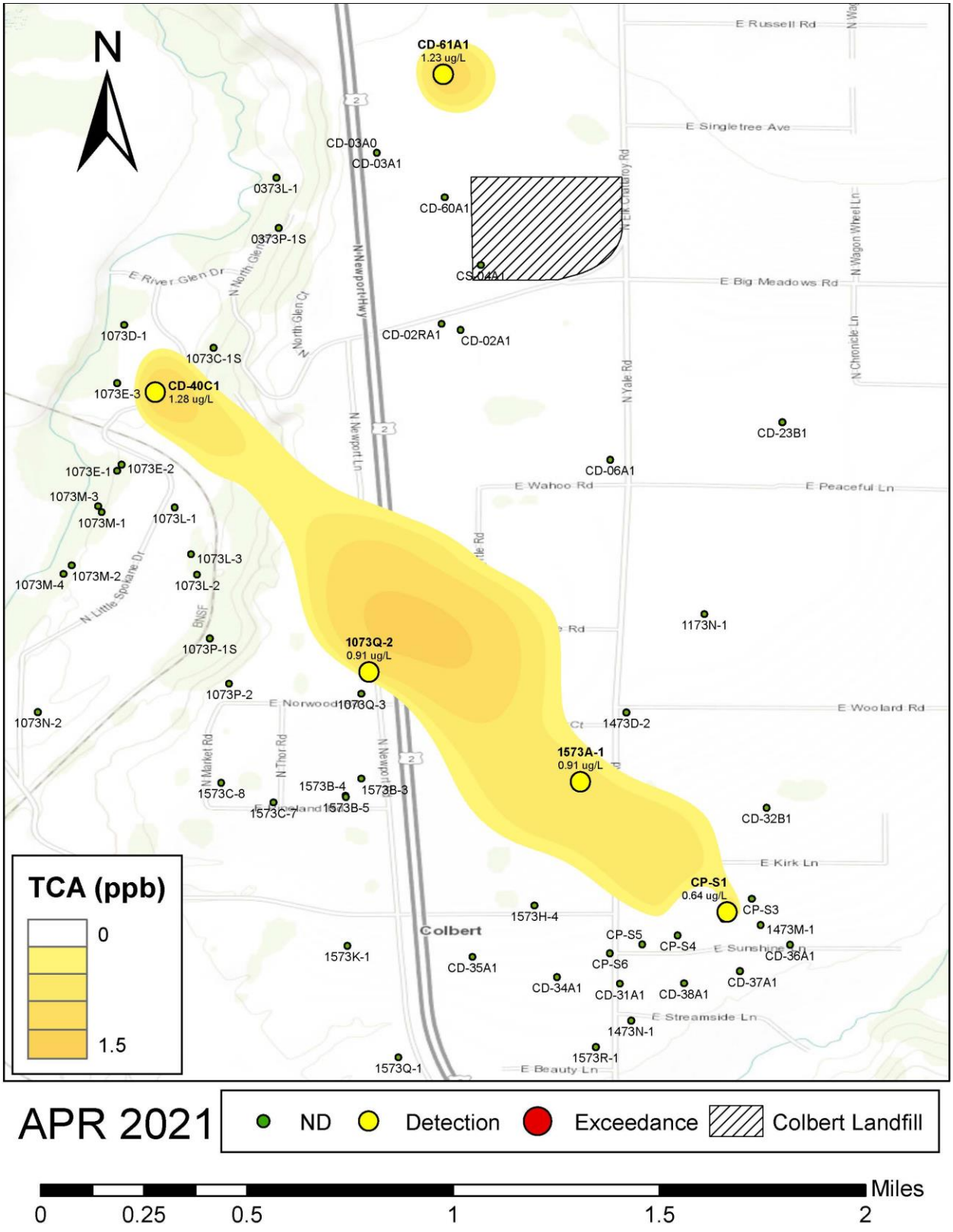


Figure 3-10 Upper Aquifer Estimated DCA Plume

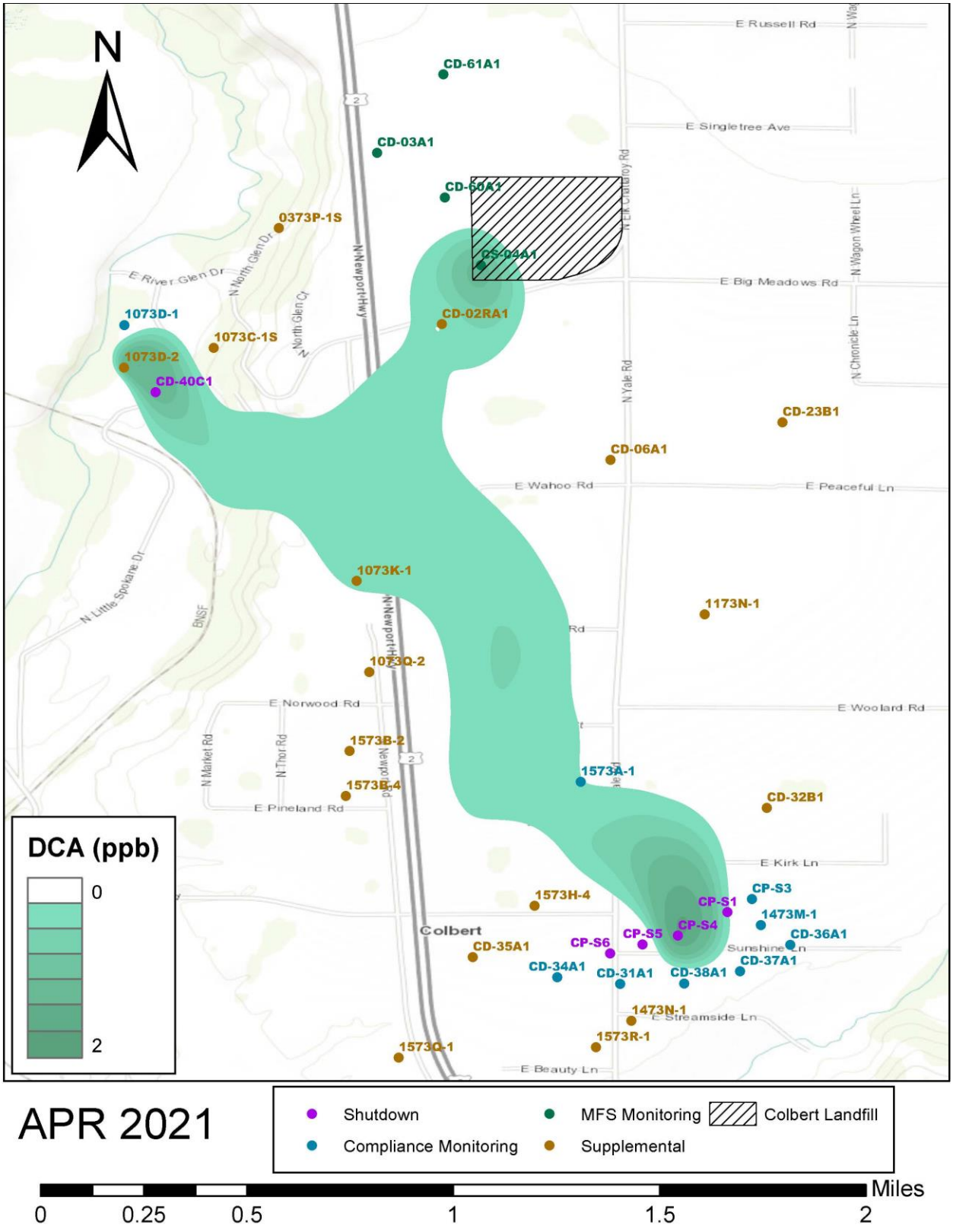


Figure 3-11 Upper Aquifer DCA Detections Map

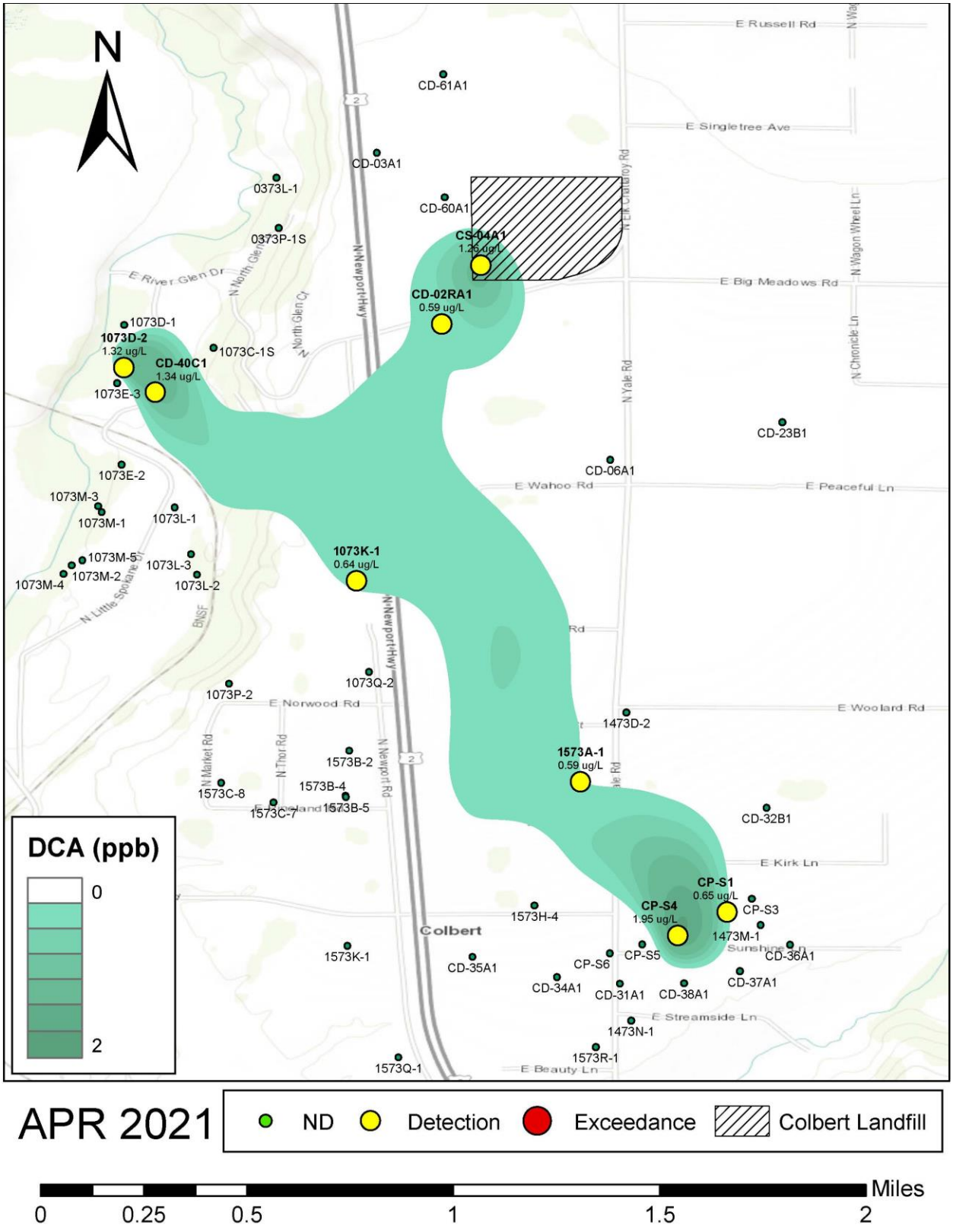


Figure 3-12 Upper Aquifer Estimated DCE Plume

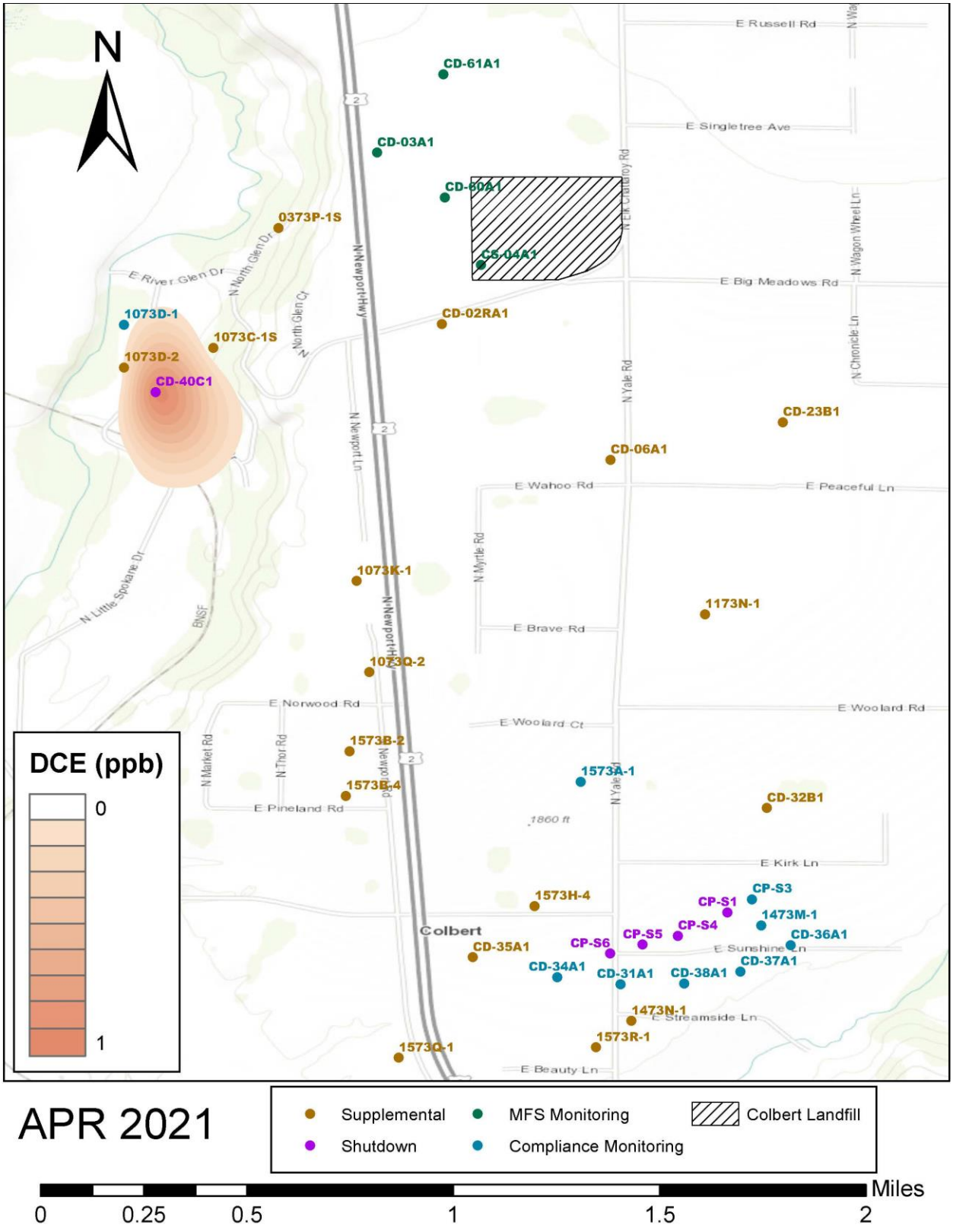


Figure 3-13 Upper Aquifer DCE Detections Map

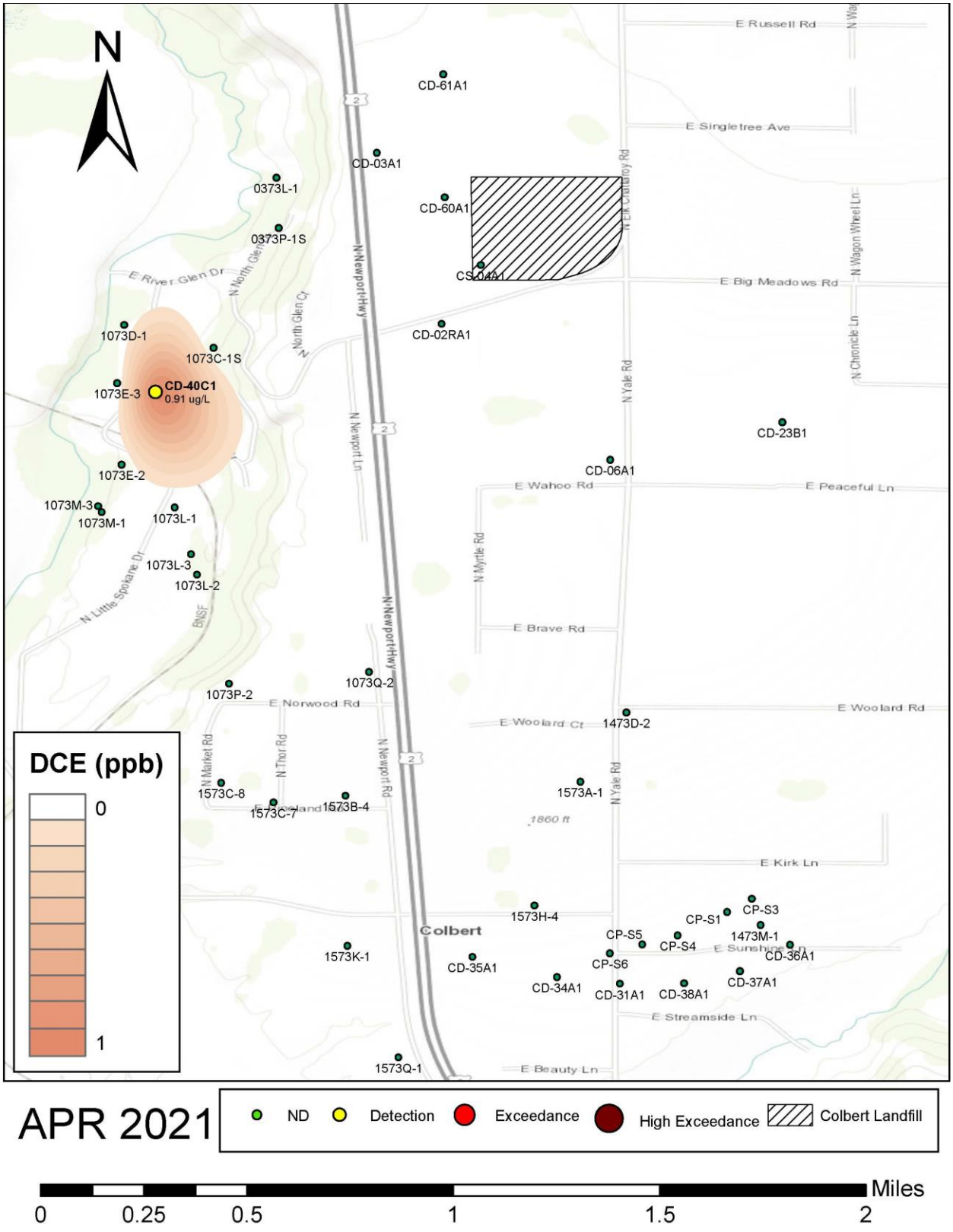


Figure 3-14 Upper Aquifer Estimated PCE Plume

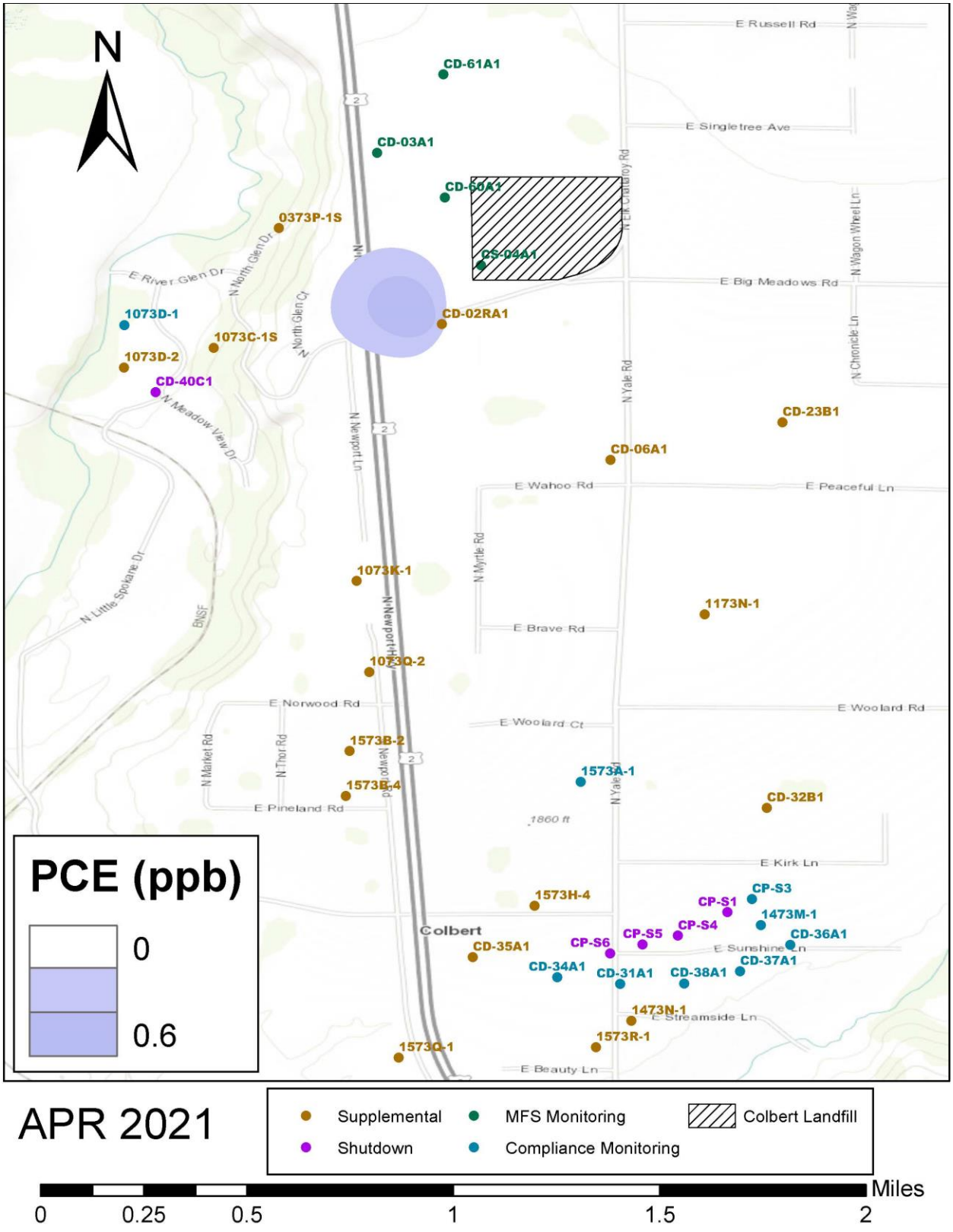


Figure 3-15 Upper Aquifer PCE Detections Map

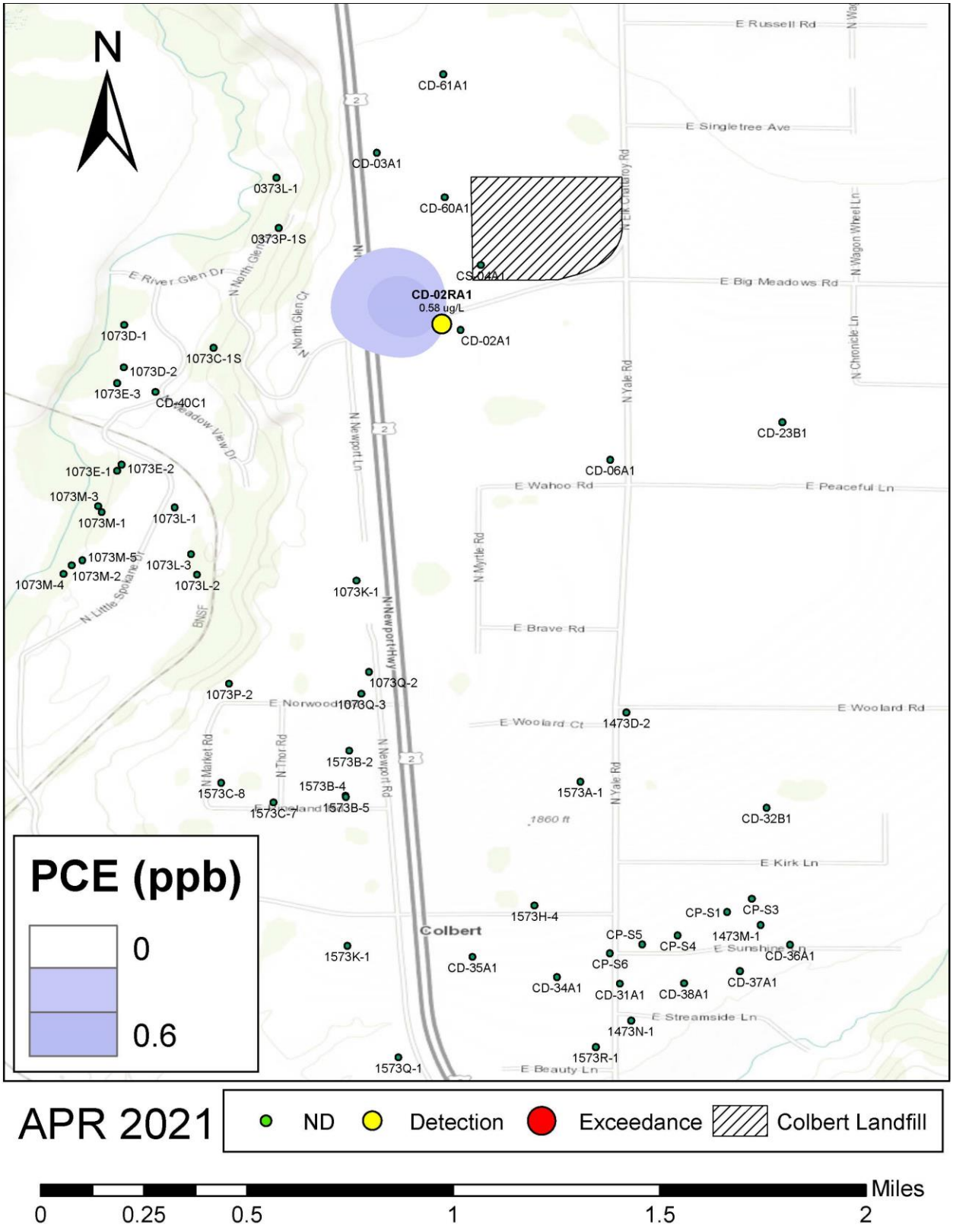


Figure 3-16 Upper Aquifer Estimated TCE Plume

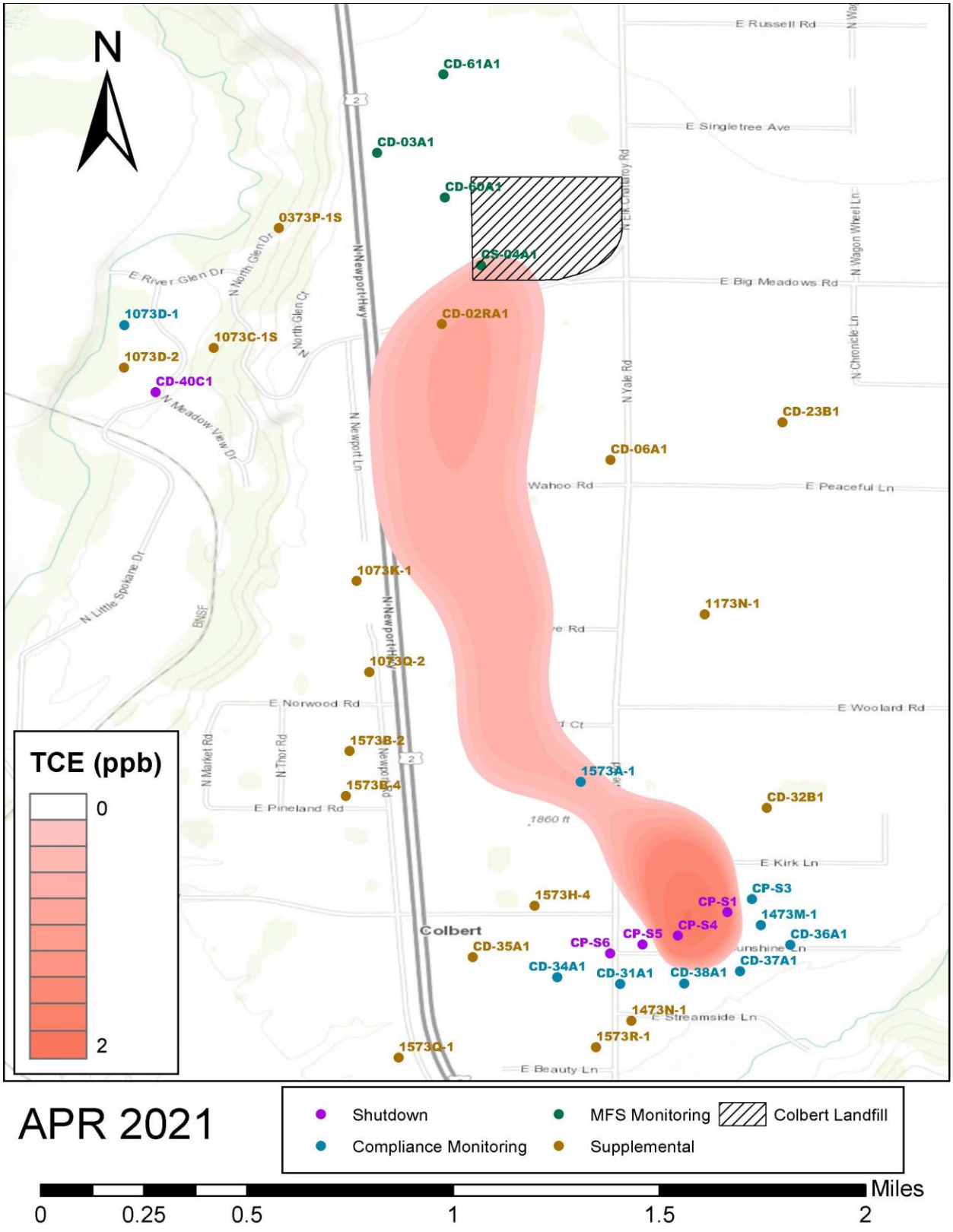


Figure 3-17 Upper Aquifer TCE Detections Map

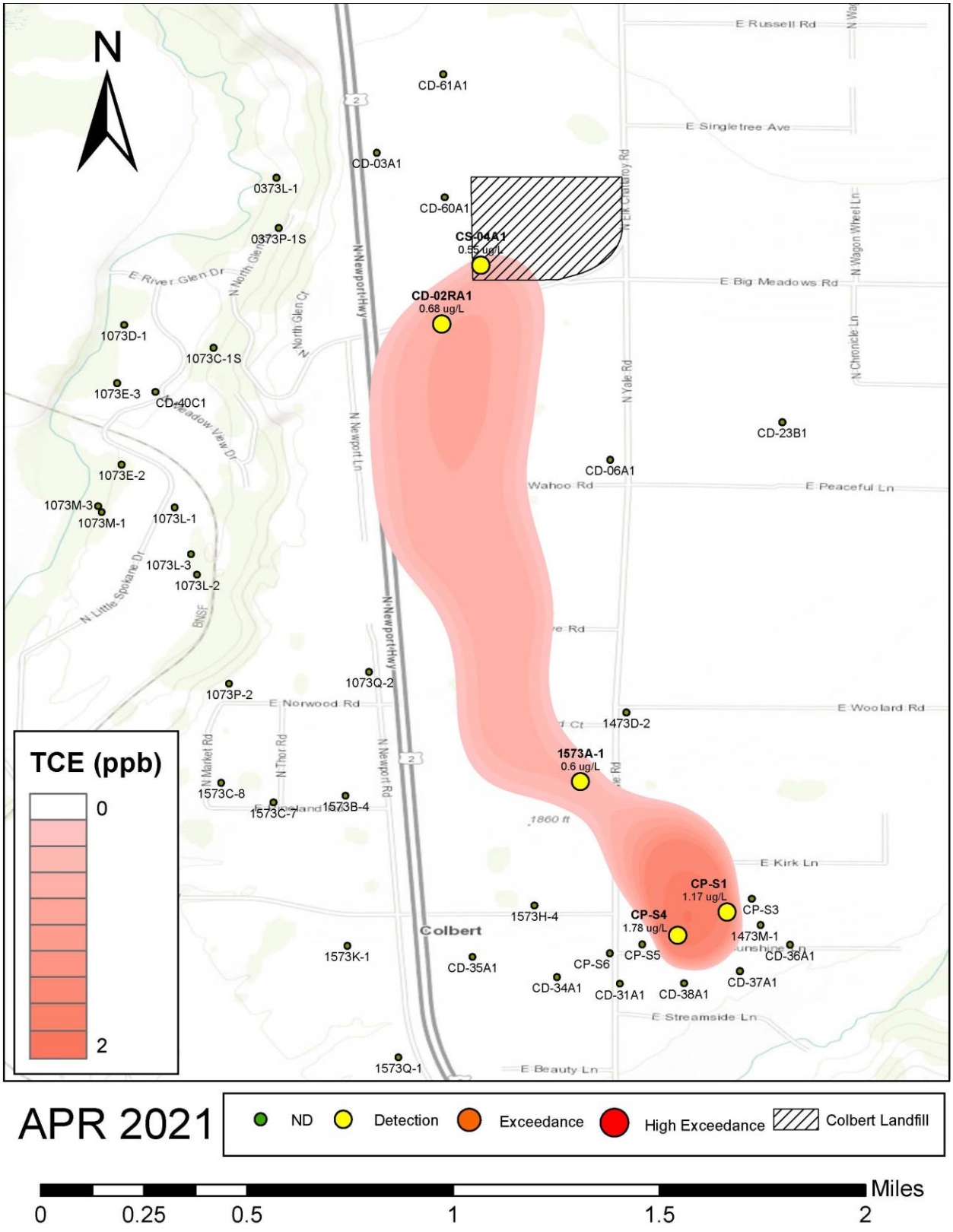


Figure 3-18 Upper Aquifer All Analytes Estimated Plume Map

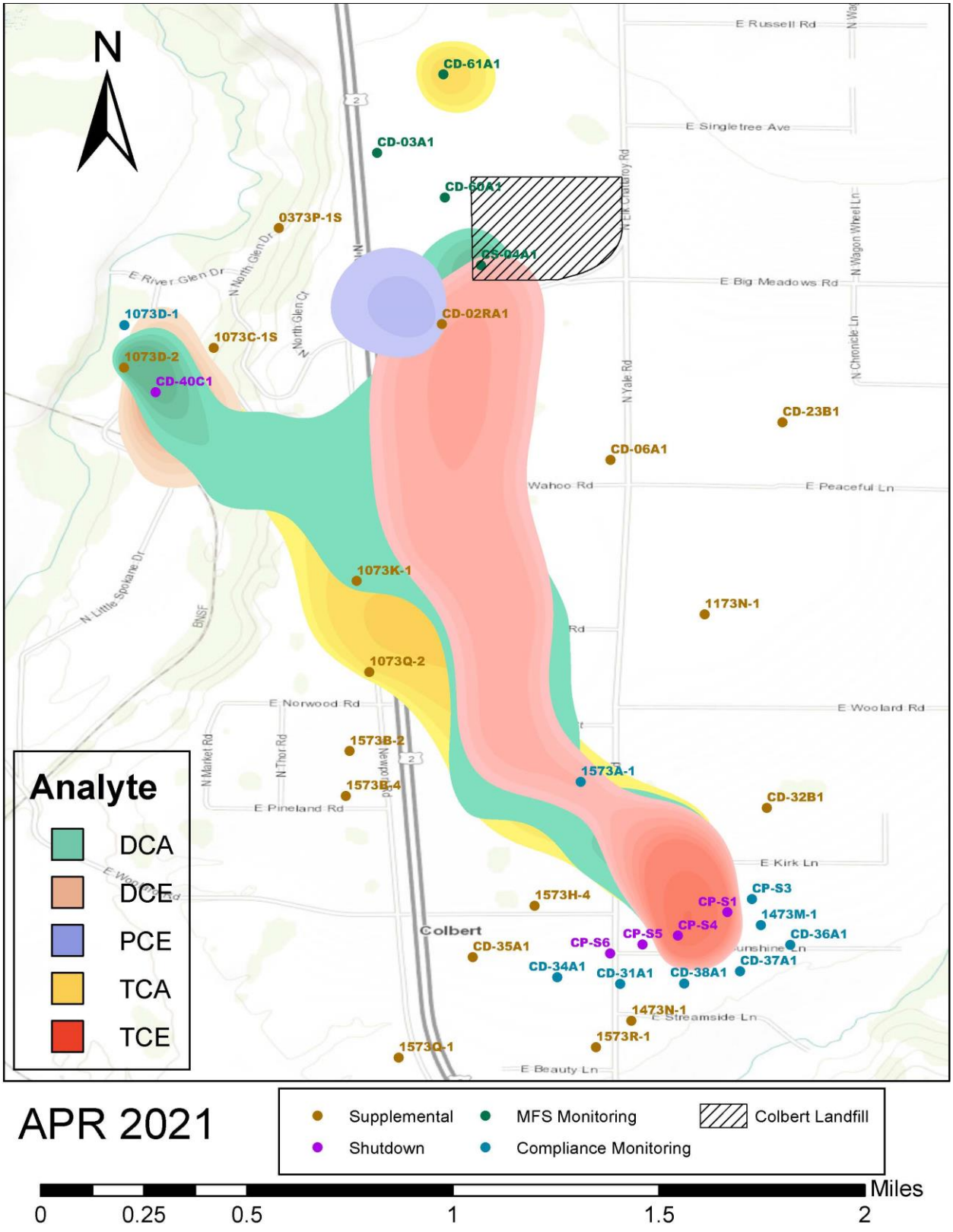
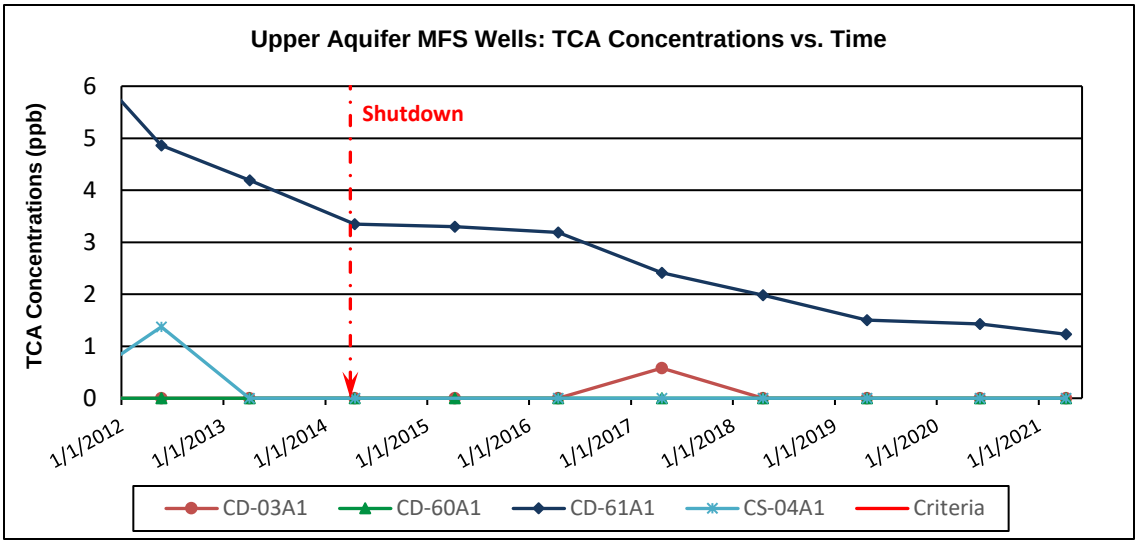
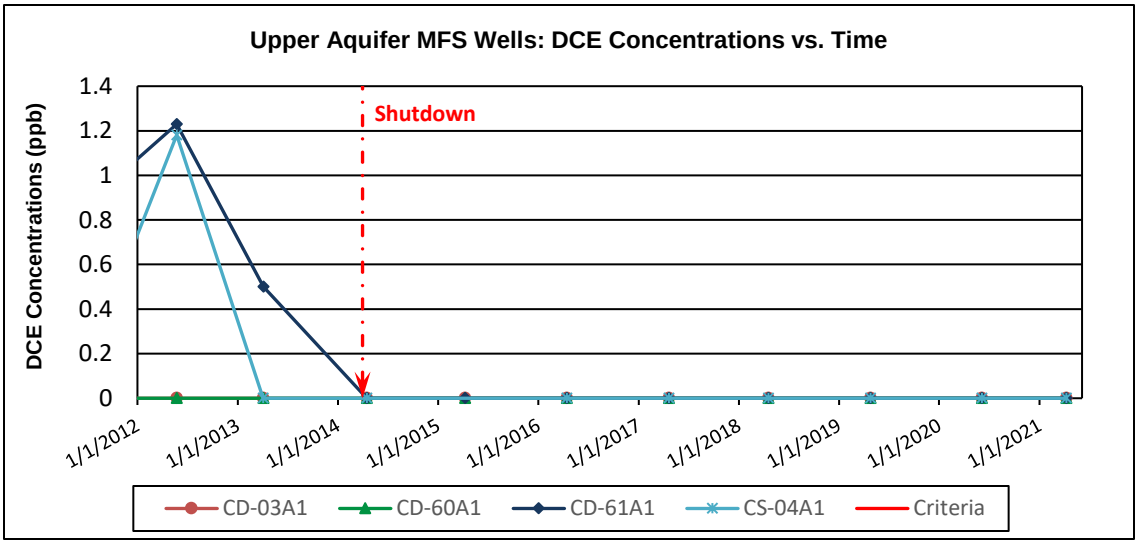


Figure 3-19 Upper Aquifer MFS Wells COC Concentrations vs. Time





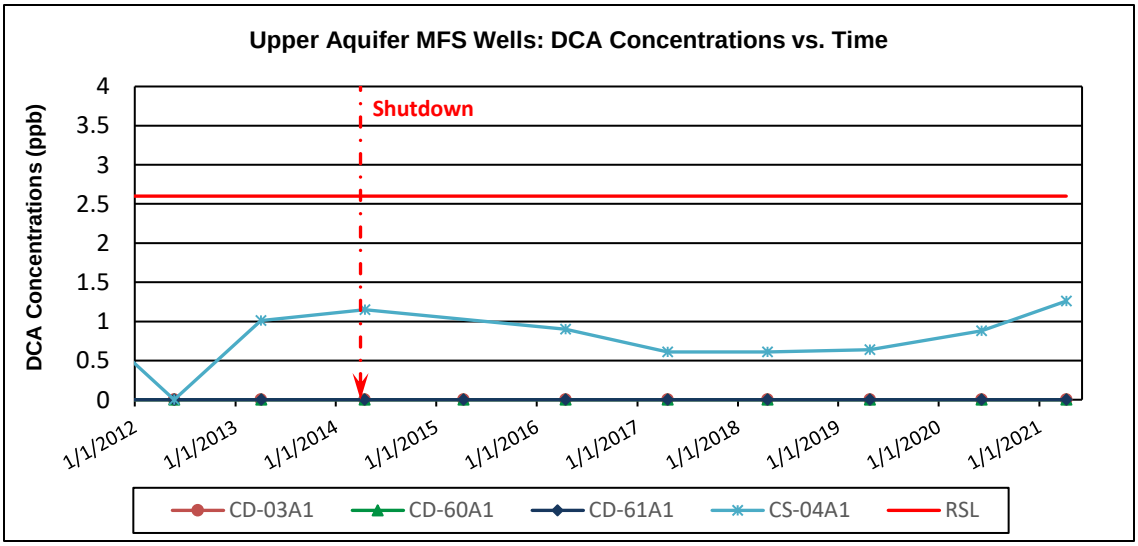
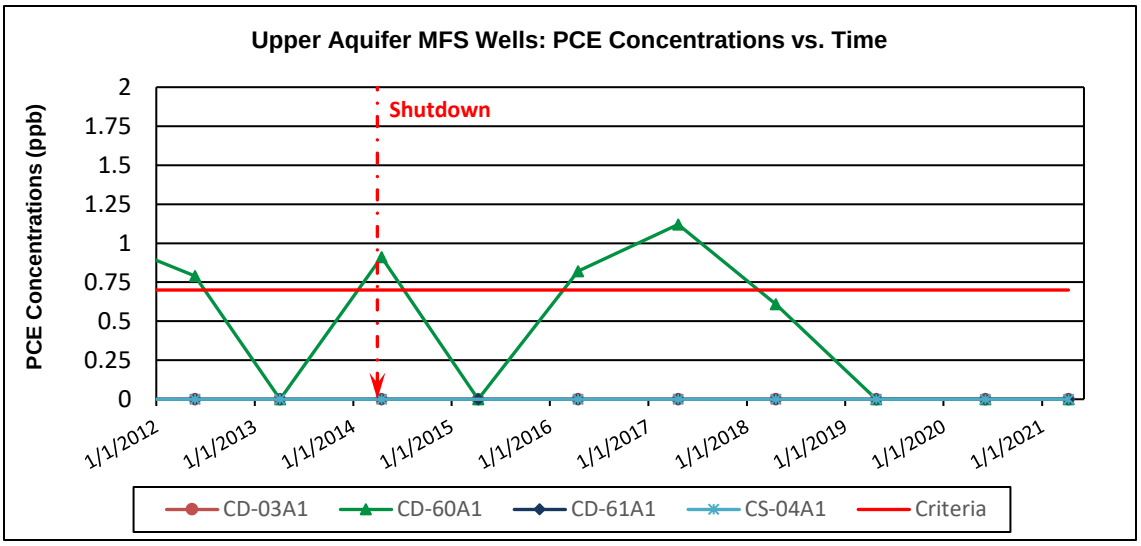


Figure 3-20 Upper Aquifer MFS Wells COC Concentrations vs. Time



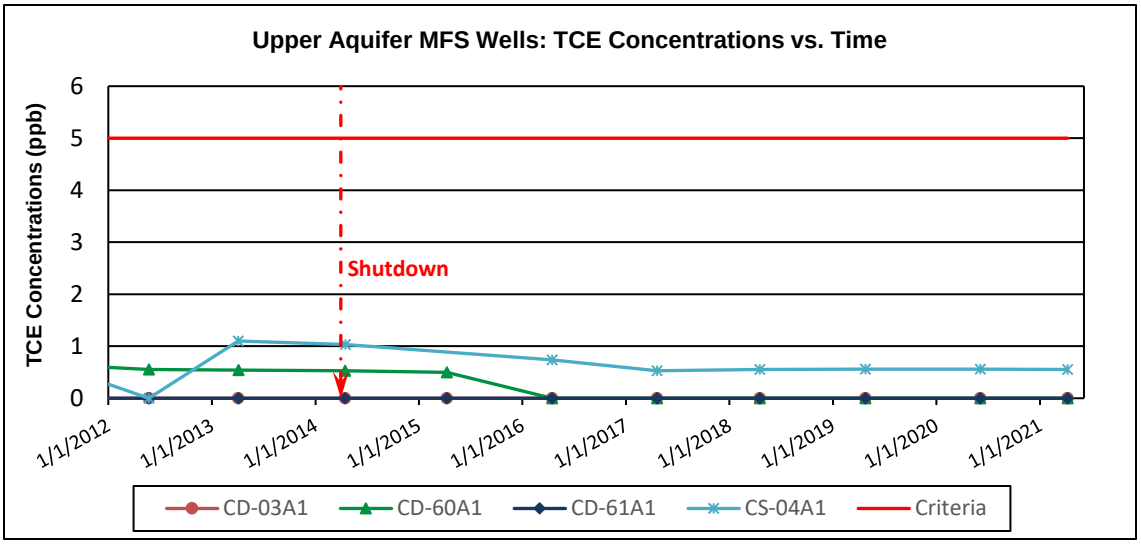
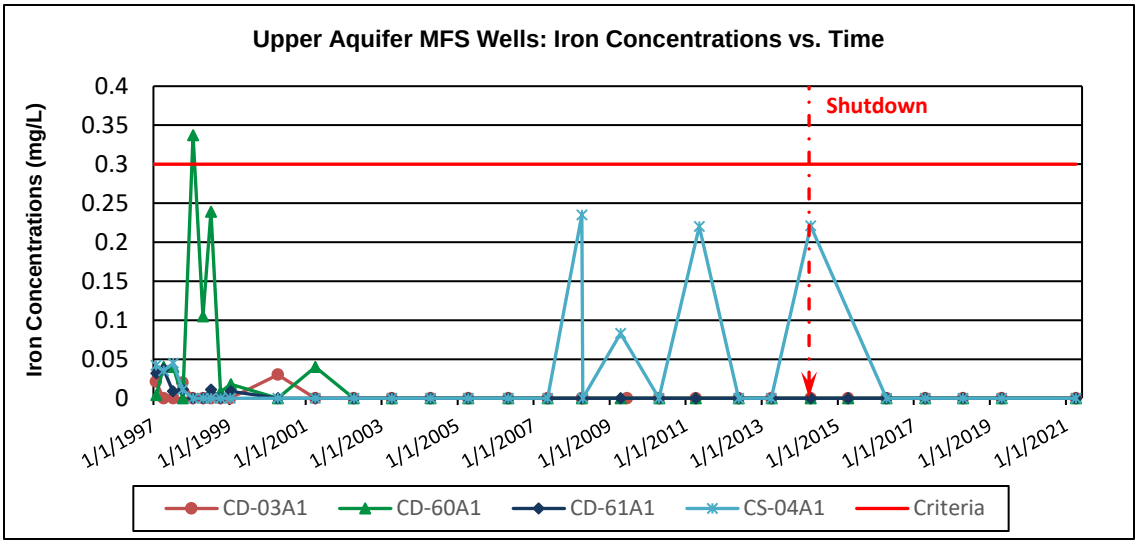
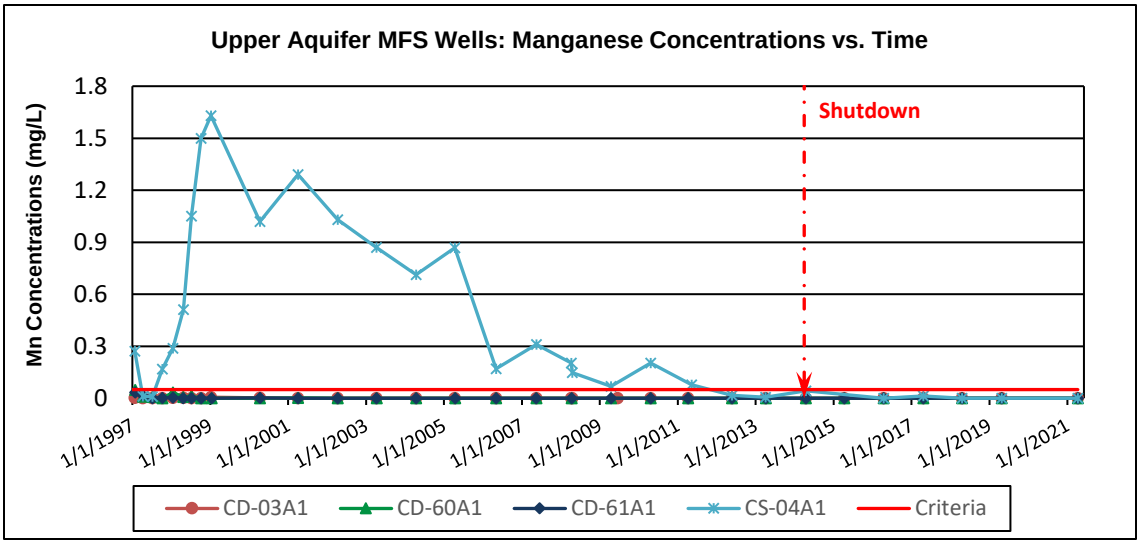


Figure 3-21 Upper Aquifer MFS Parameters vs. Time





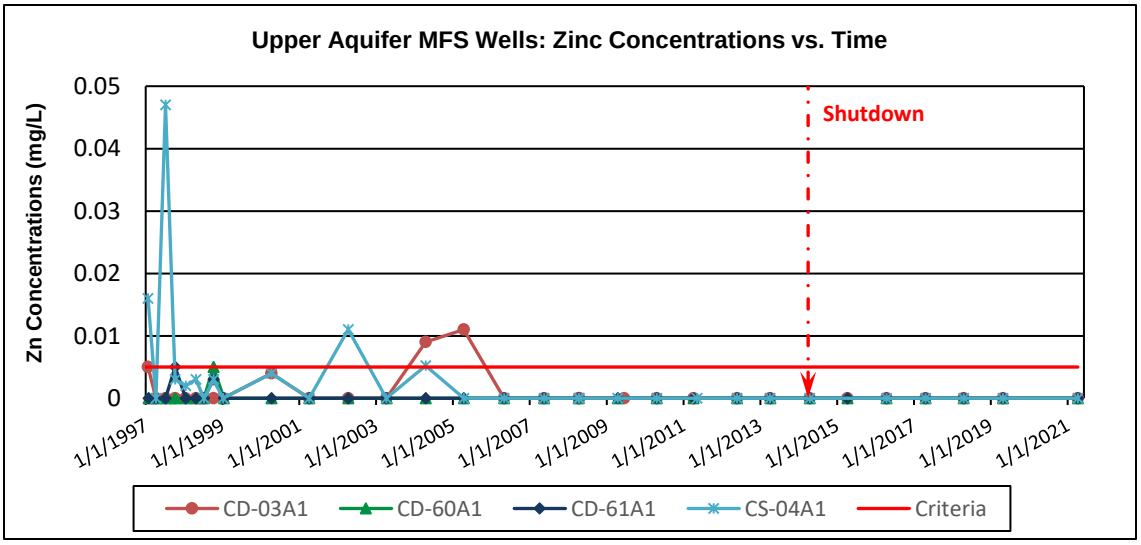
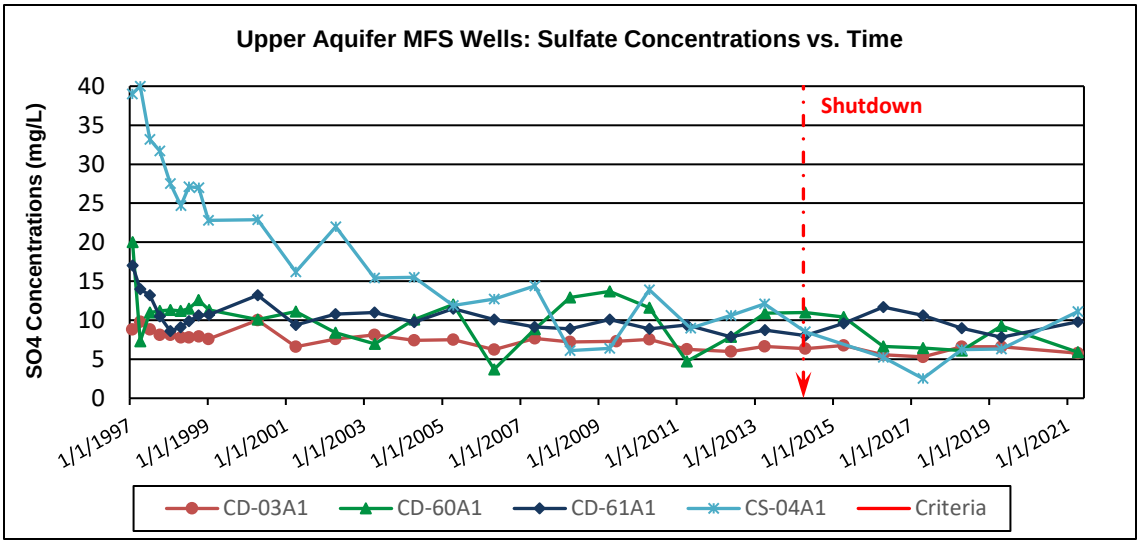
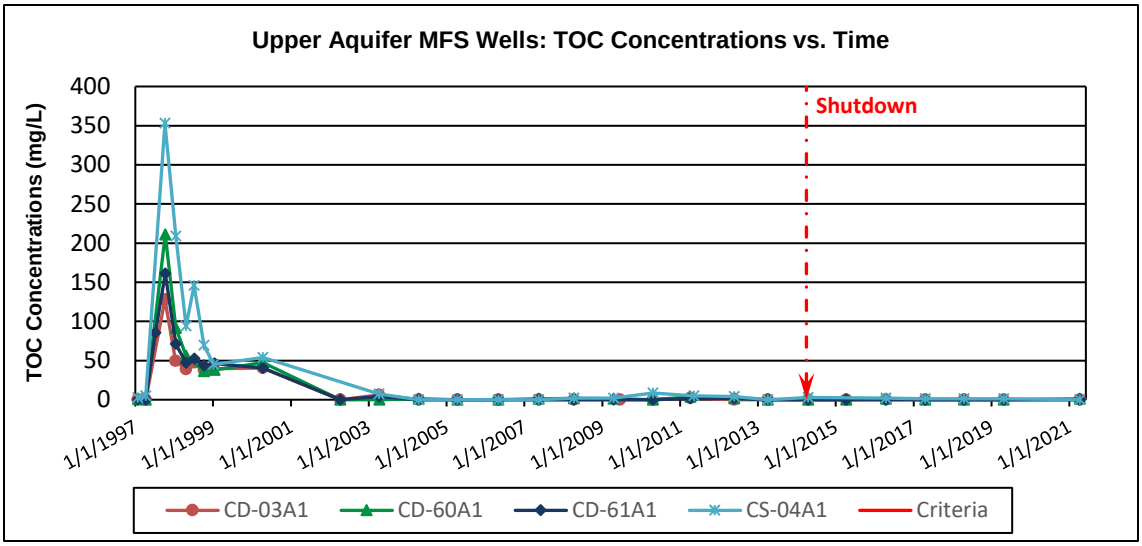


Figure 3-22 Upper Aquifer MFS Parameters vs Time





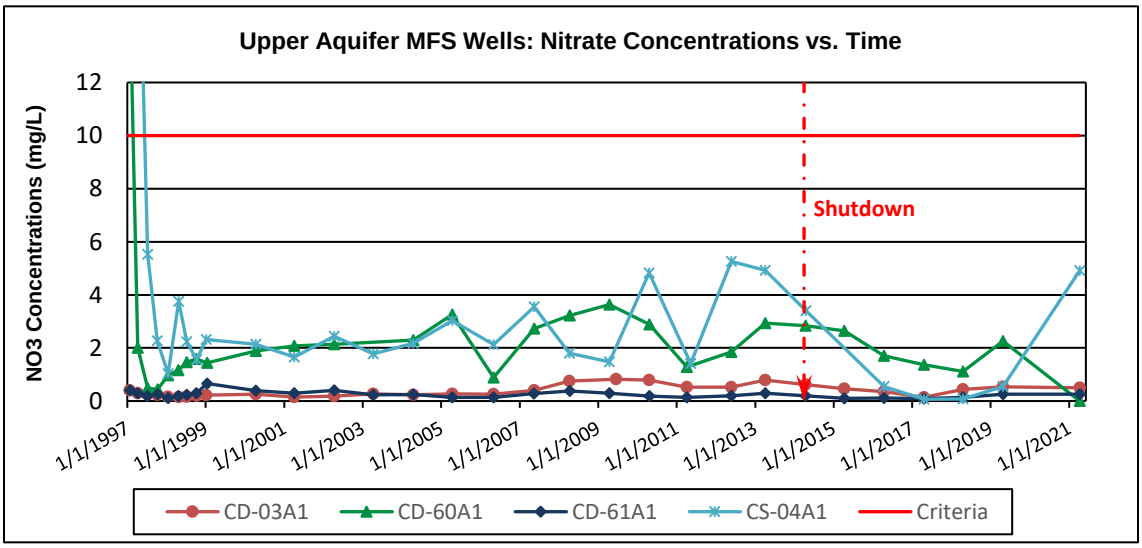


Table 3-8 Summary Results for the Mann-Whitney Nonparametric Significance Test (2021)

	Level of Significance (p)	
Constituent	**Upper Aquifer**	***Lower Aquifer (1999)**
Chloride (Cl)	**1.93E-05**	**0.006**
Chemical Oxygen Demand (COD)	0.4665	0.48
Iron (FE)	0.1488	0.17
Manganese (MN)	0.07258	0.86
Ammonia (NH3)	0.4778	0.42
Nitrite (NO2)	0.4292	1.13
Nitrate (NO3)	**2.20E-05**	0.08
Sulfate	0.8052	**0.0006**
Total Organic Carbon	0.8427	0.32
Zinc	0.06391	0.06

***** Lower aquifer results from January 1999 using CP-E2 and CD-48C2 analytical results for calculations.

Bold number indicates a level of significance under 0.05, test run as two-tailed method.

Figure 3-23 Box Plots for Background and Downgradient MFS Wells (2021)

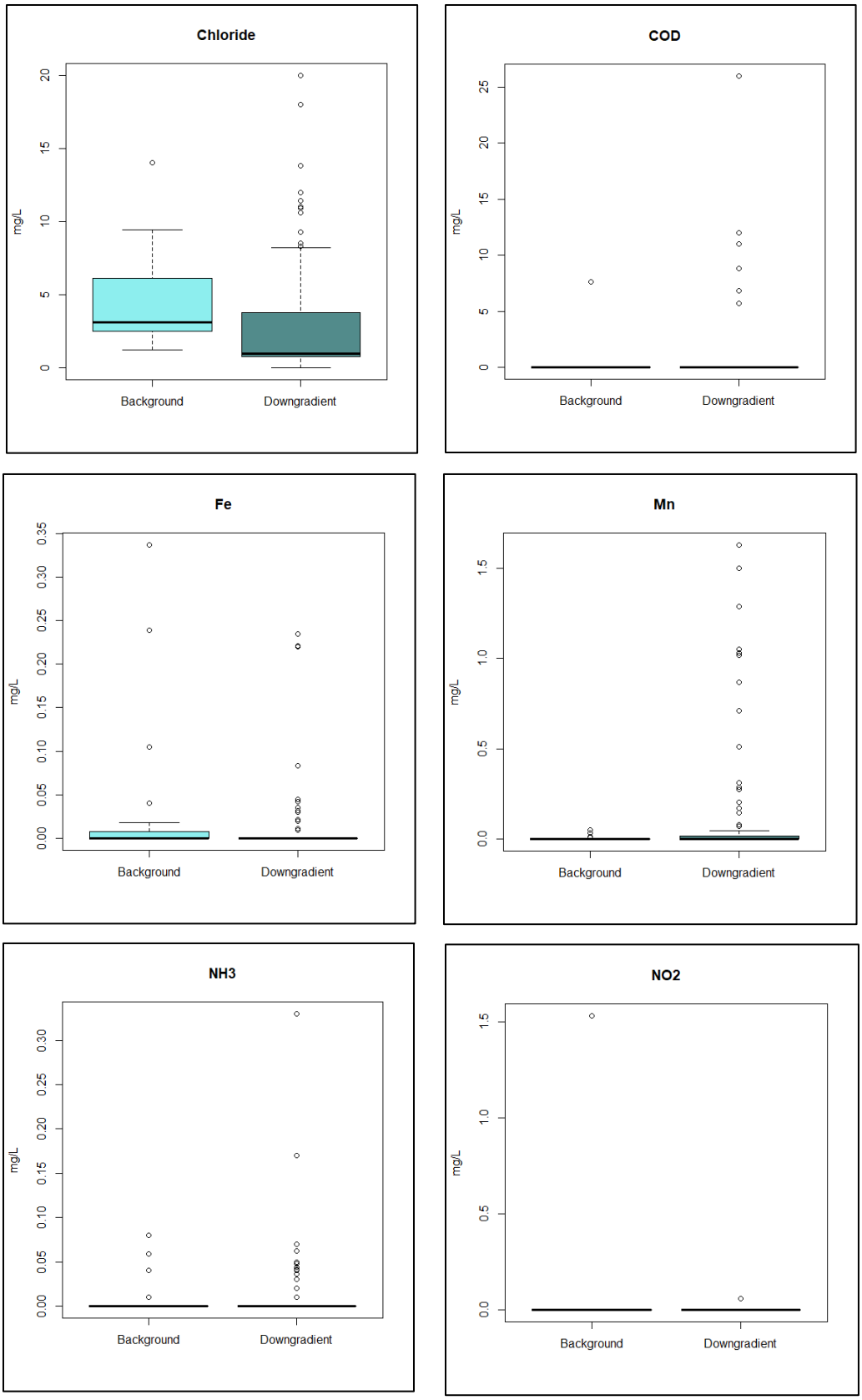
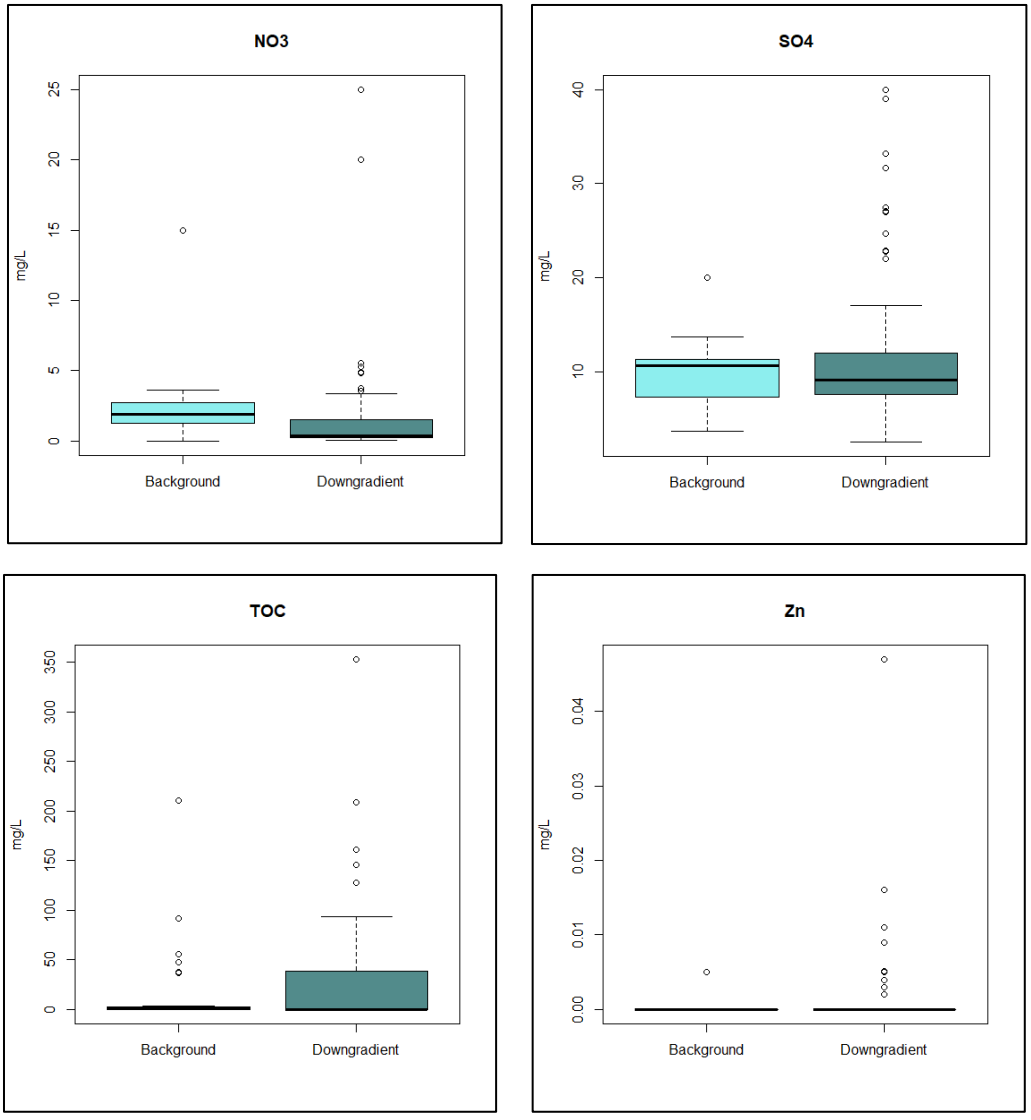


Figure 3-23 continued



4.0 Residential Program

4.1 Locations and Schedule

Current residential well sampling locations can be found in Figure 4-1. The residential sampling schedule is included in Table 4-1.

4.2 Monitoring Results and Criteria

Criteria for residential use wells were established in the Consent Decree. The Consent Decree states that if any residential well with a concentration over the evaluation criteria OR any residential well that has an average concentration over 65% of the evaluation criteria over 12 months, the county shall supply that residence with an alternative water source.

All residential well results were well below established criteria. Results from sampling are presented in Table 4-2. Time-series plots for wells with COC detections are shown in Figure 4-2 through Figure 4-4.

4.3 Data Evaluation

None of the residential wells on the residential monitoring program measured concentrations above the method detection limits for the 2020-2021 sampling year.

4.4 Program Modifications

On a regular basis, the program schedule is re-evaluated to determine if any changes are needed. With the initiation of the Shut-down test, a re-evaluation was performed comparing plume maps and well locations as well as a list of residences connected to a public water supply. Some modifications to increase sampling in specific areas were made to the schedule to ensure a conservative approach concerning public health.

12 changes have been made to the schedule for the upcoming 2020-2021 sampling year. There were 7 decreases in the sampling schedule (several decreases from biennial to supplemental sampling and 1 decrease to annual sampling), 4 increases from bi-annual sampling to annual sampling, and 1 well that has been abandoned. Changes are not required by any documentation or work plan.

The 2021 residential well sampling schedule and changes to the program are presented in Table 4-1.

Figure 4-1 Residential Well Sampling Locations

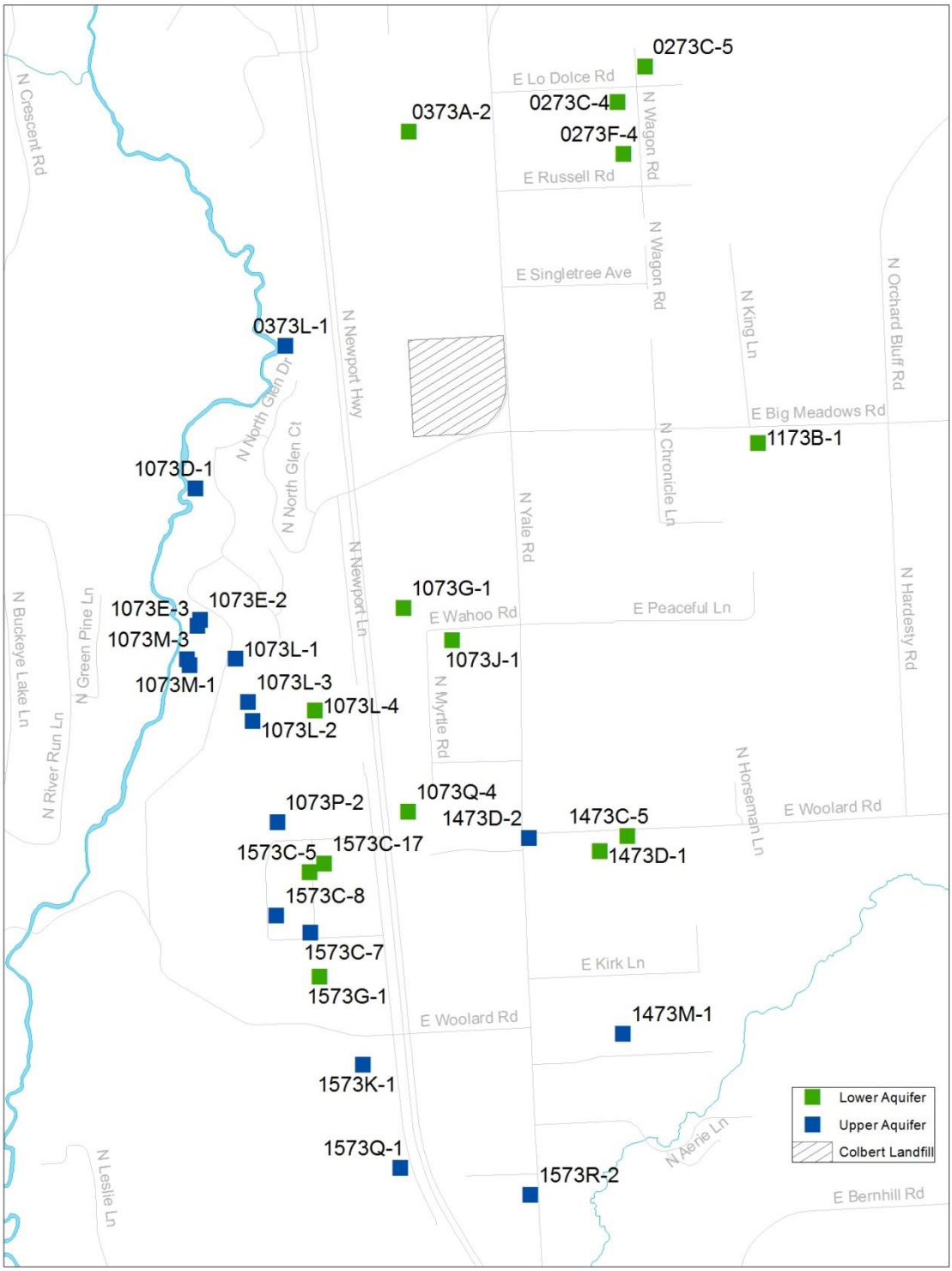


Table 4-1 Residential Well Sampling Schedule for Reporting Period

Colbert Residential Sampling Plan 2021

StationID	LastName	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Sched Comments
0273C-2	Vannatter	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to Supplemental Sampling - remove if non-detect
0273C-3	Warden	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to Supplemental Sampling - remove if non-detect
0273C-4	McQuesten	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to Supplemental Sampling - remove if non-detect
0273D-6	Thornton	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	
0273F-4	Gander	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	
0373A-2	Resseman	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	Increased to quarterly sampling - detections of DCA.
0373A-4	Owner	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	
0373L-1	Sterling	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	
1073D-1	Nerren	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
1073E-2	Pullen	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	
1073E-3	Clark	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
1073E-4	Carpenter	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	
1073G-1	Rux	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	
1073J-1	Moreno	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	
1073L-1	Halpin	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	
1073L-2	Countryman	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	
1073L-3	Anderson	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
1073L-4	Thomas	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to Supplemental Sampling - remove if non-detect
1073M-1	Bertholf	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to Supplemental Sampling - remove if non-detect
1073M-3	Lane	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	
1073P-1	Greenen	☐	☐	☐	☐	☑	☐	☐	☐	☐	☑	☐	☐	
1073P-2	Petrelli	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	
1073Q-4	NORTH MEADOWS W	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to annual sampling in January.

StationID	LastName	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Sched Comments
1173B-1	Bise	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	
1473C-5	Overmyer	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
1473D-2	Wardian	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
1473M-1	Richard	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	
1573C-10	Lake	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Increased to annual sampling on the month of June.
1573C-17	RESIDENT	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Increased to annual sampling on the month of April.
1573C-5	Shelp	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	Decreased to Supplemental Sampling - remove if non-detect
1573C-7	Kirby	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	
1573C-8	Williams	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
1573H-1	Hunter	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
1573Q-1	Saunder	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Increased to annual sampling on the month of July.
1573R-2	Hunter	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Increased to annual sampling on the month of May.

Changes made to the Colbert Residential Sampling Schedule

StationID	Still active?	Comments/changes - ColRes review on 1/21/2021
1073Q-4	Yes	Decrease to annual sampling in January.
0273C-2	Yes	Decrease to Supplemental Sampling - remove if non-detect
0273C-3	Yes	Decrease to Supplemental Sampling - remove if non-detect
0273C-4	Yes	Decrease to Supplemental Sampling - remove if non-detect
1073L-4	Yes	Decrease to Supplemental Sampling - remove if non-detect
1073M-1	Yes	Decrease to Supplemental Sampling - remove if non-detect
1573C-5	Yes	Decrease to Supplemental Sampling - remove if non-detect
1573C-17	Yes	Increase to annual sampling on the month of April.
1573C-10	Yes	Increase to annual sampling on the month of June.
1573Q-1	Yes	Increased to annual sampling on the month of July.
1573R-2	Yes	Increased to annual sampling on the month of May.
1573K-1	No	Well is now on Whitworth water - well abandoned.

Table 4-2 Residential Groundwater Monitoring Program Results

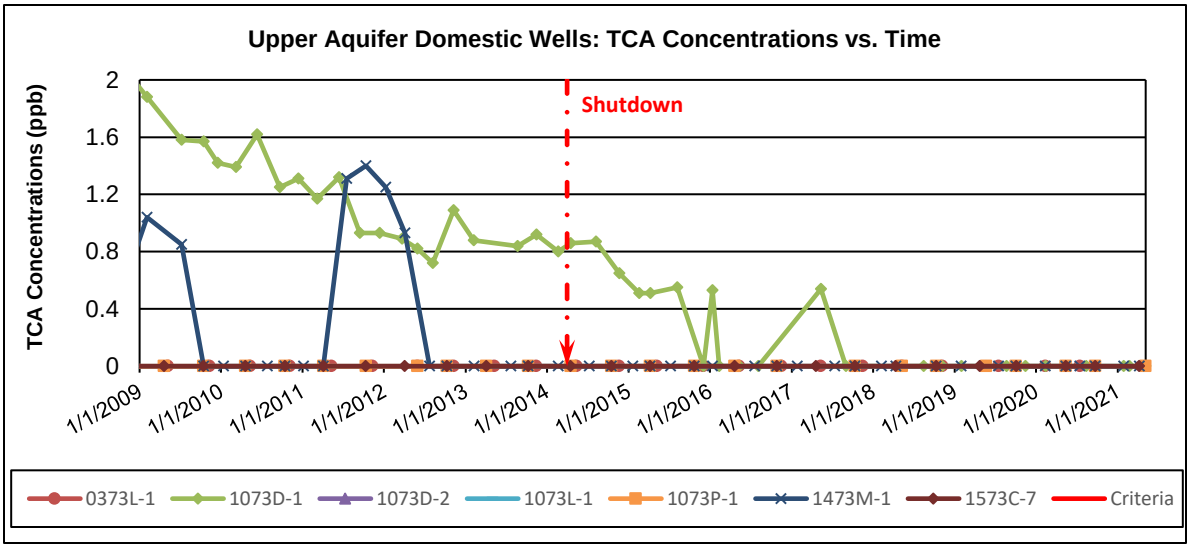
(June 2020 through April 2021)

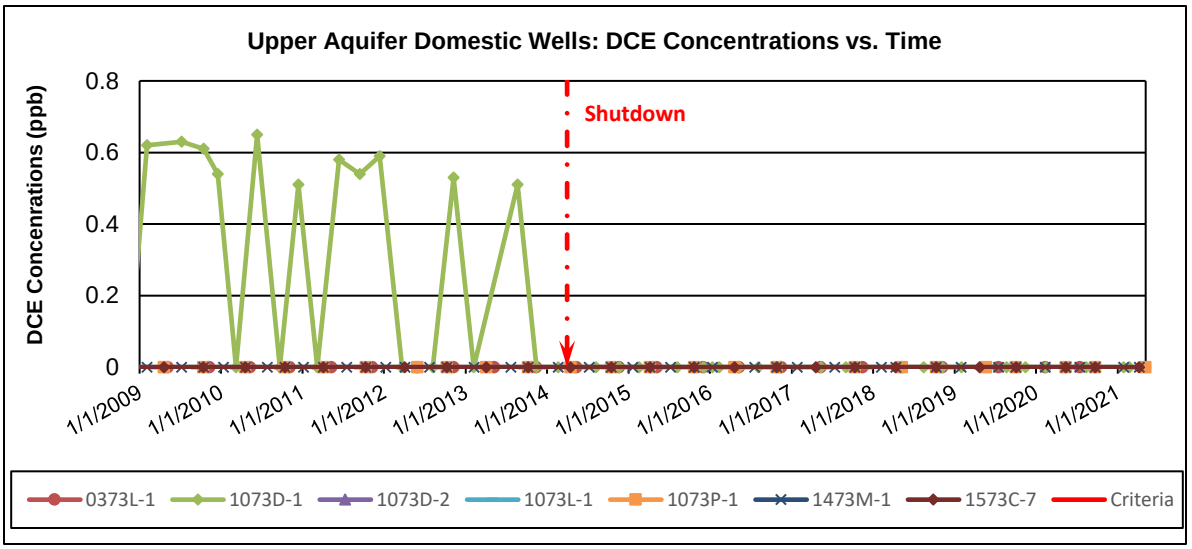
StationID	Aquifer	SampleDate	LastName	DCA	DCE	MC	PCE	TCA	TCE
0273D-6	lower	8/12/2020	Thornton	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
0273F-4	lower	1/27/2021	Gander	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
0373A-2	lower	9/22/2020	Resseman	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
0373A-2	lower	1/27/2021	Resseman	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
0373A-2	lower	3/11/2021	Resseman	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
0373L-1	upper	7/14/2020	Sterling	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073D-1	upper	8/12/2020	Nerren	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073D-1	upper	1/27/2021	Nerren	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073D-1	upper	2/22/2021	Nerren	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073D-1	upper	5/5/2021	Nerren	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-2	upper	7/15/2020	Pullen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-2	upper	9/22/2020	Pullen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-2	upper	1/27/2021	Pullen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-2	upper	4/6/2021	Pullen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-3	upper	8/12/2020	Clark	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-3	upper	1/27/2021	Clark	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-3	upper	2/22/2021	Clark	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-3	upper	5/5/2021	Clark	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073E-4		10/6/2020	Carpenter	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073G-1	lower	9/22/2020	Rux	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073G-1	lower	1/27/2021	Rux	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073G-1	lower	3/11/2021	Rux	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-1	upper	9/21/2020	Halpin	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-1	upper	1/27/2021	Halpin	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-1	upper	3/11/2021	Halpin	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-2	upper	9/21/2020	Countryman	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-2	upper	4/6/2021	Countryman	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-3	upper	8/12/2020	Anderson	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-3	upper	1/27/2021	Anderson	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

1073L-3	upper	2/22/2021	Anderson	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-3	upper	5/5/2021	Anderson	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073L-4	lower	9/21/2020	Thomas	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073M-1	upper	7/15/2020	Bertholf	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073P-1	upper	9/21/2020	Greenen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073P-1	upper	5/4/2021	Greenen	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073P-2	upper	8/12/2020	Petrelli	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073Q-4	lower	7/15/2020	NORTH MEADOWS WATER	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1073Q-4	lower	1/27/2021	NORTH MEADOWS WATER	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1173B-1	lower	1/27/2021	Bise	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473C-5	lower	8/12/2020	Overmyer	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473D-2	upper	8/12/2020	Wardian	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473D-2	upper	1/27/2021	Wardian	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473D-2	upper	2/22/2021	Wardian	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473D-2	upper	5/4/2021	Wardian	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473M-1	upper	7/14/2020	Richard	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473M-1	upper	9/21/2020	Richard	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473M-1	upper	1/27/2021	Richard	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1473M-1	upper	4/7/2021	Richard	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573C-17	lower	4/6/2021	RESIDENT	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573C-5	lower	8/12/2020	Shelp	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573C-7	upper	9/21/2020	Kirby	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573C-7	upper	4/6/2021	Kirby	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573C-8	upper	2/22/2021	Williams	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573H-1	lower	5/4/2021	Hunter	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573Q-1	upper	7/15/2020	Saunder	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
1573R-2	upper	5/4/2021	Hunter	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

***Bold** indicates a value greater than non-detection.

Figure 4-2 Upper Aquifer Residential Wells Concentrations vs Time





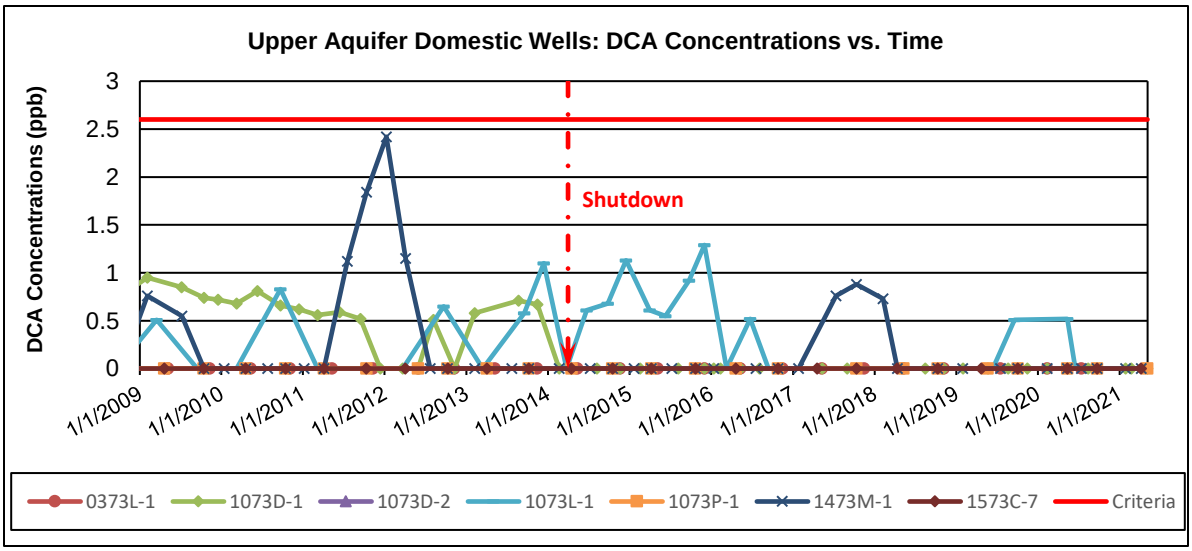
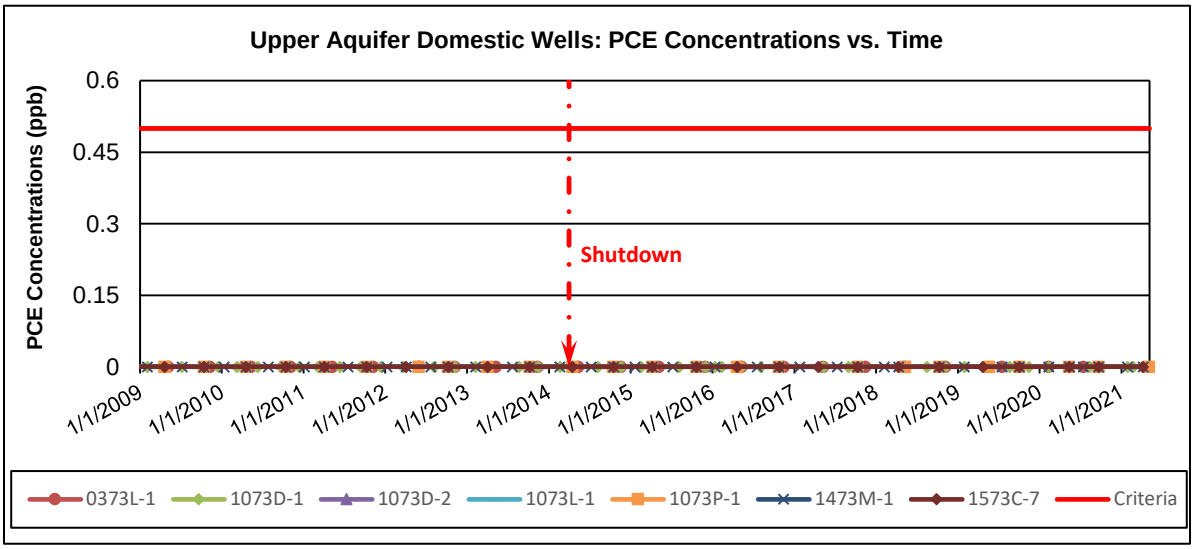


Figure 4-3 Upper Aquifer Residential Wells Concentrations vs Time



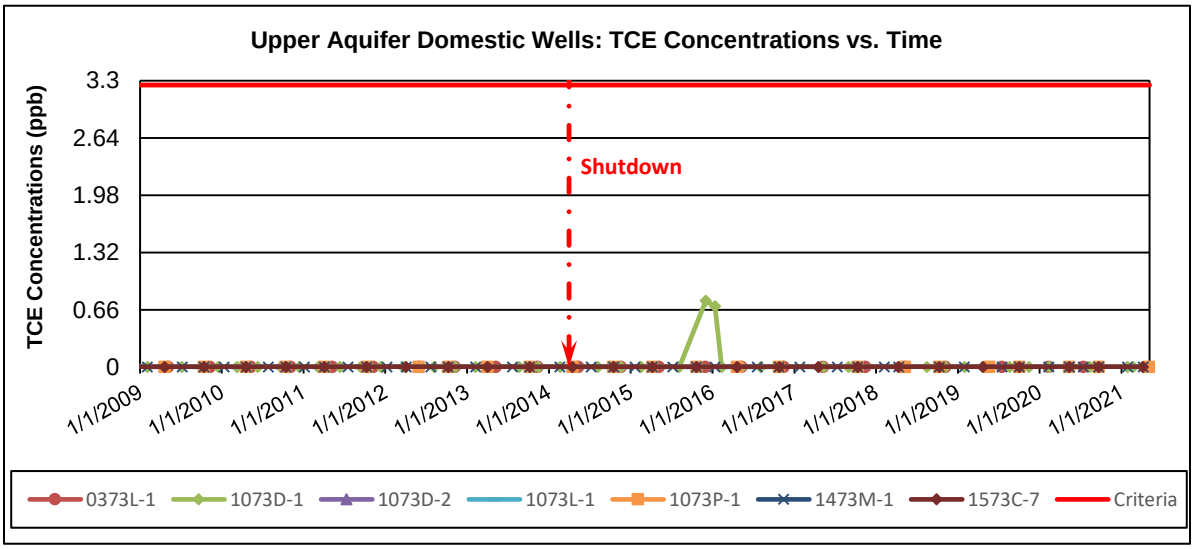
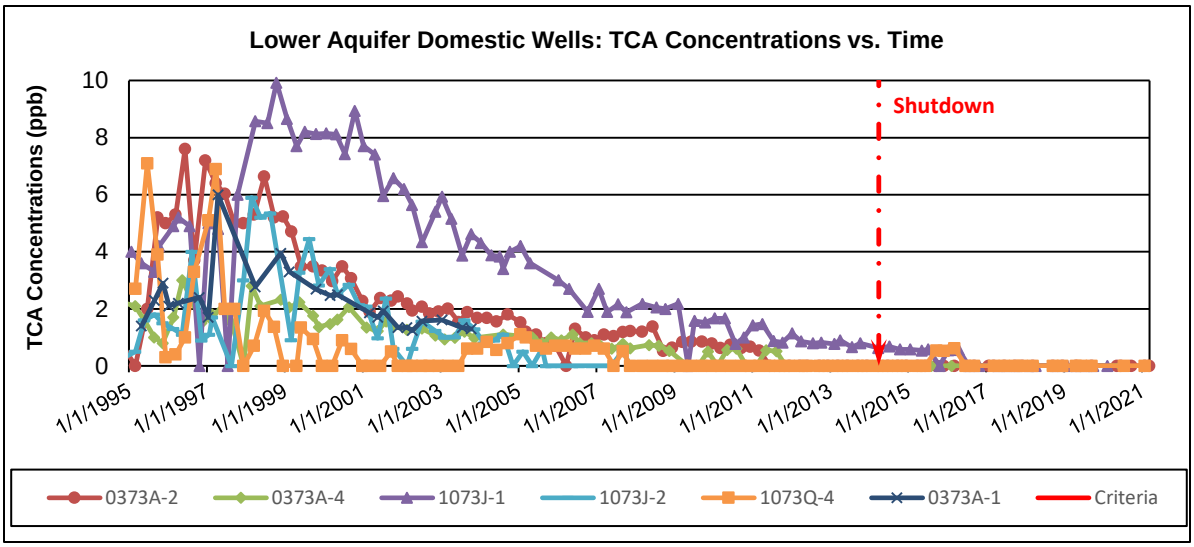
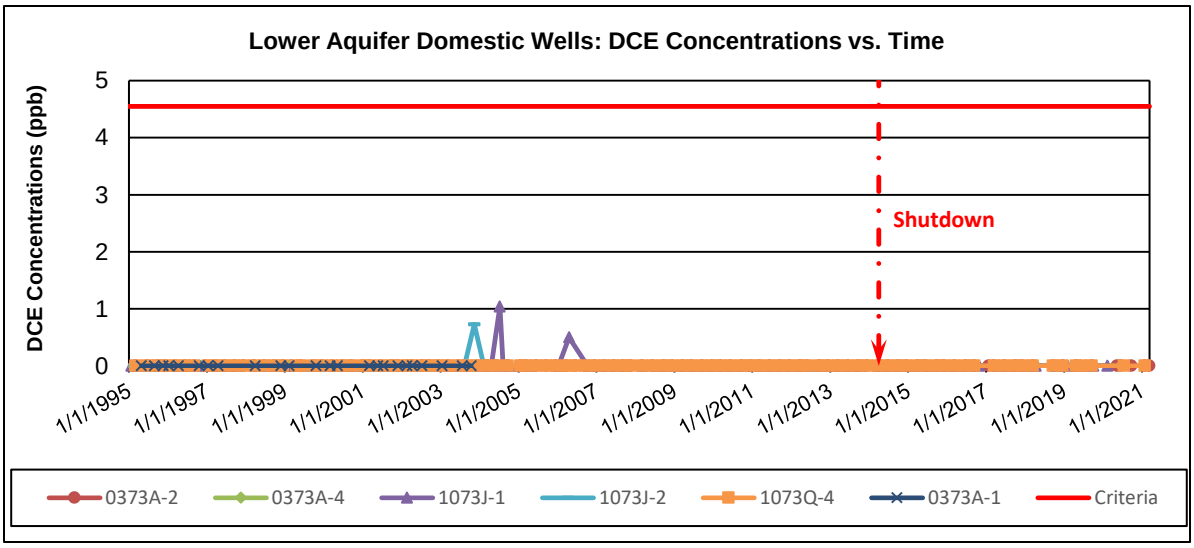


Figure 4-4 Lower Aquifer Residential Wells Concentrations vs Time





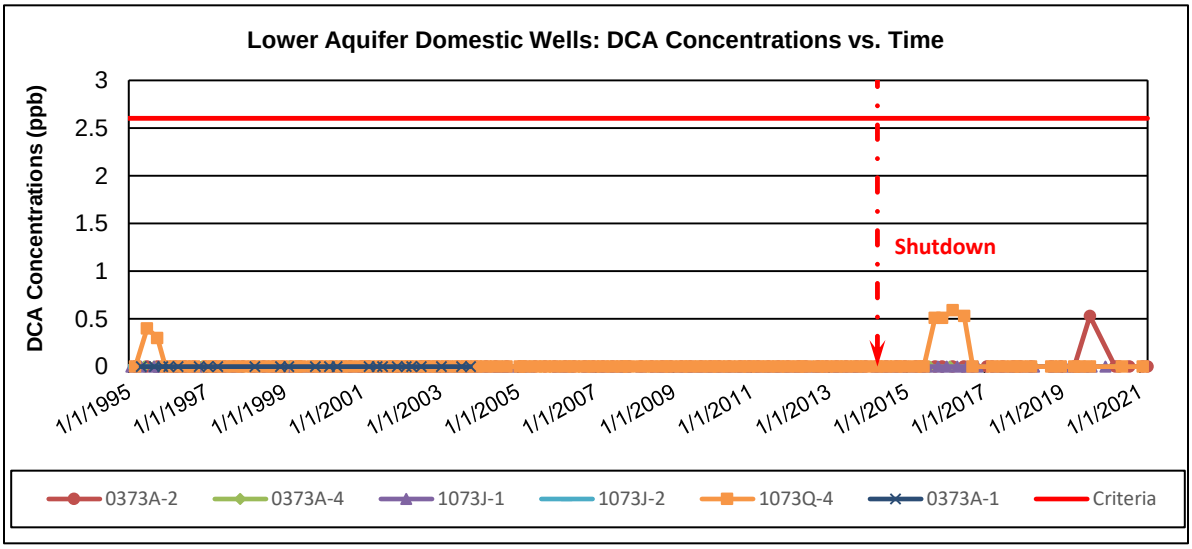
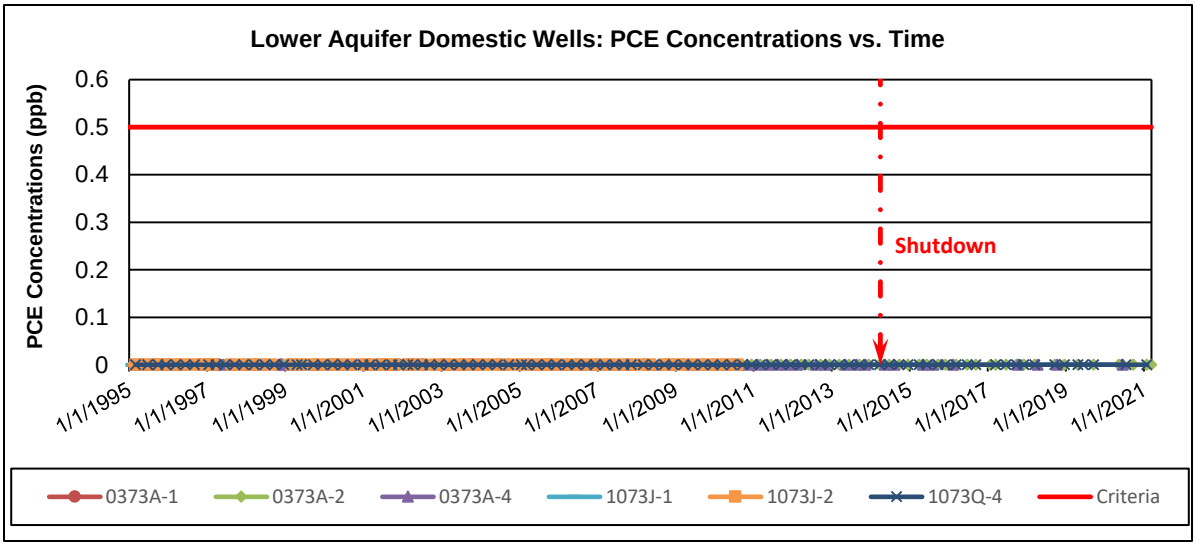
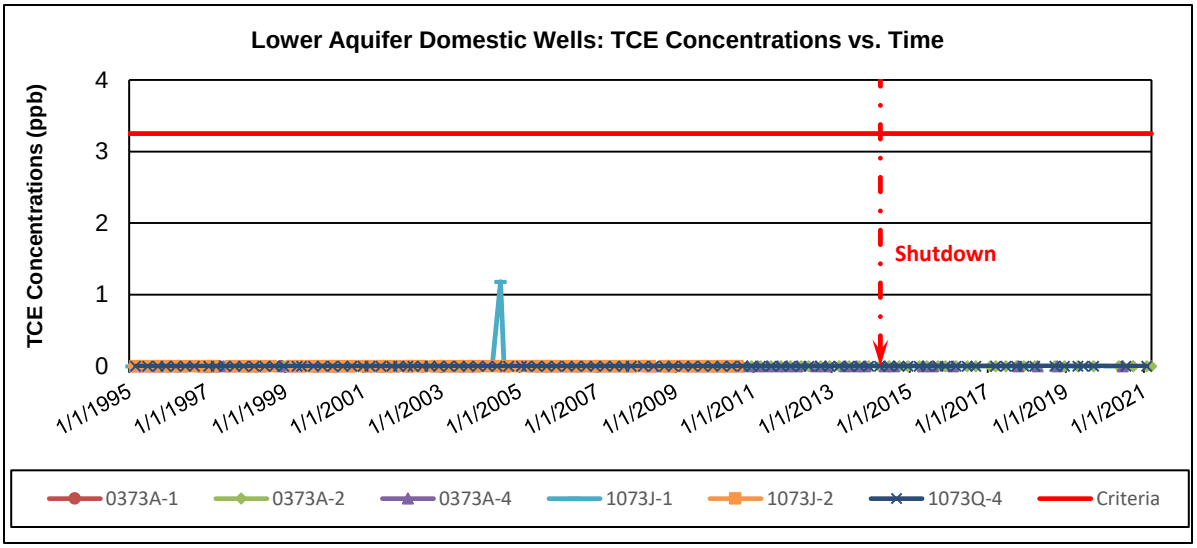


Figure 4-5 Lower Aquifer Residential Wells Concentrations vs Time





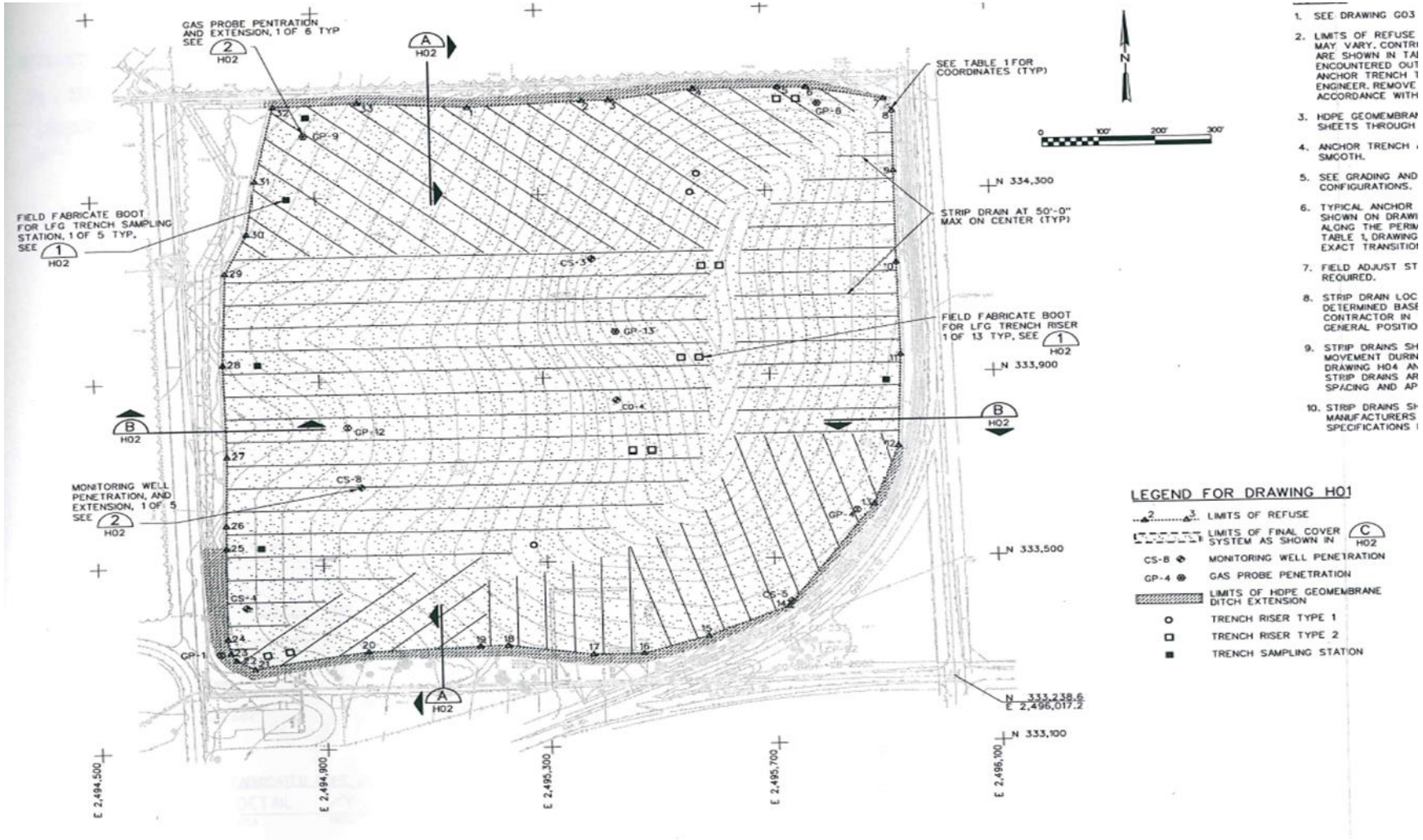
5.0 Colbert Landfill Gas System

5.1 Colbert Landfill Gas Collection System Summary

The landfill gas (LFG) system was installed to prevent off-site gas migration and to prevent build-up of gas pressure. The Colbert Landfill gas collection system uses a combination of interior and perimeter gas collection trenches connected through a main gas manifold. The Colbert Landfill gas collection system is presented in Figure 5-1.

The gas is moved toward the control system with the use of a 15 hp blower (no VFD) at the main facility. Landfill condensate is collected in both an underground storage tank and an above-ground storage tank. The amount of gas collected from each area of the interior and perimeter system is controlled through valve adjustments in the trench riser wellhead assemblies installed in each of the gas collection trenches. The overall amount of vacuum available for gas collection in the manifold is controlled by valve adjustments at the main facility. The gas collection station includes a condensate knockout vessel, a gas exhauster, several carbon adsorber vessels, and an exhaust stack. The landfill gas is passed through the carbon adsorber (granular activated carbon, or GAC) vessels to remove VOC's and is then exhausted out the stack. Monitoring is performed at sample ports before and after the carbon vessels, at each trench riser, and at interior and perimeter gas probes.

Figure 5-1 Colbert Landfill Gas Collection System



5.2 Colbert Landfill Gas Monitoring

Monitoring for gas at the Colbert Landfill is performed at sample ports before and after the carbon vessels, at each trench riser, and at interior and perimeter gas probes. Spokane County personnel perform monthly monitoring at gas probes and the exhaust system, monthly condensate tank level checks, monthly gas fan maintenance (greasing, belt tension adjustments, etc.), and VOC analyses on an annual basis (Method TO-15). TO-15 sampling is typically conducted in the month of August during the reporting period, and was last conducted in August 2020. TO-15 results and the Colbert Landfill Perimeter Gas Probe results/summary are presented in Appendix A. In summary, there are only non-detections or very low concentrations of landfill gas at the perimeter gas probes.

The most recent Carbon vessel change-out was conducted on 2/13/2020, and the following landfill gas monitoring activities were conducted during this reporting period:

- Landfill gas sampling and analysis (Method TO-15) was performed in August 2021.
- Monthly monitoring at gas probes and exhaust system.
- Monthly gas fan maintenance (greasing, belt tension adjustments, etc.)
- Quarterly monitoring of trench risers (June, October, February, and April).

Other notable items include:

A cost-benefit analysis was conducted for the option to switch from the activated carbon gas filtration system to a biofilter system at the Colbert site in the fall of 2017. The practice had been to change out the activated carbon every 6 months, but due to the rising costs of purchasing new carbon material and disposing of the old, the annual cost of this practice had risen to $25,000. Taking into account the higher upfront costs of constructing a biofilter, with lower lifetime costs of this system, we found that the financial break-even point over a 20 year period would be to change out the activated carbon every 1.5 years. In other words, if the activated carbon required changing more frequently than once every 1.5 years, it is financially beneficial to undertake the construction and maintenance of a biofilter system.

From the fall of 2016 to the spring of 2018, Environmental technicians sampled the effluent gas every 3 months for signs of "break-out," or when compounds were no longer adsorbing to the carbon material. TO-15 samples for the study were collected on 12/14/2016, 3/30/2017, 11/21/2017, and 3/21/2018. After a year and a half, the quarterly samples began to show small signs of mal-adsorption, with emissions of just a few compounds still less than De Minimus thresholds. Because of the financial modeling and the quarterly sampling results, the staff feel comfortable with a new plan to change out the activated carbon material once every 1.5 years now instead of the unnecessary 6-month change out.

6.0 Landfill Operations and Maintenance

Spokane County personnel conduct O&M activities in accordance with the Colbert Landfill 1999 O&M Plan. From May 1, 2014 through April 2021, the following O&M activities were conducted at the Colbert Landfill:

- Monthly inspections at the gas probes and exhaust system
- Monthly condensate tank levels/inspections
- Monthly gas fan maintenance (greasing, belt tension adjustments, etc.)
- Quarterly inspections of trench risers (June, October, February and April).
- Cover and ditch weed control was ongoing throughout the growing season.

Additional O&M activities were conducted for the Colbert landfill gas system, landfill cover/settlement marker surveying, and the groundwater extraction system/extraction wells. The Colbert Landfill gas system monitoring and maintenance is described above in section 5.2 Colbert Landfill Gas Monitoring. The landfill cover assessments/settlement marker surveying occur every 2 years, and are described below in section 6.1 Colbert Landfill Settlement. Inspections for the P&T extraction wells are conducted on a quarterly basis. Extraction well inspection reports can be found in Appendix C and include (but are not limited to) the following:

- Sump evaluation: Hi Float Alarm, cleaning, and pertinent notes.
- VFD evaluation: cleaning the filters, inspecting wiring and components.
- Piping evaluation: exercising gate valves, inspect piping, inspect air/vac valve.
- Pit evaluation: inspection for leaks, checking for zero reading(s).
- PCP evaluation: inspecting wiring/relays/comp, checking indicator lights, clean filters.
- Vault evaluation: inspecting ladder bolts/rungs/lower and upper lid bolts.
- Final inspections and other pertinent notes.

All additional relevant operations and maintenance documentation (field notes summarizing field activities and results, field sheets for sampling events within the reporting period, etc.) is presented in Appendix B.

6.1 Colbert Landfill Settlement

- Spokane County installed 10 new settlement markers (CSM10 – CSM19) in June 2019 across several known areas of concern to monitor settlement on the landfill. These settlement markers will be surveyed every 2 years, and will be monitored for any additional settling that might occur on the Colbert landfill.

Figure 6-1: Colbert Landfill Settlement Marker Locations

The last settlement survey that was conducted for the Colbert landfill settlement markers occurred on 5/25/2021. The following table shows the difference in elevation for each settlement marker from 2019 to 2021:

Table 6-1: Settlement Elevation Summary

Settlement Marker ID	Elevation - 2021	Difference in Elevation from 2019		Difference in Elevation from 1999
CSM1	**1863.85**	**-0.020**	▼	-0.093
CSM2	**1865.26**	**-0.011**	▼	-0.063
CSM3	**1875.50**	**-0.034**	▼	-0.184
CSM4	**1869.07**	**-0.024**	▼	-0.252
CSM5	**1856.76**	**-0.012**	▼	-0.101
CSM6	**1857.11**	**-0.008**	▼	-0.328
CSM10	**1860.76**	**-0.053**	▼	N/A
CSM11	**1860.87**	**-0.107**	▼	N/A
CSM12	**1863.12**	**-0.073**	▼	N/A
CSM13	**1860.50**	**-0.148**	▼	N/A
CSM14	**1861.48**	**-0.120**	▼	N/A
CSM15	**1863.34**	**-0.121**	▼	N/A
CSM16	**1684.59**	**-0.062**	▼	N/A
CSM17	**1860.65**	**-0.043**	▼	N/A
CSM18	**1858.08**	**-0.029**	▼	N/A
CSM19	**1856.56**	**-0.024**	▼	N/A

7.0 Institutional Controls

The goal of Spokane County's Institutional Control (IC) Program is to ensure the protection of public health and the environment in the Colbert Landfill Superfund Site vicinity. Institutional Controls are defined as non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human and ecological exposure to contamination and/or protect the integrity of the remedy. Although Spokane County's IC program has proven effective since its implementation, the County created an Institutional Control Implementation and Assurance Plan (ICIAP) in March 2021 to describe the process for recordable and enforceable controls, along with the key strategies to ensure the protection of public health and the environment in the area surrounding the Colbert Landfill. The ICIAP document can be found on the Spokane County Solid Waste website. The County will conduct the following activities to ensure the success of the Institutional Controls program:

- Generate Constituent of Concern (COC) plume maps using geospatial analysis to define plume boundaries/areas of concern.

- Report plume maps/boundaries to the SRHD to establish boundaries and areas of concern regarding potential well drilling. This will ensure that if an individual/organization is interested in drilling a new well or planning a well use change, the SRHD will have boundaries/areas of concern to reference.

- Coordinate with the Spokane Regional Health District (SRHD) to investigate any individuals/ interested in drilling wells or changing a well use in any areas of concern within the annual reporting period timeframe.

- Report plume maps/boundaries to the Washington Department of Ecology (Ecology) to establish boundaries and areas of concern regarding potential well drilling. This will ensure that if an individual/organization applies for a permit to drill a new well or change an established well's use, Ecology will have boundaries/areas of concern to reference.

- Coordinate with Ecology to investigate any individuals/organizations interested in drilling wells or changing a well use in any areas of concern within the annual reporting period timeframe.

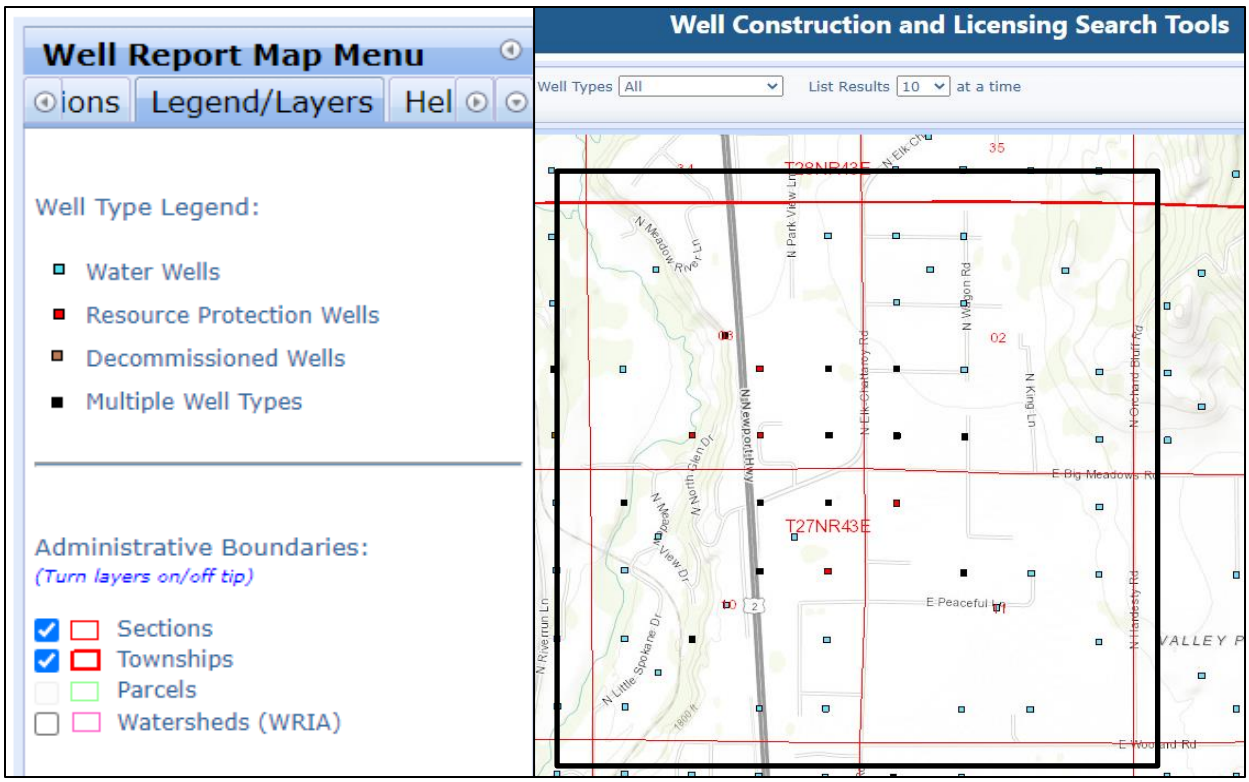
- Utilize the Well Construction and Licensing Search Tools to account for any new or unknown well construction that may have occurred near any areas of concern.

Records of IC Evaluation Activities for 2021

The following activities have been conducted/completed by Spokane County, Washington Department of Ecology, and Spokane Regional Health District personnel:

- Completed the Colbert Landfill ICIAP on March 2021/EPA fully approved the ICIAP document in June 2021.

- Spokane County personnel consulted the contamination plume maps created for 2021 and used the Washington Department of Ecology's Well Construction and Licensing Search Tools to define a search area to evaluate for new well installs/well use changes:



Spokane County personnel reviewed the most recent well data based on the listed well completion date(s), the well report received date, and well type/proximity to the plumes/landfill. The most recent well report that has been received was a domestic well that was completed in 2016 (Well Tag ID BIU890) and appears to be outside of all contamination plume boundaries. These results were equivalent to the annual evaluation conducted in 2020. No additional new well requests/well use changes were discovered in the annual evaluation for 2021. The well reports that had "blank" well completion dates/well report received dates were also investigated, and included wells with the Well Report IDs: 209225 through 209232, 209885, 209896, 209897, 209898, 209899, 294656 through 294669, 294712, and 294713. All of these wells are either Spokane County-owned wells, wells on the Colbert Landfill residential monitoring program, or decommissioned.

- Spokane County personnel sent the 2021 contamination plume maps to the Washington Department of Ecology and the Spokane Regional Health District on 6/15/2021 and inquired about their findings regarding an evaluation for new well requests/well use changes in the Colbert Landfill vicinity. The Washington Department of Ecology evaluated the wells in the area and consulted the Well Drilling Coordinator, and found no new domestic well requests. The Spokane Regional Health District also evaluated the wells in the area and consulted with the Well Inspection and Liquid Waste program, and found no recent well construction activities within the vicinity of the Colbert Landfill.

8.0 References

Landau Associates. 1992. Phase II Remedial Design Remedial Action Colbert Landfill Spokane, Washington *Final Groundwater Monitoring Plan.* August 7.

Landau Associates. 1992. *Quality Assurance Project Plan - Phase II Remedial Design/Remedial Action - Colbert Landfill - Spokane, WA*. February 28.

Landau Associates. 1991. Colbert Landfill Remedial Design Remedial Action Spokane County, Washington *Final Phase I Engineering Report.* December 30.

EPA. 2011. Colbert Landfill Superfund Site Spokane County, Washington. *Remediation System Evaluation*. U.S. Environmental Protection Agency. October 14.

Landau Associates. 1998. *Colbert Landfill Operations and Maintenance Manual*.

Landau Associates. 1996. *MFS Groundwater Monitoring Plan*

Spokane County Utilities/ Landau Assoc. 2013. *Final Work Plan, Groundwater Pump and Treat System Shut-down Test, Colbert Landfill CERCLA Site.*

Spokane County Utilities. 2007.*1,4-Dioxane Work Plan for the Colbert Landfill*

Spokane County Utilities. 1991*. Quality Assurance and Field Sampling Plan-Colbert Residential Well Sampling*

CH2MHill. May 1997*. Operations and Maintenance Manual for Colbert Landfill Closure*

U.S. District Court, Eastern District of Washington. 1988. Consent Decree No. C-89-033-RJM. The Washington State Department of Ecology and The United States of America on behalf of the U.S. Environmental Protection Agency (plaintiffs) v. County of Spokane and Key Tronic Corporation (defendants). February 28.

Appendix A

Colbert Landfill Perimeter Gas Probe and TO-15 Results

eurofins | Air Toxics

Analysis Request /Canister Chain of Custody

For Laboratory Use Only

PID: _____ Workorder #: 2008710

180 Blue Ravine Rd. Suite B, Folsom, CA 95630
Phone (800) 985-5955; Fax (916) 351-8279

page 1 of 1

Client: SPOKANE COUNTY
Project Name: COLBERT LANDFILL
Project Manager: AUSTIN STEWART Project #
Sampler: M. TERRIS
Site Name: COLBERT

Special Instructions/Notes:

Turnaround Time (Rush surcharges may apply)
Standard X Rush _____ (specify)

Lab ID	Field Sample Identification(Location)	Can #	Flow Controller #	Start Sampling Information		Stop Sampling Information		Canister Vacuum/Pressure		Lab Use Only		Requested Analyses			
				Date	Time	Date	Time	Initial (in Hg)	Final (in Hg)	Receipt	Final (psig) Gas: N_2 / He	TO-15			
	CGI-003-200826	N3491	1910	8/26	1115	8/26	1130	28.8	0			/			
DUP	CGE-001-200826	N1805	1912	8/26	1135	8/26	1145	29.0	0			/			

Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
[signature]	8/26/20	1400	[signature] FAT	8/28/20	0927
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time
Relinquished by: (Signature/Affiliation)	Date	Time	Received by: (Signature/Affiliation)	Date	Time

Lab Use Only

Shipper Name: UPS | Custody Seals Intact? (Yes) No None | GOOD

Sample Transportation Notice: Relinquishing signature on this document indicates that samples are shipped in compliance with all applicable local, State, Federal, and international laws, regulations, and ordinances of any kind. Relinquishing signature also indicates agreement to hold harmless, defend, and indemnify Eurofins Air Toxics against any claim, demand, or action, of any kind, related to the collection, handling, of shipping of samples. D.O.T Hotline (800) 467-4922

eurofins | Air Toxics

9/4/2020
Mr. Mike Terris
Spokane County Utilities
22515 N. Elk Chattaroy Road

Colbert WA 99005

Project Name: COLBERT LANDFILL
Project #:
Workorder #: 2008710

Dear Mr. Mike Terris

The following report includes the data for the above referenced project for sample(s) received on 8/28/2020 at Air Toxics Ltd.

The data and associated QC analyzed by TO-15 are compliant with the project requirements or laboratory criteria with the exception of the deviations noted in the attached case narrative.

Thank you for choosing Eurofins Air Toxics Inc. for your air analysis needs. Eurofins Air Toxics Inc. is committed to providing accurate data of the highest quality. Please feel free to contact the Project Manager: Alexandra Winslow at 916-985-1000 if you have any questions regarding the data in this report.

Regards,

Alexandra Winslow

Project Manager

eurofins | Air Toxics

WORK ORDER #: 2008710

Work Order Summary

CLIENT:	Mr. Mike Terris Spokane County Utilities 22515 N. Elk Chattaroy Road Colbert, WA 99005	**BILL TO:**	Mr. Mike Terris Spokane County Utilities 22515 N. Elk Chattaroy Road Colbert, WA 99005
PHONE:	509-238-6607	**P.O. #**	
FAX:	509-238-6812	**PROJECT #**	COLBERT LANDFILL
DATE RECEIVED:	08/28/2020	**CONTACT:**	Alexandra Winslow
DATE COMPLETED:	09/04/2020		

FRACTION #	NAME	TEST	RECEIPT VAC./PRES.	FINAL PRESSURE
01A	CGI-003-200826	TO-15	3.5 "Hg	5 psi
02A	CGE-001-200826	TO-15	3.0 "Hg	5 psi
03A	Lab Blank	TO-15	NA	NA
04A	CCV	TO-15	NA	NA
05A	LCS	TO-15	NA	NA
05AA	LCSD	TO-15	NA	NA

CERTIFIED BY: Heidi Hayes DATE: 09/04/20

Technical Director

Certification numbers: AZ Licensure AZ0775, FL NELAP – E87680, LA NELAP – 02089, NH NELAP - 209219, NJ NELAP - CA016, NY NELAP - 11291, TX NELAP - T104704434-19-14, UT NELAP – CA009332020-12, VA NELAP - 10615, WA NELAP - C935
Name of Accreditation Body: NELAP/ORELAP (Oregon Environmental Laboratory Accreditation Program)
Accreditation number: CA300005-013, Effective date: 10/18/2019, Expiration date: 10/17/2020.
Eurofins Air Toxics, LLC certifies that the test results contained in this report meet all requirements of the NELAC standards

180 BLUE RAVINE ROAD, SUITE B FOLSOM, CA - 95630
(916) 985-1000 . (800) 985-5955 . FAX (916) 351-8279

LABORATORY NARRATIVE
EPA Method TO-15
Spokane County Utilities
Workorder# 2008710

Two 6 Liter Summa Canister samples were received on August 28, 2020. The laboratory performed analysis via EPA Method TO-15 using GC/MS in the full scan mode.

Receiving Notes

There were no receiving discrepancies.

Analytical Notes

Dilution was performed on sample CGI-003-200826 due to matrix interference.

All Quality Control Limit exceedances and affected sample results are noted by flags. Each flag is defined at the bottom of this Case Narrative and on each Sample Result Summary page.

The reporting limit for Styrene was raised from 0.50 ppbv to 0.80 ppbv due to anomalous linearity in the Initial Calibration.

Definition of Data Qualifying Flags

Ten qualifiers may have been used on the data analysis sheets and indicates as follows:

B - Compound present in laboratory blank greater than reporting limit (background subtraction not performed).

J - Estimated value.

E - Exceeds instrument calibration range.

S - Saturated peak.

Q - Exceeds quality control limits.

U - Compound analyzed for but not detected above the reporting limit, LOD, or MDL value. See data page for project specific U-flag definition.

UJ- Non-detected compound associated with low bias in the CCV

N - The identification is based on presumptive evidence.

M - Reported value may be biased due to apparent matrix interferences.

CN - See Case Narrative.

File extensions may have been used on the data analysis sheets and indicates as follows:

a-File was requantified

b-File was quantified by a second column and detector

r1-File was requantified for the purpose of reissue

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: CGI-003-200826

Lab ID#: 2008710-01A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	130	25	630
Freon 114	5.0	28	35	190
Vinyl Chloride	5.0	120	13	310
Chloroethane	20	110	53	290
Freon 11	5.0	15	28	84
1,1-Dichloroethene	5.0	30	20	120
Hexane	5.0	140	18	500
1,1-Dichloroethane	5.0	14	20	57
cis-1,2-Dichloroethene	5.0	150	20	580
Tetrahydrofuran	5.0	63	15	190
Cyclohexane	5.0	68	17	230
2,2,4-Trimethylpentane	5.0	51	24	240
Benzene	5.0	28	16	89
Heptane	5.0	140	21	570
Trichloroethene	5.0	5.1	27	27
Toluene	5.0	21	19	80
Chlorobenzene	5.0	15	23	71
Ethyl Benzene	5.0	430	22	1900
m,p-Xylene	5.0	740	22	3200
o-Xylene	5.0	73	22	320
Cumene	5.0	28	25	140
Propylbenzene	5.0	23	25	110
4-Ethyltoluene	5.0	41	25	200
1,3,5-Trimethylbenzene	5.0	55	25	270
1,2,4-Trimethylbenzene	5.0	140	25	660
1,4-Dichlorobenzene	5.0	31	30	180

Client Sample ID: CGE-001-200826

Lab ID#: 2008710-02A

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.74	150	3.7	760
Freon 114	0.74	48	5.2	330

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Summary of Detected Compounds
EPA METHOD TO-15 GC/MS FULL SCAN

Client Sample ID: CGE-001-200826

Lab ID#: 2008710-02A

Vinyl Chloride	0.74	110	1.9	270
Chloroethane	3.0	120	7.9	310
Freon 11	0.74	0.86	4.2	4.8
Ethanol	3.0	5.0	5.6	9.5
Toluene	0.74	1.4	2.8	5.2
Ethyl Benzene	0.74	3.1	3.2	14
m,p-Xylene	0.74	7.2	3.2	31
o-Xylene	0.74	1.1	3.2	4.6
4-Ethyltoluene	0.74	0.95	3.7	4.6
1,3,5-Trimethylbenzene	0.74	0.86	3.7	4.2
1,2,4-Trimethylbenzene	0.74	3.0	3.7	15
1,4-Dichlorobenzene	0.74	1.0	4.5	6.1

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Client Sample ID: CGI-003-200826

Lab ID#: 2008710-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083132**	**Date of Collection:**	**8/26/20 11:30:00 AM**
Dil. Factor:	**10.1**	**Date of Analysis:**	**9/1/20 03:41 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	5.0	130	25	630
Freon 114	5.0	28	35	190
Chloromethane	50	Not Detected UJ	100	Not Detected UJ
Vinyl Chloride	5.0	120	13	310
1,3-Butadiene	5.0	Not Detected	11	Not Detected
Bromomethane	50	Not Detected	200	Not Detected
Chloroethane	20	110	53	290
Freon 11	5.0	15	28	84
Ethanol	20	Not Detected	38	Not Detected
Freon 113	5.0	Not Detected	39	Not Detected
1,1-Dichloroethene	5.0	30	20	120
Acetone	50	Not Detected	120	Not Detected
2-Propanol	20	Not Detected	50	Not Detected
Carbon Disulfide	20	Not Detected	63	Not Detected
3-Chloropropene	20	Not Detected	63	Not Detected
Methylene Chloride	50	Not Detected	180	Not Detected
Methyl tert-butyl ether	20	Not Detected	73	Not Detected
trans-1,2-Dichloroethene	5.0	Not Detected	20	Not Detected
Hexane	5.0	140	18	500
1,1-Dichloroethane	5.0	14	20	57
2-Butanone (Methyl Ethyl Ketone)	20	Not Detected	60	Not Detected
cis-1,2-Dichloroethene	5.0	150	20	580
Tetrahydrofuran	5.0	63	15	190
Chloroform	5.0	Not Detected	25	Not Detected
1,1,1-Trichloroethane	5.0	Not Detected	28	Not Detected
Cyclohexane	5.0	68	17	230
Carbon Tetrachloride	5.0	Not Detected	32	Not Detected
2,2,4-Trimethylpentane	5.0	51	24	240
Benzene	5.0	28	16	89
1,2-Dichloroethane	5.0	Not Detected	20	Not Detected
Heptane	5.0	140	21	570
Trichloroethene	5.0	5.1	27	27
1,2-Dichloropropane	5.0	Not Detected	23	Not Detected
1,4-Dioxane	20	Not Detected	73	Not Detected
Bromodichloromethane	5.0	Not Detected	34	Not Detected
cis-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
4-Methyl-2-pentanone	5.0	Not Detected	21	Not Detected
Toluene	5.0	21	19	80
trans-1,3-Dichloropropene	5.0	Not Detected	23	Not Detected
1,1,2-Trichloroethane	5.0	Not Detected	28	Not Detected
Tetrachloroethene	5.0	Not Detected	34	Not Detected
2-Hexanone	20	Not Detected	83	Not Detected

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Client Sample ID: CGI-003-200826

Lab ID#: 2008710-01A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083132**	**Date of Collection:**	**8/26/20 11:30:00 AM**
Dil. Factor:	**10.1**	**Date of Analysis:**	**9/1/20 03:41 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	5.0	Not Detected	43	Not Detected
1,2-Dibromoethane (EDB)	5.0	Not Detected	39	Not Detected
Chlorobenzene	5.0	15	23	71
Ethyl Benzene	5.0	430	22	1900
m,p-Xylene	5.0	740	22	3200
o-Xylene	5.0	73	22	320
Styrene	8.1	Not Detected	34	Not Detected
Bromoform	5.0	Not Detected	52	Not Detected
Cumene	5.0	28	25	140
1,1,2,2-Tetrachloroethane	5.0	Not Detected	35	Not Detected
Propylbenzene	5.0	23	25	110
4-Ethyltoluene	5.0	41	25	200
1,3,5-Trimethylbenzene	5.0	55	25	270
1,2,4-Trimethylbenzene	5.0	140	25	660
1,3-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,4-Dichlorobenzene	5.0	31	30	180
alpha-Chlorotoluene	5.0	Not Detected	26	Not Detected
1,2-Dichlorobenzene	5.0	Not Detected	30	Not Detected
1,2,4-Trichlorobenzene	20	Not Detected	150	Not Detected
Hexachlorobutadiene	20	Not Detected	220	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	88	70-130

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Client Sample ID: CGE-001-200826

Lab ID#: 2008710-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083130**	**Date of Collection:**	**8/26/20 11:45:00 AM**
Dil. Factor:	**1.49**	**Date of Analysis:**	**9/1/20 02:44 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.74	150	3.7	760
Freon 114	0.74	48	5.2	330
Chloromethane	7.4	Not Detected UJ	15	Not Detected UJ
Vinyl Chloride	0.74	110	1.9	270
1,3-Butadiene	0.74	Not Detected	1.6	Not Detected
Bromomethane	7.4	Not Detected	29	Not Detected
Chloroethane	3.0	120	7.9	310
Freon 11	0.74	0.86	4.2	4.8
Ethanol	3.0	5.0	5.6	9.5
Freon 113	0.74	Not Detected	5.7	Not Detected
1,1-Dichloroethene	0.74	Not Detected	3.0	Not Detected
Acetone	7.4	Not Detected	18	Not Detected
2-Propanol	3.0	Not Detected	7.3	Not Detected
Carbon Disulfide	3.0	Not Detected	9.3	Not Detected
3-Chloropropene	3.0	Not Detected	9.3	Not Detected
Methylene Chloride	7.4	Not Detected	26	Not Detected
Methyl tert-butyl ether	3.0	Not Detected	11	Not Detected
trans-1,2-Dichloroethene	0.74	Not Detected	3.0	Not Detected
Hexane	0.74	Not Detected	2.6	Not Detected
1,1-Dichloroethane	0.74	Not Detected	3.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	3.0	Not Detected	8.8	Not Detected
cis-1,2-Dichloroethene	0.74	Not Detected	3.0	Not Detected
Tetrahydrofuran	0.74	Not Detected	2.2	Not Detected
Chloroform	0.74	Not Detected	3.6	Not Detected
1,1,1-Trichloroethane	0.74	Not Detected	4.1	Not Detected
Cyclohexane	0.74	Not Detected	2.6	Not Detected
Carbon Tetrachloride	0.74	Not Detected	4.7	Not Detected
2,2,4-Trimethylpentane	0.74	Not Detected	3.5	Not Detected
Benzene	0.74	Not Detected	2.4	Not Detected
1,2-Dichloroethane	0.74	Not Detected	3.0	Not Detected
Heptane	0.74	Not Detected	3.0	Not Detected
Trichloroethene	0.74	Not Detected	4.0	Not Detected
1,2-Dichloropropane	0.74	Not Detected	3.4	Not Detected
1,4-Dioxane	3.0	Not Detected	11	Not Detected
Bromodichloromethane	0.74	Not Detected	5.0	Not Detected
cis-1,3-Dichloropropene	0.74	Not Detected	3.4	Not Detected
4-Methyl-2-pentanone	0.74	Not Detected	3.0	Not Detected
Toluene	0.74	1.4	2.8	5.2
trans-1,3-Dichloropropene	0.74	Not Detected	3.4	Not Detected
1,1,2-Trichloroethane	0.74	Not Detected	4.1	Not Detected
Tetrachloroethene	0.74	Not Detected	5.0	Not Detected
2-Hexanone	3.0	Not Detected	12	Not Detected

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Client Sample ID: CGE-001-200826

Lab ID#: 2008710-02A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083130**	**Date of Collection:**	**8/26/20 11:45:00 AM**
Dil. Factor:	**1.49**	**Date of Analysis:**	**9/1/20 02:44 AM**

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.74	Not Detected	6.3	Not Detected
1,2-Dibromoethane (EDB)	0.74	Not Detected	5.7	Not Detected
Chlorobenzene	0.74	Not Detected	3.4	Not Detected
Ethyl Benzene	0.74	3.1	3.2	14
m,p-Xylene	0.74	7.2	3.2	31
o-Xylene	0.74	1.1	3.2	4.6
Styrene	1.2	Not Detected	5.1	Not Detected
Bromoform	0.74	Not Detected	7.7	Not Detected
Cumene	0.74	Not Detected	3.7	Not Detected
1,1,2,2-Tetrachloroethane	0.74	Not Detected	5.1	Not Detected
Propylbenzene	0.74	Not Detected	3.7	Not Detected
4-Ethyltoluene	0.74	0.95	3.7	4.6
1,3,5-Trimethylbenzene	0.74	0.86	3.7	4.2
1,2,4-Trimethylbenzene	0.74	3.0	3.7	15
1,3-Dichlorobenzene	0.74	Not Detected	4.5	Not Detected
1,4-Dichlorobenzene	0.74	1.0	4.5	6.1
alpha-Chlorotoluene	0.74	Not Detected	3.8	Not Detected
1,2-Dichlorobenzene	0.74	Not Detected	4.5	Not Detected
1,2,4-Trichlorobenzene	3.0	Not Detected	22	Not Detected
Hexachlorobutadiene	3.0	Not Detected	32	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: 6 Liter Summa Canister

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	89	70-130
4-Bromofluorobenzene	89	70-130

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Client Sample ID: Lab Blank

Lab ID#: 2008710-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083111f**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 03:03 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Freon 12	0.50	Not Detected	2.5	Not Detected
Freon 114	0.50	Not Detected	3.5	Not Detected
Chloromethane	5.0	Not Detected UJ	10	Not Detected UJ
Vinyl Chloride	0.50	Not Detected	1.3	Not Detected
1,3-Butadiene	0.50	Not Detected	1.1	Not Detected
Bromomethane	5.0	Not Detected	19	Not Detected
Chloroethane	2.0	Not Detected	5.3	Not Detected
Freon 11	0.50	Not Detected	2.8	Not Detected
Ethanol	2.0	Not Detected	3.8	Not Detected
Freon 113	0.50	Not Detected	3.8	Not Detected
1,1-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Acetone	5.0	Not Detected	12	Not Detected
2-Propanol	2.0	Not Detected	4.9	Not Detected
Carbon Disulfide	2.0	Not Detected	6.2	Not Detected
3-Chloropropene	2.0	Not Detected	6.3	Not Detected
Methylene Chloride	5.0	Not Detected	17	Not Detected
Methyl tert-butyl ether	2.0	Not Detected	7.2	Not Detected
trans-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Hexane	0.50	Not Detected	1.8	Not Detected
1,1-Dichloroethane	0.50	Not Detected	2.0	Not Detected
2-Butanone (Methyl Ethyl Ketone)	2.0	Not Detected	5.9	Not Detected
cis-1,2-Dichloroethene	0.50	Not Detected	2.0	Not Detected
Tetrahydrofuran	0.50	Not Detected	1.5	Not Detected
Chloroform	0.50	Not Detected	2.4	Not Detected
1,1,1-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Cyclohexane	0.50	Not Detected	1.7	Not Detected
Carbon Tetrachloride	0.50	Not Detected	3.1	Not Detected
2,2,4-Trimethylpentane	0.50	Not Detected	2.3	Not Detected
Benzene	0.50	Not Detected	1.6	Not Detected
1,2-Dichloroethane	0.50	Not Detected	2.0	Not Detected
Heptane	0.50	Not Detected	2.0	Not Detected
Trichloroethene	0.50	Not Detected	2.7	Not Detected
1,2-Dichloropropane	0.50	Not Detected	2.3	Not Detected
1,4-Dioxane	2.0	Not Detected	7.2	Not Detected
Bromodichloromethane	0.50	Not Detected	3.4	Not Detected
cis-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
4-Methyl-2-pentanone	0.50	Not Detected	2.0	Not Detected
Toluene	0.50	Not Detected	1.9	Not Detected
trans-1,3-Dichloropropene	0.50	Not Detected	2.3	Not Detected
1,1,2-Trichloroethane	0.50	Not Detected	2.7	Not Detected
Tetrachloroethene	0.50	Not Detected	3.4	Not Detected
2-Hexanone	2.0	Not Detected	8.2	Not Detected

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Client Sample ID: Lab Blank

Lab ID#: 2008710-03A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083111f**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 03:03 PM**	

Compound	Rpt. Limit (ppbv)	Amount (ppbv)	Rpt. Limit (ug/m3)	Amount (ug/m3)
Dibromochloromethane	0.50	Not Detected	4.2	Not Detected
1,2-Dibromoethane (EDB)	0.50	Not Detected	3.8	Not Detected
Chlorobenzene	0.50	Not Detected	2.3	Not Detected
Ethyl Benzene	0.50	Not Detected	2.2	Not Detected
m,p-Xylene	0.50	Not Detected	2.2	Not Detected
o-Xylene	0.50	Not Detected	2.2	Not Detected
Styrene	0.80	Not Detected	3.4	Not Detected
Bromoform	0.50	Not Detected	5.2	Not Detected
Cumene	0.50	Not Detected	2.4	Not Detected
1,1,2,2-Tetrachloroethane	0.50	Not Detected	3.4	Not Detected
Propylbenzene	0.50	Not Detected	2.4	Not Detected
4-Ethyltoluene	0.50	Not Detected	2.4	Not Detected
1,3,5-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,2,4-Trimethylbenzene	0.50	Not Detected	2.4	Not Detected
1,3-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,4-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
alpha-Chlorotoluene	0.50	Not Detected	2.6	Not Detected
1,2-Dichlorobenzene	0.50	Not Detected	3.0	Not Detected
1,2,4-Trichlorobenzene	2.0	Not Detected	15	Not Detected
Hexachlorobutadiene	2.0	Not Detected	21	Not Detected

UJ = Analyte associated with low bias in the CCV.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	101	70-130
1,2-Dichloroethane-d4	94	70-130
4-Bromofluorobenzene	84	70-130

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Client Sample ID: CCV

Lab ID#: 2008710-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083106**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 11:41 AM**	

Compound	%Recovery
Freon 12	98
Freon 114	99
Chloromethane	60 Q
Vinyl Chloride	117
1,3-Butadiene	125
Bromomethane	109
Chloroethane	127
Freon 11	86
Ethanol	123
Freon 113	94
1,1-Dichloroethene	116
Acetone	104
2-Propanol	115
Carbon Disulfide	121
3-Chloropropene	121
Methylene Chloride	113
Methyl tert-butyl ether	101
trans-1,2-Dichloroethene	112
Hexane	119
1,1-Dichloroethane	118
2-Butanone (Methyl Ethyl Ketone)	122
cis-1,2-Dichloroethene	121
Tetrahydrofuran	119
Chloroform	105
1,1,1-Trichloroethane	82
Cyclohexane	112
Carbon Tetrachloride	82
2,2,4-Trimethylpentane	107
Benzene	121
1,2-Dichloroethane	93
Heptane	130
Trichloroethene	111
1,2-Dichloropropane	120
1,4-Dioxane	116
Bromodichloromethane	99
cis-1,3-Dichloropropene	119
4-Methyl-2-pentanone	115
Toluene	111
trans-1,3-Dichloropropene	113
1,1,2-Trichloroethane	110
Tetrachloroethene	97
2-Hexanone	124

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Client Sample ID: CCV

Lab ID#: 2008710-04A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083106**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 11:41 AM**	

Compound	%Recovery
Dibromochloromethane	101
1,2-Dibromoethane (EDB)	112
Chlorobenzene	112
Ethyl Benzene	114
m,p-Xylene	115
o-Xylene	112
Styrene	122
Bromoform	90
Cumene	109
1,1,2,2-Tetrachloroethane	115
Propylbenzene	108
4-Ethyltoluene	107
1,3,5-Trimethylbenzene	106
1,2,4-Trimethylbenzene	103
1,3-Dichlorobenzene	96
1,4-Dichlorobenzene	98
alpha-Chlorotoluene	101
1,2-Dichlorobenzene	92
1,2,4-Trichlorobenzene	92
Hexachlorobutadiene	82

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	100	70-130
1,2-Dichloroethane-d4	82	70-130
4-Bromofluorobenzene	87	70-130

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Client Sample ID: LCS

Lab ID#: 2008710-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 09:34 AM**	

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	96	70-130
Chloromethane	118	70-130
Vinyl Chloride	110	70-130
1,3-Butadiene	121	70-130
Bromomethane	123	70-130
Chloroethane	114	70-130
Freon 11	82	70-130
Ethanol	102	70-130
Freon 113	92	70-130
1,1-Dichloroethene	108	70-130
Acetone	98	70-130
2-Propanol	112	70-130
Carbon Disulfide	105	70-130
3-Chloropropene	114	70-130
Methylene Chloride	98	70-130
Methyl tert-butyl ether	97	70-130
trans-1,2-Dichloroethene	96	70-130
Hexane	111	70-130
1,1-Dichloroethane	110	70-130
2-Butanone (Methyl Ethyl Ketone)	110	70-130
cis-1,2-Dichloroethene	123	70-130
Tetrahydrofuran	110	70-130
Chloroform	101	70-130
1,1,1-Trichloroethane	81	70-130
Cyclohexane	104	70-130
Carbon Tetrachloride	88	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	106	70-130
1,2-Dichloroethane	88	70-130
Heptane	121	70-130
Trichloroethene	99	70-130
1,2-Dichloropropane	115	70-130
1,4-Dioxane	118	70-130
Bromodichloromethane	96	70-130
cis-1,3-Dichloropropene	112	70-130
4-Methyl-2-pentanone	112	70-130
Toluene	108	70-130
trans-1,3-Dichloropropene	107	70-130
1,1,2-Trichloroethane	100	70-130
Tetrachloroethene	95	70-130
2-Hexanone	122	70-130

eurofins | Air Toxics

Client Sample ID: LCS

Lab ID#: 2008710-05A

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083103**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 09:34 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	95	70-130
1,2-Dibromoethane (EDB)	104	70-130
Chlorobenzene	104	70-130
Ethyl Benzene	108	70-130
m,p-Xylene	105	70-130
o-Xylene	104	70-130
Styrene	118	70-130
Bromoform	89	70-130
Cumene	103	70-130
1,1,2,2-Tetrachloroethane	108	70-130
Propylbenzene	99	70-130
4-Ethyltoluene	102	70-130
1,3,5-Trimethylbenzene	104	70-130
1,2,4-Trimethylbenzene	99	70-130
1,3-Dichlorobenzene	91	70-130
1,4-Dichlorobenzene	92	70-130
alpha-Chlorotoluene	94	70-130
1,2-Dichlorobenzene	91	70-130
1,2,4-Trichlorobenzene	72	70-130
Hexachlorobutadiene	68 Q	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	102	70-130
1,2-Dichloroethane-d4	81	70-130
4-Bromofluorobenzene	89	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2008710-05AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 10:02 AM**	

Compound	%Recovery	Method Limits
Freon 12	91	70-130
Freon 114	92	70-130
Chloromethane	117	70-130
Vinyl Chloride	111	70-130
1,3-Butadiene	122	70-130
Bromomethane	121	70-130
Chloroethane	117	70-130
Freon 11	80	70-130
Ethanol	110	70-130
Freon 113	92	70-130
1,1-Dichloroethene	108	70-130
Acetone	96	70-130
2-Propanol	110	70-130
Carbon Disulfide	107	70-130
3-Chloropropene	114	70-130
Methylene Chloride	104	70-130
Methyl tert-butyl ether	95	70-130
trans-1,2-Dichloroethene	94	70-130
Hexane	110	70-130
1,1-Dichloroethane	112	70-130
2-Butanone (Methyl Ethyl Ketone)	110	70-130
cis-1,2-Dichloroethene	122	70-130
Tetrahydrofuran	112	70-130
Chloroform	100	70-130
1,1,1-Trichloroethane	82	70-130
Cyclohexane	107	70-130
Carbon Tetrachloride	87	70-130
2,2,4-Trimethylpentane	104	70-130
Benzene	113	70-130
1,2-Dichloroethane	88	70-130
Heptane	123	70-130
Trichloroethene	104	70-130
1,2-Dichloropropane	114	70-130
1,4-Dioxane	120	70-130
Bromodichloromethane	95	70-130
cis-1,3-Dichloropropene	115	70-130
4-Methyl-2-pentanone	118	70-130
Toluene	107	70-130
trans-1,3-Dichloropropene	106	70-130
1,1,2-Trichloroethane	105	70-130
Tetrachloroethene	98	70-130
2-Hexanone	131 Q	70-130

eurofins | Air Toxics

Client Sample ID: LCSD

Lab ID#: 2008710-05AA

EPA METHOD TO-15 GC/MS FULL SCAN

File Name:	**p083104**	**Date of Collection: NA**	
Dil. Factor:	**1.00**	**Date of Analysis: 8/31/20 10:02 AM**	

Compound	%Recovery	Method Limits
Dibromochloromethane	99	70-130
1,2-Dibromoethane (EDB)	108	70-130
Chlorobenzene	105	70-130
Ethyl Benzene	101	70-130
m,p-Xylene	108	70-130
o-Xylene	111	70-130
Styrene	124	70-130
Bromoform	92	70-130
Cumene	108	70-130
1,1,2,2-Tetrachloroethane	115	70-130
Propylbenzene	105	70-130
4-Ethyltoluene	105	70-130
1,3,5-Trimethylbenzene	108	70-130
1,2,4-Trimethylbenzene	103	70-130
1,3-Dichlorobenzene	95	70-130
1,4-Dichlorobenzene	96	70-130
alpha-Chlorotoluene	98	70-130
1,2-Dichlorobenzene	96	70-130
1,2,4-Trichlorobenzene	70	70-130
Hexachlorobutadiene	70	70-130

Q = Exceeds Quality Control limits.

Container Type: NA - Not Applicable

Surrogates	%Recovery	Method Limits
Toluene-d8	99	70-130
1,2-Dichloroethane-d4	83	70-130
4-Bromofluorobenzene	87	70-130

CARBON TUB INFORMATION

(THURS)

DATE:	8/27/20
FAN HOURS:	45085
FAN FLOW:	52 CFM
GAS TEMP:	23.8°C
INLET TUBE READ:	—

DIRECTIONS

- CURRENTLY ACTIVE
- SPENT
- WAS ACTIVE, NOW SPENT AND TAKEN OFFLINE
- NEWLY ACTIVE
- CLEAN

	TUB 1	TUB 2	TUB 3	TUB 4
STATUS BEFORE CHANGES:	●	●	●	↑
TUBE READINGS:				
PRESSURE:				

	TUB 1	TUB 2	TUB 3	TUB 4
STATUS AFTER CHANGES:	○	○	○	↑
TUBE READINGS:				
PRESSURE:	(OFF LINE) ↑		(ON LINE) ↑	

COMMENTS: EVOQUA WAS OUT TODAY TO CLEAN 3 CARBON UNITS (#1, #2 & #3) UNITS 1 & 2 WERE OFF LINE. MT TOOK CARBON UNIT 3 OF LINE TO BE CLEANED THEN PUT BACK ON LINE W/ VALVES STILL CLOSED.

SO AS OF TODAY TUB #4 IS STILL ON LINE & ACTIVE VALVES OPEN, TUB #3 IS ON LINE AS A BACK-UP VALVES CLOSED. TUBS #1 & #2 ARE CLEAN OFF LINE.

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 29.98

Tech: MT **Calibration:** zeroed CH4 to AB air->CALGAS CH4 reading 14.9 cal to 15.0%; CO2 reading 15.1 cal to 15.0%; zeroed O2 to CALGAS-> O2 reading 20.5 AB air cal to 20.9% **FanFlow:** 54 **Weather** Partly cloudy 80's

Equipment: Gem 500 #410

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0001L	6/4/2021		0	2.9	16.6	80.5	0	0	
CGP0001L	3/18/2021		0	3	16.5	80.5	0	0	
CGP0001L	2/8/2021		0	2.5	7.1	89.8	0	0	
CGP0001L	8/27/2020		0	2.3	17.4	80.3	0	-0.01	
CGP0001L	9/25/2020		0	2.4	17.3	80.3	0	0	
CGP0001L	10/1/2020		0	4.3	14.9	81	0	-0.01	
CGP0001L	5/21/2021		0	3.1	6.6	90.3	0	-0.01	
CGP0001L	12/18/2020		0	2.8	17.1	81	0	0	
CGP0001L	7/14/2020		0	2.9	9.9	87.2	0	0	
CGP0001U	12/18/2020		0	6.9	7.2	85.9	0	0	
CGP0001U	11/18/2020		0	2.6	6.1	91.3	0	-0.01	
CGP0001U	7/14/2020		0	2.1	6.1	91.8	0	0.01	
CGP0001U	1/29/2021		0	1.3	7	91.7	0	-0.01	
CGP0001U	5/21/2021		0	6.3	4.7	89	0	0	
CGP0001U	10/1/2020		0	6	7.7	85.9	0	0	
CGP0001U	9/25/2020		0	2.9	6.9	90.2	0	0	
CGP0001U	4/21/2021		0	5.1	4.8	90.1	0	0	
CGP0001U	3/18/2021		0	5.9	5.9	88.2	0	0	
CGP0001U	2/8/2021		0	3.3	6.9	89.8	0	0	
CGP0001U	8/27/2020		0	3	7	90	0	-0.02	
CGP0001U	6/4/2021		0	6.1	5.7	88.2	0	0	
CGP0002L	3/18/2021		0	5.2	6.9	87.9	0	0	
CGP0002L	12/18/2020		0	7	7.1	85.9	0	-0.01	
CGP0002L	1/29/2021		0	7.2	5	87.8	0	0	
CGP0002L	5/21/2021		0	7.9	4.8	87.3	0	0	
CGP0002L	10/1/2020		0	5.9	8	85.8	0	0	
CGP0002L	6/4/2021		0	5.6	6.5	87.9	0	0	
CGP0002L	9/25/2020		0	5.5	5.5	89	0	0	
CGP0002L	7/14/2020		0	5.9	5.7	88.4	0	-0.02	
CGP0002L	4/21/2021		0	6.3	4.8	88.9	0	0	
CGP0002L	2/8/2021		0	5.5	5.9	88.6	0	-0.01	

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 0

Tech: **Calibration:** **FanFlow:** 0 **Weather**

Equipment:

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0002L	11/18/2020		0	7.2	4.8	88	0	-0.04	
CGP0002L	8/27/2020		0	5.3	6	88.7	0	0	
CGP0002U	6/4/2021		0	1.4	19.2	79.4	0	-0.01	
CGP0002U	12/18/2020		0	1.9	19	79.1	0	0	
CGP0002U	7/14/2020		0	1.5	11.1	87.4	0	-0.01	
CGP0002U	11/18/2020		0	6.4	4.4	89.2	0	0	
CGP0002U	4/21/2021		0	1.5	6.6	91.9	0	0	
CGP0002U	1/29/2021		0	1.2	7.2	91.6	0	0	
CGP0002U	5/21/2021		0	2.3	7	90.7	0	0	
CGP0002U	10/1/2020		0	1.7	19.2	79.1	0	0	
CGP0002U	9/25/2020		0	1.3	18.8	79.9	0	0	
CGP0002U	8/27/2020		0	1.1	18.9	80	0	0	
CGP0002U	2/8/2021		0	1.2	11.1	87.7	0	-0.01	
CGP0002U	3/18/2021		0	1.2	19.4	79.4	0	-0.02	
CGP0003L	4/21/2021		0	8.8	3.6	87.6	0	0	
CGP0003L	3/18/2021		0	7.9	5.6	86.5	0	-0.01	
CGP0003L	11/18/2020		0	2.4	6.6	91	0	-0.02	
CGP0003L	10/1/2020		0	9.1	6.2	85	0	0	
CGP0003L	12/18/2020		0	9.4	5.6	85	0	0	
CGP0003L	1/29/2021		0	9.7	3.9	86.4	0	-0.01	
CGP0003L	9/25/2020		0	8.1	5.5	86.4	0	-0.02	
CGP0003L	6/4/2021		0	8.1	5.4	86.5	0	-0.01	
CGP0003L	8/27/2020		0	7.9	5.1	87	0	-0.03	
CGP0003L	7/14/2020		0	8.1	4.4	87.5	0	0	
CGP0003L	5/21/2021		0	9.3	4.2	86.5	0	0	
CGP0003L	2/8/2021		0	9	5.1	85.9	0	0	
CGP0003U	7/14/2020		0	2	17.2	80.8	0	0	
CGP0003U	4/21/2021		0	1.1	6.5	92.4	0	0	
CGP0003U	3/18/2021		0	2	18.4	79.6	0	-0.01	
CGP0003U	8/27/2020		0	1.1	18.5	80.4	0	-0.01	
CGP0003U	9/25/2020		0	1.3	17.9	80.8	0	-0.01	

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 29.98

Tech: MT **Calibration:** zeroed CH4 to AB air->CALGAS CH4 reading 14.9 cal to 15.0%; CO2 reading 15.1 cal to 15.0%; zeroed O2 to CALGAS-> O2 reading 20.5 AB air cal to 20.9% **FanFlow:** 54 **Weather** Partly cloudy 80's

Equipment: Gem 500 #410

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0003U	6/4/2021		0	2.5	17.9	79.6	0	0	
CGP0003U	10/1/2020		0	1.5	19.6	78.7	0	-0.01	
CGP0003U	1/29/2021		0	1.1	7.1	91.8	0	0	
CGP0003U	12/18/2020		0	1.4	19.9	79.2	0	0	
CGP0003U	11/18/2020		0	1.5	7	91.5	0	0	
CGP0003U	5/21/2021		0	2.5	7.2	90.3	0	-0.01	
CGP0003U	2/8/2021		0	1.9	7.9	90.2	0	0	
CGP0004L	4/21/2021		0	5.4	4.8	89.8	0	-0.02	
CGP0004L	6/4/2021		0	3.9	7.3	88.8	0	0	
CGP0004L	5/21/2021		0	7.8	4.1	88.1	0	-0.01	
CGP0004L	11/18/2020		0	3.2	6.2	90.6	0	-0.03	
CGP0004L	10/1/2020		0	4.1	16.1	79.5	0	-0.01	
CGP0004L	12/18/2020		0	4.7	15.8	79.5	0	-0.02	
CGP0004L	1/29/2021		0	7.4	4.8	87.8	0	0	
CGP0004L	9/25/2020		0	4.8	6	89.2	0	-0.02	
CGP0004L	8/27/2020		0	4.4	6.1	89.5	0	-0.02	
CGP0004L	7/14/2020		0	4.1	6	89.9	0	-0.01	
CGP0004L	2/8/2021		0	5.6	5.1	89.3	0	-0.02	
CGP0004L	3/18/2021		0	4	7.2	88.8	0	-0.02	
CGP0004U	8/27/2020		0	3.1	6.7	90.2	0	0	
CGP0004U	12/18/2020		0	3.6	16.2	80.2	0	0	
CGP0004U	5/21/2021		0	3.1	6.1	90.8	0	0	
CGP0004U	1/29/2021		0	2.2	6.6	91.2	0	0	
CGP0004U	9/25/2020		0	3.5	6.1	90.4	0	0	
CGP0004U	6/4/2021		0	3.3	16.3	80.4	0	-0.01	
CGP0004U	10/1/2020		0	3.4	15.9	80.2	0	0	
CGP0004U	2/8/2021		0	2.9	9.9	87.2	0	-0.01	
CGP0004U	3/18/2021		0	3	16.6	80.4	0	-0.01	
CGP0004U	4/21/2021		0	3.1	5.7	91.2	0	-0.02	
CGP0004U	11/18/2020		0	3.9	5.8	90.3	0	0	
CGP0004U	7/14/2020		0	3	6.1	90.9	0	0	

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 29.99

Tech: MT

Calibration: Zeroed CH4 to AB air CALGAS-> CH4 reading 14.8% Cal to 15.0%, CO2 reading 14.9 cal to 15.0%; zeroed O2 to calgas -> calib to 20.9% Abair

FanFlow: 54

Weather Cloudy showers low 60's

Equipment: Gem 500 #410

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0005L	9/25/2020		0	3.1	5.9	91	0	0	
CGP0005L	4/21/2021		0	6.7	3.5	89.8	0	0	
CGP0005L	3/18/2021		0	2.5	17.2	80.3	0	-0.01	
CGP0005L	2/8/2021		0	6.6	5.1	88.3	0	-0.01	
CGP0005L	7/14/2020		0	4.1	5.7	90.2	0	0	
CGP0005L	6/4/2021		0	8.9	3.1	88	0	-0.01	
CGP0005L	1/29/2021		0	7.6	3.6	88.8	0	-0.01	
CGP0005L	5/21/2021		0	9.1	3.3	87.6	0	-0.01	
CGP0005L	11/18/2020		0	4	5.5	90.5	0	-0.01	
CGP0005L	12/18/2020		0	6.9	6.6	86.6	0	0	
CGP0005L	10/1/2020		0	7.3	5.9	86.6	0	0	
CGP0005L	8/27/2020		0	2.9	6.9	90.2	0	0	
CGP0005U	10/1/2020		0	1.7	19	79.1	0	-0.01	
CGP0005U	3/18/2021		0	1	18.9	79.9	0	-0.02	
CGP0005U	6/4/2021		0	2.4	6.4	91.2	0	-0.02	
CGP0005U	4/21/2021		0	1.2	6.5	92.3	0	0	
CGP0005U	2/8/2021		0	1.5	5.9	92.6	0	0	
CGP0005U	7/14/2020		0	1.9	7.4	90.7	0	0	
CGP0005U	8/27/2020		0	1.1	17.5	81.4	0	0	
CGP0005U	12/18/2020		0	1.1	19.8	79.1	0	0	
CGP0005U	5/21/2021		0	2.4	5.7	91.9	0	0	
CGP0005U	11/18/2020		0	1.9	6.4	91.7	0	-0.01	
CGP0005U	9/25/2020		0	1.3	17.1	81.6	0	0	
CGP0005U	1/29/2021		0	1.3	6.5	92.2	0	-0.02	
CGP0007L	8/27/2020		0	1.1	18.5	80.4	0	0	
CGP0007L	11/18/2020		0	1	7	92	0	-0.01	
CGP0007L	10/1/2020		0	1.2	19.9	78.9	0	-0.01	
CGP0007L	12/18/2020		0	0.8	20.3	78.9	0	0	
CGP0007L	1/29/2021		0	0.8	20.3	78.9	0	0	
CGP0007L	6/4/2021		0	1.7	19.7	78.6	0	0	
CGP0007L	5/21/2021		0	0.9	18.9	80.2	0	0	

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 30.07

Tech: MT **Calibration:** Zeroed CH4 to Ab air-> CALGAS CH4 reading 14.3 cal to 15.0; CO2 reading 15.3 cal to 15.0; zeroed O2 to CALGAS-> cal to 20.9 AB air **FanFlow:** 53 **Weather** Most Clear 63F

Equipment: GEM 500 #410

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0007L	4/21/2021		0	0.9	7	92.1	0	0	
CGP0007L	3/18/2021		0	1.5	19.9	78.6	0	0	
CGP0007L	2/8/2021		0	1.5	20.1	78.4	0	-0.01	
CGP0007L	7/14/2020		0	1.9	18.1	80	0	0	
CGP0007L	9/25/2020		0	1.3	18.1	80.6	0	0	
CGP0007U	6/4/2021		0	0.6	19.8	79.6	0	0	
CGP0007U	5/21/2021		0	1.6	17.5	80.9	0	0	
CGP0007U	4/21/2021		0	1.9	6.5	91.6	0	0	
CGP0007U	7/14/2020		0	0.9	18.9	80.8	0	-0.01	
CGP0007U	11/18/2020		0	4.1	5.7	90.2	0	-0.01	
CGP0007U	10/1/2020		0	2.7	15.1	81.2	0	-0.02	
CGP0007U	12/18/2020		0	3.6	15.2	81.2	0	-0.01	
CGP0007U	1/29/2021		0	3.6	15.2	92.9	0	0	
CGP0007U	9/25/2020		0	1.2	17.1	81.7	0	-0.01	
CGP0007U	8/27/2020		0	1.3	17.5	81.2	0	-0.01	
CGP0007U	2/8/2021		0	0.7	12.1	87.2	0	-0.01	
CGP0007U	3/18/2021		0	0.3	20.1	79.6	0	-0.02	
CGP0010L	8/27/2020		0	4.1	5.5	90.4	0	-0.01	
CGP0010L	5/21/2021		0	6.3	4.7	89	0	-0.02	
CGP0010L	7/14/2020		0	6.1	6.3	87.6	0	-0.01	
CGP0010L	9/25/2020		0	3.9	6	90.1	0	-0.01	
CGP0010L	4/21/2021		0	2	6.3	91.7	0	0	
CGP0010L	12/18/2020		0	6.3	7	86.7	0	0	
CGP0010L	10/1/2020		0	5.9	6.9	86.7	0	0	
CGP0010L	11/18/2020		0	5.7	4.7	89.6	0	0	
CGP0010L	6/4/2021		0	5.1	5.5	89.4	0	0	
CGP0010L	2/8/2021		0	4.9	5.5	89.6	0	-0.02	
CGP0010L	3/18/2021		0	5	5.6	89.4	0	0	
CGP0010L	1/29/2021		0	4.6	5.5	89.9	0	-0.01	
CGP0010U	2/8/2021		0	1.9	6.9	91.2	0	0	
CGP0010U	6/4/2021		0	1.9	18.1	80	0	-0.01	

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 0

Tech: **Calibration:** **FanFlow:** 0 **Weather**

Equipment:

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0010U	11/18/2020		0	2.4	6.2	91.4	0	0	
CGP0010U	10/1/2020		0	2.1	17.7	80.5	0	-0.01	
CGP0010U	12/18/2020		0	2.2	17.3	80.5	0	-0.01	
CGP0010U	9/25/2020		0	1.6	18	80.4	0	0	
CGP0010U	8/27/2020		0	1.7	17.9	80.4	0	0	
CGP0010U	7/14/2020		0	1.8	8.1	90.1	0	0	
CGP0010U	4/21/2021		0	0.9	7	92.1	0	0	
CGP0010U	3/18/2021		0	1.9	18.1	80	0	-0.01	
CGP0010U	1/29/2021		0	1.7	6.8	91.5	0	-0.01	
CGP0010U	5/21/2021		0	3.1	7.2	89.7	0	0	
CGP0011L	6/4/2021		0	1.1	19.8	79.1	0	-0.01	
CGP0011L	8/27/2020		0	0.9	19.1	80	0	-0.01	
CGP0011L	9/25/2020		0	1.1	18.9	80	0	-0.01	
CGP0011L	4/21/2021		0	0.3	7.3	92.4	0	-0.01	
CGP0011L	12/18/2020		0	0.4	20.3	79.3	0	-0.01	
CGP0011L	10/1/2020		0	1.4	19.1	79.3	0	0	
CGP0011L	5/21/2021		0	1.1	19	79.9	0	0	
CGP0011L	2/8/2021		0	0.9	20.6	78.5	0	-0.01	
CGP0011L	11/18/2020		0	0.4	7	92.6	0	-0.01	
CGP0011L	3/18/2021		0	0.9	20	79.1	0	-0.01	
CGP0011L	1/29/2021		0	5.1	14.5	80.4	0	-0.01	
CGP0011L	7/14/2020		0	3.7	5.6	90.7	0	0	
CGP0011U	2/8/2021		0	2.9	6.9	90.2	0	0	
CGP0011U	6/4/2021		0	2.5	16.3	81.2	0	0	
CGP0011U	10/1/2020		0	5.5	14.1	80.4	0	-0.01	
CGP0011U	11/18/2020		0	4.5	5.1	90.4	0	-0.02	
CGP0011U	12/18/2020		0	5.1	14.5	80.4	0	0	
CGP0011U	4/21/2021		0	2.4	6.2	91.4	0	-0.01	
CGP0011U	9/25/2020		0	3.4	6.1	90.5	0	0	
CGP0011U	8/27/2020		0	3.4	5.9	90.7	0	0	
CGP0011U	1/29/2021		0	0.4	20.3	79.3	0	0	

COLBERT PERIMETER GAS MONITORING REPORT

Barometer: 30.04

Tech: MT

Calibration: Zeroed Ch4 AB air-> calgas CH4 reading 14.9% cal to 15.0%; CO2 reading 14.8% cal to 15.0%; zeroed O2 calgas-> cal O2 to 20.9%AB air

FanFlow: 52

Weather Slightly Cloudy 60's

Equipment: Gem 500 #410

Location	Date	Time	CH4	CO2	O2	Balance	Static Press	Diff. Press.	Comments
CGP0011U	3/18/2021		0	2.5	16.3	81.2	0	0	
CGP0011U	5/21/2021		0	3.5	5.9	90.6	0	0	
CGP0011U	7/14/2020		0	0.7	19.5	79.8	0	-0.01	
CTS00001	7/14/2020		0	2.8	6.2	91	0	0	
CTS00002	7/14/2020		0	3.6	6.2	90.2	0	0	
CTS00003	7/14/2020		0	1.8	6.2	92	0	0	
CTS00004	7/14/2020		0	2.2	5.1	92.7	0	0	
CTS00005	7/14/2020		0	8.1	5.5	86.4	0	-0.01	

Appendix B

Landfill Operations and Maintenance Field Data/Summary

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: MTERRIS
StationID: CP-S3
Weather: MOSTLY CLEAR 42°F
Sample ID: CP-S3 - 210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, (Ded. Bennett), Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: -NA-

Well Depth: 99
Screens from: To
Casing Size (in)

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
(6)	(1.5)
8	2.6

Depth to Water: 85.81'
Water Column Depth: 13.19' x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 19.79≈20 x3 well volumes = Total Purge Vol. (gal): 60GAL

Purge Rate
Purge Begin Time: 0900

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0916	20GAL	7.57	619	12.3		SLI CLOUDY RUSTY
0932	40GAL	7.55	625	12.2		CLEAR
0948	60GAL	7.54	621	12.1		CLEAR
Stabilization Criteria:	√OK	+/- 0.1 unit	+/- 5%		0.92	(must meet criteria within 3 consecutive measurements)

Sample Time: 0950
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: EXTECH 100	Meter: ECTestr11+	Hach 2100P
S/N 445991	S/N 24B	(S/N 940700005619/)
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
StationID: CD-31A1
Sample ID: CD-31A1 - 210406
QA/QC Sample ID:

Field Personnel: KM
Weather: Sunny ~ 33°F
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

Well Depth: 110
Screens from: 103 To 108
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 93.13
Water Column Depth: 16.87 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 4.39 = 5 gal x3 well volumes = Total Purge Vol. (gal): 15 Gal

Purge Rate: —
Purge Begin Time: 0810

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0828	5 gal	7.58	600	10.1		a little hazy
0849	10 Gal	7.60	602	10.1		Clear
0906	15 Gal	7.61	606	10.0		Clear
Stabilization Criteria:	√ ok	+/- 0.1 unit	+/- 5%		0.18	(must meet criteria within 3 consecutive measurements)

Sample Time: 0907
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: KM
StationID: CD-34A1
Weather: Sunny 38° F
Sample ID: CD-34A1-210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: —

Well Depth: 110
Screens from: 100 To 110
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 96.99'
Water Column Depth: 13.01 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 3.38 x3 well volumes = Total Purge Vol. (gal): 12 GAL

Purge Rate: —
Purge Begin Time: 0914

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0925	4GAL	7.55	611	9.7		Clear
0936	8GAL	7.55	610	9.7		Clear
0945	12GAL	7.56	611	9.5		Clear
Stabilization Criteria:	√0.2	+/- 0.1 unit	+/- 5%		0.60	(must meet criteria within 3 consecutive measurements)

Sample Time: 0947
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 46nA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
StationID: CD-36A1
Sample ID: CD-36A1-210406
QA/QC Sample ID: — NA

Field Personnel: KM
Weather: Sunny 45° F
Purge Method: Disp. bailer, Ded. Grundfos, (Ded. Bladder) Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

Well Depth: 102
Screens from: To
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 89.29
Water Column Depth: 12.71 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 3.30=4 x3 well volumes = Total Purge Vol. (gal): 12GAL

Purge Rate: —
Purge Begin Time: 1000

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1010	4 GAL	7.81	599	9.7		Clear
1020	8GAL	7.83	598	9.6		Clear
1030	12GAL	7.84	598	9.7		Clear
Stabilization Criteria:	√ ok	+/- 0.1 unit	+/- 5%		0.20	(must meet criteria within 3 consecutive measurements)

Sample Time: 1033
QAQC Sample Time: — NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestvilt	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

* Surface lid needs 3 bolts...

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: KM
StationID: CD-37A1
Weather: Sunny 56° F
Sample ID: CD-37A1-210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID:

Well Depth: 104 Screens from: To Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 90.11'
Water Column Depth: 13.89 x Gallons per linear foot: 026 = Calc. Purge vol./casing vol.: 3.61-4 x3 well volumes = Total Purge Vol. (gal): 12GAL

Purge Rate: —
Purge Begin Time: 1223

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1238	4GAL	7.49	648	10.6		Clear
1253	8GAL	7.51	647	10.5		Clear
1308	12GAL	7.50	649	10.5		Clear
Stabilization Criteria:	√ ok	+/- 0.1 unit	+/- 5%		0.16	(must meet criteria within 3 consecutive measurements)

Sample Time: 1311
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Eclestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: KM
StationID: CD-38A1
Weather: Sunny 52° F
Sample ID: CD-38A1-210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: —

Well Depth: 111 Screens from: To Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 90.15'
Water Column Depth: 20.85 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 5.42 x3 well volumes = Total Purge Vol. (gal): 18 GAL

Purge Rate: —
Purge Begin Time: 1105

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1128	6 GAL	7.62	565	10.1		Clear
1151	12 GAL	7.63	566	10.1		Clear
1214	18 GAL	7.64	564	10.1		Clear
Stabilization Criteria:	√ok	+/- 0.1 unit	+/- 5%		0.31	(must meet criteria within 3 consecutive measurements)

Sample Time: 1217
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC testr 11+	Hach 2100P
S/N 421511	S/N 4GnA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-6-2021
Field Personnel: KM
StationID: CP-S4
Weather: Sunny 59° F
Sample ID: CP-S4 - 2104060
Purge Method: Disp. bailer, (Ded. Grundfos), Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: —

Well Depth: 104
Screens from: To
Casing Size (in): 6

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
(6)	(1.5)
8	2.6

Depth to Water: 83.39
Water Column Depth: 20.61 x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 30.92 = 35 x3 well volumes = Total Purge Vol. (gal): 105

Purge Rate: 50 gpm
Purge Begin Time: 1343

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1345	100	7.35	682	10.4		Clear
1347	200	7.37	681	10.3		↓
1349	300	7.38	683	10.3		
Stabilization Criteria:	√ OK	+/- 0.1 unit	+/- 5%		0.70	(must meet criteria within 3 consecutive measurements)

Sample Time: 1351
QAQC Sample Time:

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 46nA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-6-2021 | Field Personnel: KM

StationID: CP-S5 | Weather: Sunny 60°F

Sample ID: CP-S5-210406

QA/QC Sample ID: —

Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

Well Depth: 101 | Screens from: | To | Casing Size (in): 6

Depth to Water: NT 80'

Water Column Depth: 21 x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 31.5 = 35 gal x3 well volumes = Total Purge Vol. (gal): 105

Purge Rate: 40 gpm | Purge Begin Time: 1405

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1407	80	7.36	672	10.6		Clear
1409	160	7.37	694	10.5		↓
1411	240	7.37	677	10.5		
Stabilization Criteria:	✓ ok	+/- 0.1 unit	+/- 5%		0.46	(must meet criteria within 3 consecutive measurements)

Sample Time: 1413 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 46A	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments: No WL use 80'

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-6-2021
Field Personnel: KM
StationID: CP-S6
Weather: Sunny 60° F wind picking up
Sample ID: CP-S6-210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: —

Well Depth: 106
Screens from: To
Casing Size (in): 6

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 86.63'
Water Column Depth: 19.37 -x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 29.05 30gal x3 well volumes = Total Purge Vol. (gal): 90

Purge Rate: 70 gpm
Purge Begin Time: 1420

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1422	140	7.40	650	10.6		Clear
1424	210	7.41	649	10.5		↓
1426	280	7.42	648	10.5		
Stabilization Criteria:	VOK	+/- 0.1 unit	+/- 5%		0.30	(must meet criteria within 3 consecutive measurements)

Sample Time: 1429
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-41C1 | Weather: Clear, 59°

Sample ID: CD-41C1-210406 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 233 | Screens from: 214 To 233 | Casing Size (in): 2.5

Depth to Water: 176.91'

Water Column Depth: 56.09' x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 14.58G USR 15.0 x3 well volumes = Total Purge Vol. (gal): 45

Purge Rate: 2.6 | Purge Begin Time: 1410

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1416	15	7.92	372	11.8		Clear
1422	30	7.90	373	11.7		Clear
428	45	7.89	372	11.8		Clear
Stabilization Criteria:	VOL	+/- 0.1 unit	+/- 5%		0.11	(must meet criteria within 3 consecutive measurements)

6 min/vol

Sample Time: 1433 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: ECTestr11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619/~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-41C2 | Weather: Clear, 59°

Sample ID: CD-41C2-210406 | Purge Method: Disp. bailer, (Ded. Grundfos), Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 291 | Screens from: 271 To 291 | Casing Size (in): 2.5

Depth to Water: 177.19

Water Column Depth: 113.81 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 29.59 use 30 x3 well volumes = Total Purge Vol. (gal): 90

Purge Rate: 2.5 gpm | Purge Begin Time: 1325

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1337	30	7.96	387	12.0		Clear
1349	60	8.00	391	11.8		Clear
1401	90	8.01	390	11.8		Clear
Stabilization Criteria:	√ ok	+/- 0.1 unit	+/- 5%		0.09	(must meet criteria within 3 consecutive measurements)

12 min/vol

Sample Time: 1403 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~9407000056191~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-41C3 | Weather: Clear, 59°

Sample ID: CD-41C3-210406 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES-40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 403 | Screens from: 384 To 403 | Casing Size (in): 2.5

Depth to Water: 177.52

Water Column Depth: 225.48 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 58.62 use 59 x3 well volumes = Total Purge Vol. (gal): 177

21 min/vol

Purge Rate: 2.9 gpm | Purge Begin Time: 1323

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1344	59	7.87	428	11.9		Clear
1405	118	7.89	427	12.0		Clear
1426	177	7.90	429	12.0		Clear
Stabilization Criteria:	vol	+/- 0.1 unit	+/- 5%		0.08	(must meet criteria within 3 consecutive measurements)

Sample Time: 1427 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: GF
StationID: CD-42C1
Weather: Clear, 47
Sample ID: CD-42C1-210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: - NA

Well Depth: 227
Screens from: 208 To 227
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 174.10'
Water Column Depth: 52.90 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 13.75 use 14.0 x3 well volumes = Total Purge Vol. (gal): 42.0

Purge Rate: 2.5
Purge Begin Time: 1050 ~~1108~~ 1107

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1056	14	7.92	432	12.1		Clear
1102	28	7.94	434	12.1		Clear
1108	42	7.91	435	12.0		Clear
Stabilization Criteria:	✓ OK	+/- 0.1 unit	+/- 5%		0.07	(must meet criteria within 3 consecutive measurements)

6 min/vol

Sample Time: 1109
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 1/1	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~/24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021

Field Personnel: GF

StationID: CD-42C2

Weather: Clear, 47

Sample ID: CD-42C2-210406

Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 312

Screens from: 293 To 312

Casing Size (in): 2.5

Depth to Water: 173.74

Water Column Depth: 138.26 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 35.95 (use 36) x3 well volumes = Total Purge Vol. (gal): 108

Purge Rate: 2.6

Purge Begin Time: 1003

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1017	36	8.03	444	11.9		Clear
1031	72	8.00	438	11.8		Clear
1045	108	7.97	430	11.7		Clear
Stabilization Criteria:	✓	+/- 0.1 unit	+/- 5%		0.09	(must meet criteria within 3 consecutive measurements)

Sample Time: 1047 — 14 min/vol

QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: ECTestr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
StationID: CD-42C3
Field Personnel: GF
Weather: Clear, 47
Sample ID: CD-42C3 - 210406
QA/QC Sample ID: NA
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

Well Depth: 402
Screens from: 383 To 402
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 173.63
Water Column Depth: 228.37 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 59.38 use 60 x3 well volumes = Total Purge Vol. (gal): 180

Purge Rate: 2.5
Purge Begin Time: 1002

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1026	60	8.03	369	11.8		Clear
1050	120	8.00	376	11.9		Clear
1114	180	7.98	378	12.0		Clear
Stabilization Criteria:	Vol	+/- 0.1 unit	+/- 5%		0.25	(must meet criteria within 3 consecutive measurements)

24 min/vol

Sample Time: 1116
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: GF
StationID: CD-43C1
Weather: clear, 40°
Sample ID: CD-43C1 - 210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 230 | Screens from: 211 To 230 | Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

− Depth to Water: 171.31
= Water Column Depth: 58.69 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 15.26 x3 well volumes = Total Purge Vol. (gal): 48
use 16
7 min/vol
Purge Rate: 2.5
Purge Begin Time: 0915

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0922	16	8.05	459	10.1		clear
0929	32	8.02	458	10.1		clear
0936	48	8.03	457	10.2		clear
Stabilization Criteria:	√ok	+/- 0.1 unit	+/- 5%	0.11		(must meet criteria within 3 consecutive measurements)

Sample Time: 0937
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC tester 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021
Field Personnel: GF
StationID: CD-43C2
Weather: Clear, 40°
Sample ID: CD-43C2-210406
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 299
Screens from: 280 To 299
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 171.03'
Water Column Depth: 127.97 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 33.27 (use 34) x3 well volumes = Total Purge Vol. (gal): 102

Purge Rate: 3.0
Purge Begin Time: 0835

Field Parameters (12 min/vol)

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0847	34	8.16	341	10.2		Clear
0859	68	8.15	335	10.5		clear
0911	102	8.19	342	10.1		clear
Stabilization Criteria:	Vol	+/- 0.1 unit	+/- 5%	0.13		(must meet criteria within 3 consecutive measurements)

Sample Time: 0913
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-43C3 | Weather: clear 40°

Sample ID: CD-43C3 - 210406 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 401 | Screens from: 382 To 401 | Casing Size (in): 2.5

Depth to Water: 170.60'

Water Column Depth: 230.4 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 59.90 Use 60 x3 well volumes = Total Purge Vol. (gal): 180

Purge Rate: 3.1 | Purge Begin Time: 0830

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0850	60	8.02	283	11.2		clear
0910	120	8.05	277	11.2		clear
0930	180	8.01	278	11.2		clear
Stabilization Criteria:	ok	+/- 0.1 unit	+/- 5%		0.22	(must meet criteria within 3 consecutive measurements)

Sample Time: 0932 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619/~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-48C1 | Weather: Clear, 50°

Sample ID: CD-48C1-210406 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 243 | Screens from: 220.5 To 240.5 | Casing Size (in): 2.5

Depth to Water: 176.24

= Water Column Depth: 66.76 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 17.36 x3 well volumes = Total Purge Vol. (gal): 54

use 18

Purge Rate: 1.5 | Purge Begin Time: 1225

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1237	18	7.88	448	12.0		Clear
1249	36	7.85	456	12.0		Clear
1301	54	7.86	457	12.1		Clear
Stabilization Criteria:	Vol	+/- 0.1 unit	+/- 5%		0.18	(must meet criteria within 3 consecutive measurements)

Sample Time: 1303 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619/~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

pump keeps tripping
set @ 320 max = 1.5 gpm

Comments:

COLBERT ANDFILL ANNUAL GROUNDWATER AMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-48C2 | Weather: Clear, 50

Sample ID: CD-48C2 - 210406 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 302 | Screens from: 279.7 To 299.7 | Casing Size (in): 2.5

Depth to Water: 176.39'

Water Column Depth: 125.61 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 32.66 (Use 33) x3 well volumes = Total Purge Vol. (gal): 99

Purge Rate: 2.9 gpm | Purge Begin Time: 1143

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1155	33	7.91	417	11.8		clear
1207	66	7.95	423	11.5		Clear
1219	99	7.96	424	11.6		Clear
Stabilization Criteria:	√	+/- 0.1 unit	+/- 5%		0.38	(must meet criteria within 3 consecutive measurements)

12 min/vol

Sample Time: 1221 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/6/2021 | Field Personnel: GF

StationID: CD-48C3 | Weather: Clear, 50°

Sample ID: CD-48C3-210406 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 386 | Screens from: 374 To 384 | Casing Size (in): 2.5

Depth to Water: 176.20'

Water Column Depth: 209.8 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 54.55 x3 well volumes = Total Purge Vol. (gal): 165

use 55

Purge Rate: 2.8 gpm | Purge Begin Time: 1140

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1200	55	7.91	425	11.7		Clear
1220	110	7.92	427	11.7		Clear
1240	165	7.92	423	11.8		Clear
Stabilization Criteria:	✓ ok	+/- 0.1 unit	+/- 5%		0.11	(must meet criteria within 3 consecutive measurements)

Sample Time: 1241 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 13124123	S/N ~~940700005619~~/24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: M. TERRIS
StationID: 1473M-1 RICHARD
Weather: P. CLOUDY 40'S
Sample ID: 1473M-1 - 210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve / RES WELL
QA/QC Sample ID: MS/MSD

Well Depth: 105'
Screens from: To
Casing Size (in): ~~1.5~~ 6"
Depth to Water: NT 80'
Water Column Depth: 25' x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 37.5:40 x3 well volumes = Total Purge Vol. (gal): 120 GAL / 170 GAL
W/50 GALLON R.T.

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Purge Rate: 9 GPM
Purge Begin Time: 0900

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0907	60 GAL	7.76	571	10.8		CLEAR
0915	120 GAL	7.78	575	10.9		CLEAR
0922	180 GAL	7.76	574	10.8		CLEAR
Stabilization Criteria:	✓ 10%	+/- 0.1 unit	+/- 5%		0.19	(must meet criteria within 3 consecutive measurements)

Sample Time: 0930
QAQC Sample Time: SAME AS SAMPLE

Meters:

pH	Conductivity	Turbidity
Meter: EXTECH 100	Meter: ECTestr 11+	Hach 2100P
S/N 445991	S/N 248	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
X	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments: MS/MSD TAKEN HERE, FILLED 2 SET EXTRA TOTAL OF 6 BOTTLES (ARI)

Colbert Residential Field Data Sheet

07-Apr-21

Well **1473M-1**

TC **TA**
R R Jonathan Richard
N 19826 Yale Road

Colbert Wa 99005

Home Phone **Work Phone**
(509) 954-3762

Last Sample Date 1/30/2019 **Sample I.D.** 1473M-1-190130

FIELD PARAMETERS	Previous	Current		
			Sample Date	4/7/2021
			Sample Time	0930
pH	7.76	7.76	Start Purge	0900
Cond (uMhos)	498	574	End Purge	0935
Temp	9.7	10.8	Rate (gpm)	9 GPM
SWL (Feet)			Purge Vol (gal)	270 GAL

PURGE VOLUME CALCULATIONS				Casing Size	Gal/Foot
Total Depth (ft)	105	Casing Vol (gal)	37.5=40	2"	0.16
SWL (ft)	80' USED	Casing Vol X 3	120GAL	4"	0.65
Water Column (ft)	25'	PT Vol (gal)	50	6"	1.47
Casing Size (in)	6	Total Vol (gal)	170GAL	8"	2.61

Previous Sample Point Hose bib at front of house

Special Instructions TEFLON SPLITTER

Comment MS/MSD taken here, filled 2 extra sets of bottles

* MS/MSD TAKEN HERE, FILLED 9 40ml VOC'S FROM HOSE BIB FRONT OF HOUSE.

- NEW ID 1473M-1-210407
1473M-1-210407 MS
1473M-1-210407 MSD

IF CANNOT TAKE WL, ENTER ASSUMED READING HERE:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: M. TERRIS
StationID: 1573A-1 JOHNSON
Weather: P. CLOUDY LOW 50'S
Sample ID: 1573A-1 - 210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve RES WELL
QA/QC Sample ID: NT

Well Depth: 105
Screens from: To
Casing Size (in): 6

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 93.38'
Water Column Depth: 11.62' x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 17.43:20 x3 well volumes
P.T 80GAL
Total Purge Vol. (gal): 300GAL (360TOTAL)

Purge Rate: 12GPM
Purge Begin Time: 1000

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1009	100GAL	7.77	499	11.4		CLEAR
1018	200GAL	7.79	505	11.5		CLEAR
1027	300GAL	7.80	506	11.4		
	✓					
Stabilization Criteria:	OK	+/- 0.1 unit	+/- 5%		0.31	(must meet criteria within 3 consecutive measurements)

Sample Time: 1030
QAQC Sample Time:

Meters:

pH	Conductivity	Turbidity
Meter: EXTECH 100	Meter: ECTestr 11+	Hach 2100P
S/N 445991	S/N 24B	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
X	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021 | Field Personnel: M. TERRIS

StationID: 1073D-1 | Weather: P. CLOUDY 50'S

Sample ID: 1073D-1 - 210407 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve COLRES

QA/QC Sample ID: - NA -

Well Depth: 76 | Screens from: 58 To 64 | Casing Size (in): 6

Depth to Water: 3.11'

= Water Column Depth: 72.89 -x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 109.3=110 P.T 80GAL x3 well volumes = Total Purge Vol. (gal): 390GAL (455 TOTAL)

Purge Rate: 13GPM | Purge Begin Time: 1050

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1100	130GAL	8.09	371	11.4		CLEAR
1110	260GAL	8.10	376	11.3		CLEAR
1120	390GAL	8.08	375	11.2		CLEAR
Stabilization Criteria:	√ OK	+/- 0.1 unit	+/- 5%		0.21	(must meet criteria within 3 consecutive measurements)

Sample Time: 1125 | QAQC Sample Time: - NA -

Meters:

pH: Meter: EXTECH 100 S/N 445991 — Calib. to 4.0, 7.0 and 10.0

Conductivity: Meter: ECTestr11+ S/N 24B — STD. to 700 umhos/cm

Turbidity: Hach 2100P S/N 940700005619/ — STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
*	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-7-2021
Field Personnel: KM
StationID: CD-40C1
Weather: Fair 35° F
Sample ID: CD-40C1-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: CD-50-210407

Well Depth: 46
Screens from: 36 To 46
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 9.47
Water Column Depth: 36.53 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 9.49 = 10 x3 well volumes = Total Purge Vol. (gal): 30

Purge Rate: —
Purge Begin Time: 0815

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0828	10	7.86	558	9.5		Clear
0840	20	7.88	560	9.5		↓
0853	30	7.88	561	9.5		
Stabilization Criteria:	VOL	+/- 0.1 unit	+/- 5%		0.20	(must meet criteria within 3 consecutive measurements)

Sample Time: 0857
QAQC Sample Time: 1017

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
X	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-7-2021
Field Personnel: KM
StationID: CP-S1
Weather: Sunny 41° F
Sample ID: CP-S1 - 210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 103
Screens from: 104 To 109
Casing Size (in): 6

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 80.22'
Water Column Depth: 22.78 x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 34.17 =35 x3 well volumes = Total Purge Vol. (gal): 105

Purge Rate:
Purge Begin Time: 0918

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0920	210	754	547	9.9		Clear
0922	420	754	548	9.9		Clear
0924	630	755	548	9.7		Clear
Stabilization Criteria:	OK ✓	+/- 0.1 unit	+/- 5%		0.79	(must meet criteria within 3 consecutive measurements)

Sample Time: 0927
QAQC Sample Time: — NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 46nA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
*	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

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COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: KM
StationID: CP-E1
Weather: Fair 48° F
Sample ID: CP-E1-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 257
Screens from: 235 To 258
Casing Size (in): 8

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

− Depth to Water: 184.15'
= Water Column Depth: 72.85 x Gallons per linear foot: 2.6 = Calc. Purge vol./casing vol.: 189.41 =200gal x3 well volumes = Total Purge Vol. (gal): 600

Purge Rate: 130 gpm
Purge Begin Time: 1040

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1042	260	6.97	933	12.4		Clear
1044	520	6.99	937	12.4		Clear
1046	780	6.98	939	12.3		Clear
Stabilization Criteria:	VOK	+/- 0.1 unit	+/- 5%		1.11	(must meet criteria within 3 consecutive measurements)

Sample Time: 1049
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr11+	Hach 2100P
S/N 421511	S/N 4GnA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-7-2021
Field Personnel: KM
StationID: CP-E2
Weather: Fair 39°F →
Sample ID: CP-E2-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 188
Screens from: To
Casing Size (in): 6

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 149.18'
Water Column Depth: 38.82 x Gallons per linear foot: 1.5 = Calc. Purge vol./casing vol.: 58.23 60 gal x3 well volumes = Total Purge Vol. (gal): 180

Purge Rate: 3 gpm
Purge Begin Time: 0800

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1000	360 GAL	7.15	985	12.8		Clear
1143	669 GAL	7.16	990	12.6		Clear
1240	840 GAL	7.18	992	12.6		Clear
Stabilization Criteria:	V OK	+/- 0.1 unit	+/- 5%		1.17	(must meet criteria within 3 consecutive measurements)

Sample Time: 1243
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4 GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:
* Slow Purged this well!
Started well first thing and sampled last..

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4-7-2021
Field Personnel: KM
StationID: CP-E3
Weather: Fair 48°F
Sample ID: CP-E3-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 264
Screens from: To
Casing Size (in): 8

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

− Depth to Water: 183.22'
= Water Column Depth: 80.78 x Gallons per linear foot: 2.6 = Calc. Purge vol./casing vol.: 210.028 215 gal x3 well volumes = Total Purge Vol. (gal): 645

Purge Rate: 140 gpm
Purge Begin Time: 1016

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1019	420	7.22	852	11.4		Clear
1022	840	7.26	853	11.3		Clear
1025	1260	7.27	853	11.3		Clear
Stabilization Criteria:	OK ✓	+/- 0.1 unit	+/- 5%		1.26	(must meet criteria within 3 consecutive measurements)

Sample Time: 1027
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach ~~2100P~~
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments: * (Green) Pump running light not on, either bad bulb or ?

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: KM
StationID: CP-W1
Weather: Fair 56°F
Sample ID: CP-W1-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 301
Screens from: 280 To 300
Casing Size (in): 8

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 174.59'
Water Column Depth: 126.41
Gallons per linear foot: 2.6
Calc. Purge vol./casing vol.: 328.66 = 330 gal
x3 well volumes
Total Purge Vol. (gal): 990

Purge Rate: 130 gpm
Purge Begin Time: 1208

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1211	390	7.85	491	11.3		Clear
1214	780	7.84	493	11.3		↓
1217	1,170	7.85	493	11.3		
Stabilization Criteria:	√OK	+/- 0.1 unit	+/- 5%		1.02	(must meet criteria within 3 consecutive measurements)

Sample Time: 1219
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

2 8/21

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: KM
StationID: CP-W2
Weather: Fair 49° F
Sample ID: CP-W2-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: CD-52-210407

Well Depth: 278
Screens from: To
Casing Size (in): 8

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 170.49'
Water Column Depth: 107.51 x Gallons per linear foot: 2.6 = Calc. Purge vol./casing vol.: 279.53 = 300 gal x3 well volumes = Total Purge Vol. (gal): 900

Purge Rate: 185 gpm
Purge Begin Time: 1105

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1108	555	7.58	670	10.5		
1111	1,110	7.59	673	10.5		
1114	1,665	7.59	675	10.5		
Stabilization Criteria:		+/- 0.1 unit	+/- 5%		0.83	(must meet criteria within 3 consecutive measurements)

Sample Time: 1117
QAQC Sample Time: 1301

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Dupe taken here

PCP → no Power Display!!

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: KM
StationID: CP-W3
Weather: 55°F Fair 11 mph winds
Sample ID: CP-W3-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 275
Screens from: To
Casing Size (in): 8

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 171.99'
Water Column Depth: 103.01 x Gallons per linear foot: 2.6 = Calc. Purge vol./casing vol.: 267.83 280 gal x3 well volumes = Total Purge Vol. (gal): 840

Purge Rate: 145
Purge Begin Time: 1143

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1146	435	7.48	661	11.2		Clear
1149	870	7.48	663	11.2		↓
1152	1,305	7.50	662	11.2		
Stabilization Criteria:	✓ OK	+/- 0.1 unit	+/- 5%		1.64	(must meet criteria within 3 consecutive measurements)

Sample Time: 1157
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

* Green, Pump is running Light out

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: GF
StationID: CD-44C1
Weather: Cldy, 49°-53
Sample ID: CD-44C1-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 200
Screens from: 187 To 197
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 174.20'
Water Column Depth: 25.80 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 6.71 x3 well volumes = Total Purge Vol. (gal): 21.0
use ~~6.75~~ 7.0

Purge Rate: Slow
Purge Begin Time: 1010

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1033	3.5	7.20	472	13.0		Clear
1056	7.0	7.15	465	14.5		Clear
1119	10.5	7.10	468	14.8		Clear
1142	14.0	7.08	463	15.5		Clear
1202	17.5	7.10	462	15.8		Clear
1226	21.0	7.04	461	16.1		Clear
Stabilization Criteria:	Vol	+/- 0.1 unit	+/- 5%		0.21	(must meet criteria within 3 consecutive measurements)

Sample Time: 1229
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: ECTestr11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

* Slow... very slow recharging mw

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: GF
StationID: CD-44C2
Weather: Cldy 49°
Sample ID: CD-44C2-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 247
Screens from: 228 To 247
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

− Depth to Water: 173.49'
= Water Column Depth: 73.51 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 19.11 use 20 x3 well volumes = Total Purge Vol. (gal): 60

Purge Rate: 2.5gpm
Purge Begin Time: 1107

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1115	20	7.05	428	12.0		Clear
1123	40	7.03	434	11.5		Clear
1131	60	6.97	435	11.6		Clear
Stabilization Criteria:	√ ok	+/- 0.1 unit	+/- 5%		0.09	(must meet criteria within 3 consecutive measurements)

Sample Time: 1133
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005519~~/ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021 | Field Personnel: GF

StationID: CD-44C3 | Weather: cldy, 49°

Sample ID: CD-44C3-210407 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 295 | Screens from: 282 To 292 | Casing Size (in): 2.5

Depth to Water: 173.61'

= Water Column Depth: 121.39 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 31.56 (use 32) x3 well volumes = Total Purge Vol. (gal): 96

Purge Rate: 2.3 gpm | Purge Begin Time: 1016

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1030	32	7.18	422	11.8		clear
1044	64	7.22	430	11.9		clear
1058	96	7.17	432	11.9		clear
Stabilization Criteria:	Vol	+/- 0.1 unit	+/- 5%		1.07	(must meet criteria within 3 consecutive measurements)

Sample Time: 1101 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~/ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021 | Field Personnel: GF

StationID: CD-45C1 | Weather: pfly cldy, 38°

Sample ID: CD-45C1-210407 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 200 | Screens from: 187 To 197 | Casing Size (in): 2.5

Depth to Water: 171.13'

= Water Column Depth: 28.87 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 7.51 x3 well volumes = Total Purge Vol. (gal): 24

use 8

Purge Rate: 2.0 | Purge Begin Time: 0911

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0915	8	7.74	483	10.4		Clear
0919	16	7.71	485	10.3		Clear
0923	24	7.73	482	10.3		Clear
Stabilization Criteria:	√ OK	+/- 0.1 unit	+/- 5%		0.15	(must meet criteria within 3 consecutive measurements)

Sample Time: 0924 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~/ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: GF
StationID: CD-45C2
Weather: pfly cldy, 38°
Sample ID: CD-45C2-210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 247
Screens from: 222 To 246
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 171.28
Water Column Depth: 75.72 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 19.69 x3 well volumes = Total Purge Vol. (gal): 60
use 20

Purge Rate: 3.2 gpm
Purge Begin Time: 0842

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0849	20	7.75	437	10.6		Clear
0856	40	7.78	438	10.7		clear
0903	60	7.74	436	10.7		Clear
Stabilization Criteria:	Vol	+/- 0.1 unit	+/- 5%		0.08	(must meet criteria within 3 consecutive measurements)

Sample Time: 0905
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: ECTestr11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
Field Personnel: GF
StationID: CD-45C3
Weather: partly cldy, 38°
Sample ID: CD-45C3 - 210407
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: NA

Well Depth: 339
Screens from: 325.2 To 335.2
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 171.70'
Water Column Depth: 167.30 -x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 43.50 x3 well volumes = Total Purge Vol. (gal): 132
use 44

Purge Rate: 2.9 gpm
Purge Begin Time: 0840

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0856	44	8.10	362	10.6		Clear
0912	88	8.08	370	10.4		Clear
0924	132	8.05	374	10.4		clear
Stabilization Criteria:	√ ok	+/- 0.1 unit	+/- 5%		0.15	(must meet criteria within 3 consecutive measurements)

Sample Time: 0929
QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EcTestr11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005619~~/ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/7/2021
StationID: CD-49
Sample ID: CD-49-210407
QA/QC Sample ID: NA

Field Personnel: GF
Weather: pt ly cldy, 34°
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ~~ES 40, Port. Grundfos~~, Port. Bennet, PDB, Hydrasleeve

Well Depth: 241.5
Screens from: 218 To 238
Casing Size (in): 2.5

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 166.91
Water Column Depth: 74.59 x Gallons per linear foot: 0.26 = Calc. Purge vol./casing vol.: 19.39 → 20 x3 well volumes = Total Purge Vol. (gal): 60 GAL
12 min/vol

Purge Rate: 1.8 gpm
Purge Begin Time: 0738

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0750	20	8.04	470	12.2		Clear
0802	40	8.01	473	12.3		Clear
0814	60	7.98	475	12.2		Clear
Stabilization Criteria:	ok	+/- 0.1 unit	+/- 5%		0.18	(must meet criteria within 3 consecutive measurements)

Sample Time: 0816
QAQC Sample Time:

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC Testr 11+	Hach 2100P
S/N 370573	S/N 1312423	S/N ~~940700005819~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
	3-40ml Glass w/HCl- VOC's (524.2)	
	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

– 370ishVFD speed max here

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/8/2021
Field Personnel: KM
StationID: CD-03A1
Weather: Cloudy 40° F
Sample ID: CD-03A1-210408
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: MS/MSD

Well Depth: 98
Screens from: 70 To 90
Casing Size (in): 2

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Depth to Water: 71.19'
Water Column Depth: 26.81 x Gallons per linear foot: 0.17 = Calc. Purge vol./casing vol.: 4.56 = 5 gal x3 well volumes = Total Purge Vol. (gal): 15

Purge Rate:
Purge Begin Time: 0830

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0852	5	7.67	370	9.0		
0914	10	7.68	371	9.0		
0936	15	7.68	374	9.0		
Stabilization Criteria:	√OK	+/- 0.1 unit	+/- 5%		0.54	(must meet criteria within 3 consecutive measurements)

Sample Time: 0939
QAQC Sample Time: 0939

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 421511	S/N 4GA	S/N 940700005619/
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
X	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
X	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
X	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

*MS/MSD TAKEN HERE

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/8/2021
Field Personnel: GF
StationID: CD-60A1
Weather: Cldy, some rains, 42°
Sample ID: CD-60A1-210408
Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve
QA/QC Sample ID: CD-51-210408

Well Depth: 96.2
Screens from: To
Casing Size (in)
Depth to Water: 79.99'
Water Column Depth: 16.21 x Gallons per linear foot: 0.17 = Calc. Purge vol./casing vol.: 2.8 use 3.0 x3 well volumes = Total Purge Vol. (gal): 9

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

* Purge Rate: 1.0
Purge Begin Time: 0915

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0918	3	7.12	501	9.8		Clear
0921	6	7.13	457	9.8		Clear
0924	9	7.15	442	9.8		Clear
0927	12	7.14	439	9.9		Clear
Stabilization Criteria:	√ok	+/- 0.1 unit	+/- 5%		0.13	(must meet criteria within 3 consecutive measurements)

Sample Time: 0925
QAQC Sample Time: 0911

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 445991	S/N 1312423	S/N 940700005619/24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
*	3-40ml Glass w/HCl- VOC's (524.2)	
*	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
*	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
*	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

* purge rate reduced to 1.0 gpm due to low purge volume

Comments: * DUPE TAKEN HERE

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/8/2021 | Field Personnel: GF

StationID: CD-61A1 | Weather: mstly cldy, 35°

Sample ID: CD-61A1-210408 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: [redacted]

Well Depth: 75.9 | Screens from: | To | Casing Size (in)

Depth to Water: 68.68'

= Water Column Depth: 7.22 -x Gallons per linear foot: 0.17 = Calc. Purge vol./casing vol.: 1.2 use 2.0 x3 well volumes = Total Purge Vol. (gal): 6.0

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

* Purge Rate: 1.0 | Purge Begin Time: 0834

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
0836	2	7.54	348	9.9		clear
0838	4	7.56	343	9.8		clear
0840	6	7.57	335	9.7		clear
Stabilization Criteria:	√ 0L	+/- 0.1 unit	+/- 5%		0.16	(must meet criteria within 3 consecutive measurements)

Sample Time: 0841 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: EC TestR11 +	Hach 2100P
S/N 445991	S/N 1312423	S/N ~~94070000561~~9/ 2495 7
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis:(Check parameters to be analyzed)		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
X	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
X	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
X	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

* Since purge volume small the purge rate was slowed down to 1.0 gpm

Comments:

COLBERT LANDFILL ANNUAL GROUNDWATER SAMPLING

Date: 4/8/2021 | Field Personnel: GF

StationID: CS-04A1 | Weather: Cldy, some lt rains, 49°

Sample ID: CS-04A1-210408 | Purge Method: Disp. bailer, Ded. Grundfos, Ded. Bladder, Ded. Bennett, Env. Tech ES 40, Port. Grundfos, Port. Bennet, PDB, Hydrasleeve

QA/QC Sample ID: NA

Well Depth: 89.51' | Screens from: | To | Casing Size (in)

Depth to Water: NT 85'*

= Water Column Depth: 4.51' x Gallons per linear foot: ~~0.8~~ use 1.0 (0.17 ~~87~~) = Calc. Purge vol./casing vol.: ~~0.8~~ use 1.0 x3 well volumes = Total Purge Vol. (gal): 3.0

Purge Rate: 1gal/10min | Purge Begin Time: 1016

CASING INFO

DIA.	VOL. (gal/ft)
1.25	0.08
2.0	0.17
2.5	0.26
4	0.66
6	1.5
8	2.6

Field Parameters

Time	Purge Vol/gal	pH	Cond. (umhos/cm)	Temp. (C)	Turb.	Comments
1026	1	6.80	675	9.2		Clear
1036	2	6.79	673	9.0		Clear
1046	3	6.78	674	9.1		Clear
Stabilization Criteria:	✓ ok	+/- 0.1 unit	+/- 5%		0.60	(must meet criteria within 3 consecutive measurements)

Sample Time: 1047 | QAQC Sample Time: NA

Meters:

pH	Conductivity	Turbidity
Meter: Extech	Meter: Ectestr 11+	Hach 2100P
S/N 445991	S/N 13124423	S/N ~~940700005619~~ 24957
Calib. to 4.0, 7.0 and 10.0	STD. to 700 umhos/cm	STD. to 4.8, 43.8, 420

Lab Analysis: (Check parameters to be analyzed)

		Bottle Batch #
X	3-40ml Glass w/HCl- VOC's (524.2)	
X	1-500mL Poly w/H2SO4- TOC/COD/Ammonia (415.1/410.1/350.1)	
X	1-500mL Poly unpreserv.- Cl/NO3/NO2/SO4 (300.0/300.0/354.0/300.0)	
X	1-500mL Poly w/HNO3 Field Filtered- Fe/Mn/Zn (6010)	
	2-500mL Amber glass unpreserv - 1,4-Dioxane (8270)	

* SWL is likely just above pump intake which causes a very slow purge
- purge well slowly to keep turbidity values low - go slow on this well

Comments: *NOT ABLE TO GET WATER LEVEL PROBE STICKS USED 85'
- gw well takes 5-10 min to reach disch hose w/ this low recovery

COLBERT

5/27/2020 (WED)

- WENT TO THE STORE FOR SUPPLIES, DRIVING SOUTH ON HYW 2 SAW SOME SKID MARKS GOING ACROSS HYW. TOWARD OUR COMP MONITORING WELLS, SAW CD-48CQ HAD BEEN STRUCK BY A VEHICLE. AFTER FURTHER REVIEW FOUND INDEED A VEHICLE HAD STRUCK THE WELL DOT HAD MARKED IT AND SENT A REPORT TO DEB. DG HAD BEEN TRYING TO CONTACT ME ABOUT THE WELL.

AFTER FURTHER DISCUSSION W/GF FELT THE WELL CAN BE REPAIRED.

* FIXING IT ON 6/11/2020 (THURS)

WILL HAVE TO DELAY SAMPLING UNTL AFTER THAT DATE. AUSTIN HAS BEEN NOTIFIED TO LET DOE KNOW

6/1/2020 (MON)

ALL QT WATER LEVELS HAVE BEEN RERONDED BEFORE SAMPLE EVENT (COLBERT ANNUAL)

COLBERT ANNUAL

→ SAMPLE ROUND HAS BEEN DELAY SINCE 4/2020 → 6/2020

6/2/2020 (TUES)
TECHS: MT/KM/GF
WEATHER: P. CLOUDY 60'S → 70S

THE FOLLOWING WELLS HAVE BEEN SAMPLED:

WELL	SAMPLE ID	TIME	TECH	VOC'S	COMM
CD-31A1	CD-31A1-200602	1046	GF	X	
CD-34A1	CD-34A1-200602	0951	GF	X	
CD-36A1	CD-36A1-200602	1216	GF	X	(NEED) BOLTS(NEW)
CD-37A1	CD-37A1-200602	1301	GF	X	
CD-38A1	CD-38A1-200602	1435	GF	X	
CD-43C1	CD-43C1-200602	0850	MT/KM	X	NO ISSUES
CD-43C2	CD-43C2-200602	0940	MT/KM	X	NO ISSUES
CD-43C3	CD-43C3-200602	0950	MT/KM	X	NO ISSUES
CD-42C1	CD-42C1 → NO SAMPLE	PUMP FAILURE			NO SAMPLE
CD-42C2	CD-42C2-200602	1055	MT/KM	X	2.1 GPM MAX
CD-42C3	CD-42C3-200602	1115	MT/KM	X	2.4 GPM MAX
CD-41C1	CD-41C1-200602	1130	MT/KM	X	NO ISSUES
CD-41C2	CD-41C2-200602	1230	MT/KM	X	2.5 GPM MAX
CD-41C3	CD-41C3-200602	1220	MT/KM	X	NO ISSUES
CD-48C1	CD-48C1-200602	1310	MT/KM	X	340 MAX
CD-48C2	NO SAMPLE HIT BY VEHICLE				
CD-48C3	PUMP FAILURE NO SAMPLE (PUMP NEED REPLACED)				2.4 GPM
CD-49	CD-49-200602	1430	MT		NO ISSUES

* ALL VOCS SAMPLE HELD IN REFER @ COLBERT TO BE SHIPPED 6/4/20 AS A BATCH.

COLBERT ANNUAL (CONT)

DATE: 6/3/2020
TECH: MT | KM | GF
WEATHER: SLI CLOUDY TO MOSTLY 50S | 60S

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	TECH	VOC	1,4 DIOX	COMM
CD-44C1	CD-44C1-200603	1030	MT	X		0.23 GPM
CD-44C2	CD-442C-200603	1005	MT	X		2.5 GPM
CD-44C3	CD-44C3-200603	0940	MT	X		2.6 GPM
CD-45C1	CD-45C1-200603	1105	MT	X		NO ISSUES
CD-45C2	CD-45C2-200603	1140	MT	X		3.0 GPM
CD-45C3	CD-45C3-200603	1145	MT	X		3.2 GPM
1073D-1	1073D-1-200603	1247	GF		X	RES WELL
1573A-1	1573A-1-200603	0931	GF	X	X	RES WELL
1473M-1	1473M-1-200603	1041	GF	X	X	MS/MSD
CD-40C1	CD-40C1-200603	1423	GF	X	X	DUPE HERE
"DUPE	CD-50-200603	1359	GF	X	X	DUPE ID
CP-S1	CP-S1-200603	0901	KM	X	X	
CP-S4	CP-S4-200603	0933	KM	X		
CP-S5	CP-S5-200603	1001	KM	X		
CP-S6	CP-S6-200603	1023	KM	X		
CP-W1	CP-W1-200603	1249	KM	X		
CP-W2	CP-W2-200603	1153	KM	X		DUPE HERE
"DUPE	CD-52-200603	1303	KM	X		DUPE ID
CP-W3	CP-W3-200603	1229	KM	X		
CP-E1	CP-E1-200603	1131	KM	X		
CP-E2	CP-E2-200603	1307	KM	X		
CP-E3	CP-E3-200603	1051	KM	X		

* ALL VOCS HELD IN FRIDGE @ COLBERT UNTIL 6/4/20

ALL 1,4 DIOXANE SAMPLE SAMPLE TODAY WERE PLACED INTO A ARI COOLER W/ 8 DOUBLE BAG ROG WET ICE PACKS TO KEEP AT/BELOW 4°C. COC WAS PLACED INTO BOTH COOLER, TAPED AND SEALED W/ COC SEALS. KM HAND DEL COOLER TO UPS FOR PRIORITY OVERNIGHT TO ARI IN SEATTLE WA 6/4/2020

COLBERT ANNUAL
6/2020 (CONT.)

DATE: 6/4/2020 (THURS)
WEATHER FAIR → P. CLOUDY 60'S
TECH'S MT / KM / GF

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	TECH	VOCS	TOC/COD AMM	CONV.	METAL	COMM
CP-S3	CP-S3-200604	1025	KM	X				
CD-03A1	CD-03A1-200604	1028	GF	X	X	X	X	PUMP-RED
CS-04A1	CS-04A1-200604	1211	GF	X	X	X	X	
CD-60A1	CD-60A1-200604	0930	MT	X	X	X	X	DUP ELTON
"DUPE	CD-51-200604	1000	MT	X	X	X	X	DUP ID
CD-61A1	CD-61A1-200604	1015	MT	X	X	X	X	MS/MSD

* ALL VOC'S TAKEN THE LAST 3 DAYS WERE PLACED INTO COOLER #19 ALONG W/ 8 DOUBLE BAG REG. WET ICE PACKS TO KEEP SAMPLES AT / BELOW 4°C. COC WAS PLACED IN COOLER, TAPED & SEALED W/ COC SEALS. MT HAND DEL. COOLER #19 TO UPS FOR OVERNIGHT TO ANATEK LAB ON 6/5/20 AM.

* ALL TOC/COD/AMM, CONVENTIONALS & METALS SAMPLES WERE PLACED INTO COOLER #15 ALONG W/ 8 DOUBLE BAGS OF REG. WET ICE PACKS TO KEEP SAMPLES AT / BELOW 4°C. COC WAS PLACED INTO COOLER, COOLER WAS THEN TAPED AND SEALED WITH COC SEALS. MT HAND DEL COOLER #15 TO UPS FOR OVERNIGHT TO SVL. TO BE DEL ON 6/5/2020 AM.

6/11/2020
TECHS (MT/GF/KM) WEATHER: P. CLOUD 60's

- REPAIRED CD-48C2 MONUMENT HIT BY CAR OFF OF HIGHWAY. INSTALLED NEW 6' ALL CASING / NEW CONCRETE PAD.

PUMP REPLACEMENTS

6/18/2020
TECHS MT | GF | KM

- REPLACED PUMPS IN CD-48C2 & CD-48C3 AFTER REPLACING PUMPS BOTH WELLS WERE PURGED FOR 2 HOURS APIECE.

* MT WILL HAVE TO ORDER NEW PUMPS AS BACK-UPS

8/6/2020

* WENT OUT TO REPLACE PUMP IN WELL CD-F2C1 BECAUSE ON OUR ANNUAL ROUND PUMP WAS FAULTING. MT/KM TRIED TO START WELL UP... IT WORKED RAN IT FOR 1 HR. READY TO SAMPLE NEXT WEEK

8/10/2020

- MT/KM ON SITE TO GET ALL QT WATERLEVELS

COLBERT QT

"8/2020"

DATE: 8/12/2020 (WED)
WEATHER: P. CLOUDY 60's - 80's (LOWER)
TECH: GORDIE F. / KEVAN M.

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	TECH	VOCS	COMM
CP-S1	CP-S1-200812	0819	KM	*	MS/MSD
CP-S4	CP-S4-200812	0837	KM	*	
CP-S5	CP-S5-200812	0851	KM	*	
CP-S6	CP-S6-200812	0907	KM	*	
CP-E1	CP-E1-200812	1201	KM	*	
CP-E2	CP-E2-200812	1301	KM	*	SLOW FORCE
CP-E3	CP-E3-200812	1011	KM	*	
CP-W1	CP-W1-200812	1341	KM	*	
CP-W2	CP-W2-200812	1223	KM	*	
CP-W3	CP-W3-200812	1323	KM	*	
CD-42C1	CD-42C1-200812	0953	GF	*	
CD-43C1	CD-43C1-200812	1046	GF	*	DUPE HERE
"DUPE	CD-50-200812	1031	GF	*	DUPE ID
CD-48C2	CD-48C2-200812	0859	GF	*	
CD-48C3	CD-48C3-200812	0851	GF	*	
CD-49	CD-49-200812	1143	GF	*	

COLBERT TRIPS (2)
8/13/2020

* ALL SAMPLE TAKEN ABOVE WERE PLACED INTO COOLER #19 ALONG WITH COC, COLLES SAMPLES AND 8 DOUBLE BAGS OF REG WET ICE PACKS AFTER TAPING UP COOLER W/ COC SEALS MT HAND DEL COOLER TO UPS FOR OVERNIGHT SHIPPMENT TO ANATEK LAB IN MOSCOW ID ON 8/14/2020

COLBERT QT SAMPLING
OCT 2020

DATE 10/5/2020
TECHS MT/GF/KM
* ALL QT WATERLEVELS TAKEN, ALL WATERLEVELS WERE TAKEN BEFORE ANY WELLS WERE TURNED ON. PER OUR NORMAL PROTOCOL

DATE 10/6/2020 (TUES)
WEATHER MOSTLY CLEAR 70S LOW 80S
TECHS MT/KM/GF

THE FOLLOWING LOCATIONS WERE SAMPLED.

LOCATION	SAMPLE ID	SAMPLE TIME	TECH(S)	VOC	COMM
CP-S1	CP-S1-201006	1003	MT/KM	*	MS/MSD
CP-S4	CP-S4-201006	1037	MT/KM	*	
CP-S5	CP-S5-201006	1117	MT/KM	*	
CP-S6	CP-S6-201006	1057	KM	*	
CP-E1	CP-E1-201006	1159	KM	*	
CP-E2	CP-E2-201006	1337	KM	*	DUPE HOW
CP-E2(DUPE)	CD-50-201006	1401	KM	*	DUPE ID
CP-E3	CP-E3-201006	1137	KM	*	
CP-W1	CP-W1-201006	1325	KM	*	
CP-W2	CP-W2-201006	1221	KM	*	
CP-W3	CP-W3-201006	1259	MT/KM	*	
CD-43C1	CD-43C1-201006	1013	GF	*	PER AS
CD-49	CD-49-201006	1133	GF	*	
CARPENTER	1073E-4-201006	1100	MT	*	OWNER REQUEST

* MT PACKED ABOVE SAMPLES INTO COOLER #45 ALONG W/10 DOUBLE BAG REG. WET ICE PACK TO KEEP SAMPLES AT/BELOW 4°C WHILE IN SHIPPMENT. KM HAND DEL. COOLER #45 TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID

* CARPENTOR WELL (OLD SULLIVAN) HAS A FUNKY ~~ODE~~ ODOR TO WATER REQUEST WE SAMPLE. TALKING W/AS WE CONFIRMED THIS COULD BE A GOOD IDEA

COLBERT QT SAMPLING
JAN 2021

DATE: 1/19/2021 (TUES)
TECHS: MT/KM

* ALL QT WATERLEVELS WERE TAKEN TODAY ALL WATERLEVELS WERE TAKEN AND RECORDED BEFORE ANY WELL WAS TURNED ON PER OUR NORMAL PROTOCOL.

DATE: 1/20/2021 (WED)
WEATHER: CLOUDY
TECHS: MT/KM

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	TECH	VOC'S	COM
CP-S1	CP-S1-210120	0900	KM	X	MS/MD
CP-S4	CP-S4-210120	0920	KM	X	
CP-S5	CP-S5-210120	0940	KM	X	
CP-S6	CP-S6-210120	1000	KM	X	
CP E1	CP-E1-210120	1050	KM	X	
CP-E2	CP-E2-210120	1220	KM	X	
CP E3	CP-E3-210120	1030	KM	X	
CP W1	CP-W1-210120	1200	KM	X	
CP-W2	CP-W2-210120	1110	KM	X	
CP W3	CP-W3-210120	1130	KM	X	
CD-43C1	CD-43C1-210120	1118	MT	X	DUPE1
"DUPE	CD-50-210120	1144	MT	X	DUPE1D
CD-49	CD-49-210120	1021	MT	X	
TRIPS	COLBERT TRIPS	—	—	X	

* THE ABOVE SAMPLES WERE PLACED INTO COOLER #45 W/ 10 DOUBLE BAGGED REG WET ICE PACKS TO KEEP AT/BELOW 4°C WHILE IN SHIPMENT. KM HAND DEL COOLER #45 TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID

COLBERT ANNUAL SAMPLING
"4/2021"

DATE: 4/5/2021 (MON)
TECH: MT/GF/KM
WEATHER: P. CLOUDY 40S/50S

ALL ANNUAL MONITORING WELLS, WATERLEVELS TAKEN PRE SAMPING AS A NORMAL PROTOCOL ALL READING WERE RECORDED AND USED AS AN ELEVATION / PURGE FOR EACH LOCATION.

DATE: 4/6/2021 (TUES)
TECH: MT/KM/GF
WEATHER: P. CLOUDY 40S AM 60S P.M

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SID	STIME	TECH	VOCS	COMM
CD-31A1	CD-31A1-210406	0907	KM	X	✓
CD-34A1	CD-34A1-210406	0947	KM	X	✓
CD-36A1	CD-36A1-210406	1033	KM	X	✓
CD-37A1	CD-37A1-210406	1311	KM	X	✓
CD-38A1	CD-38A1-210406	1217	KM	X	✓
CP-S3	CP-S3-210406	0950	MT	X	✓
CP-S4	CP-S4-210406	1351	KM	X	✓
CP-S5	CP-S5-210406	1413	KM	X	✓
CP-S6	CP-S6-210406	1429	KM	X	✓
CD-41C1	CD-41C1-210406	1433	GF	X	✓
CD-41C2	CD-41C2-210406	1403	GF	X	✓
CD-41C3	CD-41C3-210406	1427	GF	X	✓
CD-42C1	CD-42C1-210406	1109	GF	X	✓
CD-42C2	CD-42C2-210406	1047	GF	X	✓
CD-42C3	CD-42C-210406	1116	GF	X	✓
CD-43C1	CD-43C1-210406	0937	GF	X	✓
CD-43C2	CD-43C2-210406	0913	GF	X	✓
CD-43C3	CD-43C3-210406	0932	GF	X	✓
CD-48C1	CD-48C1-210406	1303	GF	X	✓
CD-48C2	CD-48C2-210406	1221	GF	X	✓
CD-48C3	CD-48C3-210406	1241	GF	X	✓

* ALL SAMPLES TAKEN TODAY (VOCS) HELD IN REFER @ COLBERT TO BE SENT AS A [illegible] OF THE DAY

3Q2021 ANNUAL SAMPLING

DATE: 4/7/2021 (WED)
TECH: MT/KM/GF
WEATHER: P. CLOUDY 405 AM CLOUDY 505 PM

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	S. ID	S TIME	TECH	VOC	1,4 DIOX	COMM
1473M-1	1473M-1-210407	0930	MT	X	X	MSD/MS VOCS COLRES
1573A-1	1573A-1-210407	1030	MT	X	X	✓
1073D-1	1073D-1-210407	1125	MT		X	NO VOC'S
CD-40C1	CD-40C1-210407	0857	KM	X	X	DUPE HERE
" DUPE	CD-50-210407	1017	KM	X	X	DUPE ID
CP-S1	CP-S1-210407	0927	KM	X	X	
CP-E1	CP-E1-210407	1049	KM	X		
CP-E2	CP-E2-210407	~~1027~~ 1243	KM	X		SLOW PURGE
CP-E3	CP-E3-210407	1027	KM	X		
CP-W1	CP-W1-210407	1219	KM	X		
CP-W2	CP-W2-210407	1117	KM	X		DUPE HERE
" DUPE	CD-52-210407	1301	KM	X		DUPE ID
CP-W3	CP-W3-210407	1157	KM	X		
CD-49	CD-49-210407	0816	GF	X		
CD-44C1	CD-44C1-210407	1229	GF	X		SLOW PURGE
CD-44C2	CD-44C2-210407	1133	GF	X		
CD-44C3	CD-44C3-210407	1101	GF	X		
CD-45C1	CD-45C1-210407	0924	GF	X		
CD-45C2	CD-45C2-210407	0905	GF	X		
CD-45C3	CD-45C3-210407	0929	GF	X		

* ALL VOCS HELD OVERNIGHT IN REFER → SHIPS AS A BATCH!!
* MT PACKED ALL 1,4 DIOXANE INTO COOLER (ARI OWN) ALONG W/8 DOUBLE BAGGED REG WET ICE PACKS TO KEEP SAMPLES AT/BELOW 4° DURING SHIPPMENT. MT HAND DEL. COOLER TO UPS FOR PRIORITY OVERNIGHT TO ARI IN TUKWILA WA ON 4/8/2021 PM

* MT SHIPPED ALL COLRES SAMPLE TODAY AS WELL (PLEASE SEE COLRES FIELD NOTEBOOK FOR FOR DETAILS) 1473M-1-210407 VOCS + MS/MSD WERE SENT W/ COLRES.

COLBERT ANNUAL SAMPLING "4/2021"

DATE: 4/8/2021 (THURS)
TECHS: MT/KM/GF
WEATHER: CLOUDY SHOWERS 40S AM; CLOUDY PM 40'S

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	S. ID	S. TIME	TECH	VOC	TOC	COD	MET	COMM
CD-03A1	CD-03A1-210408	0939	KM	X	X	X	X	MS/MSD
CD-60A1	CD-60A1-210408	0925	GF	X	X	X	X	DUPE HOME
"DUPE	CD-51-210408	0911	GF	X	X	X	X	DUPE ID
CD-61A1	CD-61A1-210408	0841	GF	X	X	X	X	
CS-04A1	CS-04A1-210408	1047	GF	X	X	X	X	
TRIPS	COLBERT TRIPS (3)			X				(3)

* MT/KM PACKED ALL 3-DAYS OF SAMPLING FOR VOCS (4/6/21 - 4/7/21 - 4/8/21) INTO 1 COOLER AS A BATCH. KM PLACED SAMPLES INTO COOLER WHILE MT V REF: AGAINST COC. ALL SAMPLE WERE PLACED INTO COOLER # 13 ALONG W/ 8 DOUBLE BAGGED REG. WET ICE PACKS TO TRY TO KEEP SAMPLES AT A TEMP OF 4°C OR BELOW! KM HAND DEL. COOLER #13 TO UPS FOR OVERNIGHT TO ANATEK IN MOSCOW ID ON 4/9/2021 AM

* MT/KM PACKED ALL TOC/COD/AMMONIA, CONVENTIONAL & METALS SAMPLES INTO COOLER #14 ALONG W/ 8 DOUBLE BAGGED REG. WET ICE PACKS TO TRY TO KEEP SAMPLES AT A TEMP OF 4°C OR BELOW DURING SHIPPMENT! KM PACKED COOLER MT VD REF AGAINST COC. KM HAND DEL. COOLER #14 TO UPS FOR OVERNIGHT TO SVL ON 4/9/2021 AM

MT COMPLETED ROUND ON 4/9/2021 WITH DATA ENTRY, WRITE UP OF EVENT, FILE PLACEMENT, COPIES

COURES

"6/2020"

DATE(S): 6/16 & 6/17/2020
TECH: M. TERRIS
WEATHER: P. CLOUDY 60S/70S

THE FOLLOWING LOCATIONS WERE SAMPLED:

OWNER	SAMPLE ID	DATE	TIME	WL	COMT
WARDEN	0273C-3-200616	6/16	1315	96.07	
VANSICKEL NEW OWNER	0373A-4-200616	6/16	1420	NT	
RUX	1073G-1-200617	6/17	1200	177.41	
HALPIN	1073L-1-200617	6/17	1255	20.01'	MS/MSD
LANE	1073M-3-200617	6/17	1335	12.01'	
LAKE	1573C-10-200617	6/17	1430	NT	
RESSEMAN	0373A-2-200617	6/17	1515	NT	DUPE
"DUPE	2373A-2-200617	6/17	1600		DUPE ID

COURES TRIPS (2)

MT PACKED ABOVE SAMPLES INTO COOLER #17 ALONG W/ 8 DOUBLE BAGS OF REG. WET ICES AND COC TAPED TO TOP OF INSIDE LIDE. COOLER WAS TAPED UP W/ COC SEALS. MT HAND DEL. COOLER #17 TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID ON 6/18/20

COLRES

DATE(S) 7/14/2020 & 7/15/2020
WEATHER: CLEAR 70S/80S
TECH. M. TERRIL

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	DATE	TIME	WL	COMM
ENNIS	1473M-1-200714	7/14	1430	NT	MS/MSD
STERLING	0373L-1-200714	7/14	1500	NT	SPRING
N. MEADOWS	1073Q-4-200715	7/15	0915	NT	
SAUNDER	1573Q-1-200715	7/15	1100	NT	
BERTHOLF	1073M-1-200715	7/15	1140	16.99'	
POLLEN	1073E-2-200715	7/15	1230	NT	DUPE
"DUPE	2073E-2-200715	7/15	1300		DUPE II

COLRES TRIPS (2)

* MT PLACED ABOVE SAMPLES INTO COOLER #5 ALONG W/ 8 DOUBLE BAG NEG. WET ICE PACKS TO KEEP AT 4°C WHILE SHIPPMENT. MT HAND DEL. COOLER #5 TO UPS OR OVERNIGHT ON 7/16/20. TO ANATEK IN MOSCOW ID

COLRES
"8/2020"

DATE: 8/12/2020 (WED)
WEATHER: CLEAR WARM 80S
TECH: M. TERRIS

THE FOLLOWING COLRES SAMPLE LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	WL	(BEFORE) PUMP ON	COMM.
THORNTON	0273D-6-200812	0830	NT	Y	*'
PETRELLI	1073P-2-200812	0930	75.41'	N	MS/MSD
OVERMYER	1473C-5-200812	1030	NT	Y	*'
WARDIAN	1473D-2-200812	1120	NT	Y	*'
SHELP	1573C-5-200812	1200	NT	~~N~~ Y	NEW OWNE *'
CLARK	1073E-3-200812	1335	12.89'	N	
ANDERSON	1073L-3-200812	1425	18.01'	N	
NERREN	1073D-1-200812	1500	4.12'	N	DUPE HER
"DUPE	2073D-1-200812	1530	—		DUPE ID
COLRES (TRIPS)					

*' WATER WAS RONNING @ THESE LOCATIONS, ONCE PURGE BEGAN RAN WATER 15-30 MIN (SEE NOTES ON FIELD SHEETS) TO PURGE ALL LINES.

8/13/2020
- MT PLACED ABOVE SAMPLES INTO COOLER # 19 ALONG W/ 9 DOUBLE BAGGED REG. WET ICE PACKS & COC. (SAMPLES WERE SHIPPED ~~#~~ IN SAME COOLER AS COLBERT QT) MT HAND DEL. COOLER TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID ON 8/14/2020 AM.

SEPT / OCT 2020

SINCE THERE WERE ONLY 3 WELLS FOR 9/2020 TALKED TO AUSTIN WE MADE A DECISION TO SAMPLE SEPT WITH OCTOBER WELLS

DATE: 9/21 & 9/22/20 (MON & TUES)
WEATHER: P. CLOUDY BOTH DMS 705
TECH: M. TERRIS

THE FOLLOWING WELL LOCATIONS WERE SAMPLED

LOCATION	SAMPLE ID	DATE	TIME	WL	WELLON	COMM
ENNIS/ RICHARD/ ~~ROLLIN~~ BROWN	1473M-1-200921	9/21	1100	NT	N	MS/MSD
	1573C-7-200921		1150	8271	N	
GREENEN	1073P-1-200921		1330	SPRING	N	
HALPIN	1073L-1-200921		1415	11.06	Y	
COUNTRYMAN	1073L-2-200921		1445	~~14~~ NT	Y	
CRABB	1073L-4-200921		1530	NT	Y	
PULLEN	1073E-2-200922	9/22	0940	15.82	N	
ROX	1073G-1-200922		1030	175.99	N	
RESSEMAN	0373A-2-200922		1115	NT	N	DUPE
"DUPE	2373A-2-200922		1200			DUPE ID
MORENO	(NO SAMPLE) WATER OFF					
TRIP	COOLERS TMPS 21					

9/22/20
* MT PACKED ABOVE SAMPLES INTO COOLER #21 ALONG W/ 8 DUBLE BAGGED REG. WET ICE PACKS MT HAND DEL COOLER #21 TO UPS FOR OVERNIGHT TO ANATEK LAB ON 9/23 AM

10/6/2020
CARPENTER WELL 1073E-4 (OLD SULLIVAN WELL) OWNER REQUESTED A SAMPLE SINCE WE HAVE NOT TESTED SINCE 2018. OWNER OBSERVED A RED RING IN TOILET & SINK AFTER A DISCUSSION W/OWNERS ABOUT IT MIGHT BE RUST/METALS BUT SHE SAID THEIR IS AN ~~OTHER~~ ODOR TO THE WATER AS WELL. TALKED W/AS WE BOTH THOUGHT IT WILL BE GOOD TO

NOV 2020

11/18/2020 (WED)

2020 KEEPS ON GIVING. GOV. INSLEE SHUT US BACK DOWN (LOCK DOWN) TALKED TO AUSTIN WE DECIDED TO POSTPONE SAMPLING THIS MONTH AND MOVE THIS ROUND BACK TO DECEMBER DUE TO THE "LOCK DOWN." SO THE 5 WELLS SAMPLED THIS MONTH NORMALLY WILL NOW BE SAMPLED IN DECEMBER WITH THOSE SAMPLES. MT !

12/16/2020 (WED)

GOVERNOR INSLEE HAS CONTINUE MANDATE SHUT DOWN THRU 1/4/2020 MT TALKED TO A.S. ABOUT THIS, THIS AM WE BOTH DECIDED TO POSTPONE NOV/DEC COURES SAMPLING UNTIL JAN. 2021

SAMPLE PLAN REVIEW
2021

DATE: 1/21/2021
STAFF: M. TEARIS | A STEWART

Colbert Residential Sampling Plan 2020

	StationID	LastName	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	School Comments
SR	0273C-2	Vannalter	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	
SR	0273C-3	Warden	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	Supplemental sampling schedule - only sample on supplemental events.
SR	0273C-4	McQuesten	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	Biennial sampling every odd year. Move to supplemental after 2021 sampling.
K	0273D-6	Thornton	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	
K	0273F-4	Gander	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Decreased from semi-annual to annual (December). 2/20/2020
K	0373A-2	Resseman	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	Increased to quarterly sampling - detections of DCA.
K	0373A-4	Owner	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	
K	0373L-1	Sterling	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	Decreased to annual sampling (July). 2/20/2020.
K	1073D-1	Nerren	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
K	1073E-2	Pullen	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	
K	1073E-3	Clark	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
K	1073G-1	Rux	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	
K	1073J-1	Moreno	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	
K	1073L-1	Halpin	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	no change
K	1073L-2	Countryman	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	
K	1073L-3	Anderson	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
SR	1073L-4	Crabb	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	
SR	1073M-1	Berthelf	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	
K	1073M-3	Lane	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	
K	1073P-1	Greenen	☐	☐	☐	☐	☑	☐	☐	☐	☐	☑	☐	☐	
K	1073P-2	Pekelli	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	
K	1073P-3	NORTH MEADOWS W	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to semi-annual (Jan/July). 2/20/2020. ANNUAL
K	173B-1	Bise	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☑	Decreased to annual (December). 2/20/2020

SUPPLEMENTAL RD '22

SR - SUPPLEMENTAL RD
K - KEEP AS IS

StationID	LastName	Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec	Sched Comments
1473C-5	Overmyer	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	
1473D-2	Wardian	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	
1473M-1	~~Ennis~~	☑	☐	☐	☑	☐	☐	☑	☐	☐	☑	☐	☐	
1573C-10	Lake	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	~~Biennial sampling on odd years only. 2/20/2020~~
1573C-17	RESIDENT	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Biennial sampling on odd years only. 2/20/2020
1573C-5	Nelson	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	
1573C-7	Brown	☐	☐	☐	☑	☐	☐	☐	☐	☐	☑	☐	☐	
1573C-8	Williams	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
1573H-1	Hunter	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	
1573K-1	Eschenbacher	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	☐	Decreased to annual (April). 2/20/2020.
1573Q-1	Saunder	☐	☐	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	~~Biennial sampling on odd years only. 2/20/2020~~
1573R-2	Hunter	☐	☐	☐	☐	☑	☐	☐	☐	☐	☐	☐	☐	Decreased to annual sampling (May). 2/20/2020.

CHANGES 2021:

WELL ID	OWNER
0273C-2	VANNATTEN
0273C-3	WARDEN
0273C-4	MCQUESTEN
1073L-4	CRABB
1073M-1	BERTHOLF
1573C-5	NELSON
NORTH MEADOWS	1073Q-4

CHANGES

MOVED FROM ANNUAL → SUPPLEMENTAL IN 2022

"

"

"

"

MOVED FROM SEMI-ANNUAL TO ANNUAL IN JAN

COLRES

~~FE~~ NOV | DEC | JAN

DATE: 1/27/2021
WEATHER: SNOW AM LOW 30S P.C PM MID-30S
TECH: MT | KM | GF

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	TECH	WELL ON	COMM
RICHARD	1473M-1-210127	0950	KM	N	MS/MSD
N. MEADOW	1073Q-4-210127	1030	MT	Y	
CLARK	1073E-3-210127	1040	KM	Y	
WALDIAN	1473D-2-210127	1041	GF	N	
RUX	1073G-1-210127	1125	MT	N	
RESSEMAN	0373A-2-210127	1143	GF	N	
HALPIN	1073L-1-210127	1145	KM	Y	
BISE	1173B-1-210127	1215	MT	N	
GANDER	0273F-4-210127	1219	GF	N	
ANDERSON	1073L-3-210127	1235	KM	N	
NERREN	1073D-1-21 0127	1255	MT	Y	DUPE HOLE
"DUPE"	2073D-1-21 0127	1320	MT	-	DUPE ID
POLLEN	1073E-2-210127	1355	GF	N	
TRIP1	COLRES TRIPS	- (2)			

- MORENO NO SAMPLE NOT HOME -

1/28/21

* MT PLACED ABOVE SAMPLE INTO COOLER #45 ALONG W/8 DOUBLE BAGGED REG WET ICE PACKS TO KEEP SAMPLES AT/BELOW 4°C DURING SHIPMENT. MT HAND DEL COOLER #45 TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID ON 1/29/21

COLRES
2|2021

DATE: 2/22/2021 (MONDAY)
TECH: MT|KM
WEATHER: P. CLOUDY → CLOUDY 40S

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	TECH	WELL ON	COMM
WARDIAN	1473D-2-210222	1000	MT	N	
CLARK	1073E-3-210222	1040	KM	N	
WILLIAMS	1573C-8-210222	1100	MT	N	MS/MSD
ANDERSON	1073L-3-210222	1145	KM	N	
NERREN	1073D-1-210222	1200	MT	N	DUPE HERE
" DUPE	2073D-1-210222	1230	MT		DUPE ID
TRIPS	COLRES TRIPS (2)				

* MT PLACE ALL SAMPLES TAKEN ABOVE INTO COOLER #21 ALONG W/ 8 DOUBLE BAGGED REG. WET ICE TO KEEP SAMPLES AT/BELOW 4°C DURING SHIPMENT. KM HAND DEL. COOLER #21 TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID

COLRES
"3/2021"

DATE: 3/11/2021 (THURS)
WEATHER: P. CLOUDY 40S AM 50S PM
TECH: M. TERRIS

THE FOLLOWING LOCATION WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	WL	POMPON	COMM
RESSEMAN	~~02~~0373A-2-210311	1125	NT	Y	MS/MSD
RVX	1073G-1-210311	1300	174.89'	N	
HALPIN	1073L-1-210311	1345	9.71'	N	DUPEHERE
"DUPE	2073L-1-210311	1408			DUPEID
TRIPS	COLRES (TRIP BLANKS) 2				

* PACKED ABOVE SAMPLES INTO COOLER LI ALONG W/ 8 DUBLE BAGS OF REG WETICE TO KEEP SAMPLES AT/BELOW 4°C DURING SHIPMENT TO ANATEK LAB IN MOSCOW ID VIA UPS TO ARRIVE ON 3/12/2021

COLRES
"4/2021)

DATE(S) 4/6/2021 (TUES) 4/7/2021 (WED)
TECH: M. TERRIS
WEATHER: ~~P CLOUDY~~ P. CLOUDY 40S/50S

THE FOLLOWING LOCATIONS WERE SAMPLED:

LOCATION	SAMPLE ID	TIME	WL	PUMP ON		COMM
RESIDENT	1573C-17-210406	1150	NT	Y		(DOG!!)
KURBY	1573C-7-210406	1300	NT	N		NEW OWNER
COUNTRYMAN	1073L-2-210406	1350	NT	Y		SON HOME
PULLEN	1073E-2-210406	1440	14.99'	N		MRS PULLEN HOME
" DUPE	2073E-2-210406	1400	—			DUPE ID
RICHARD	1473M-1-210407	0930	NT	Y	MS/MSD	MRS HOME *

ESCHENBACHER 1573K-1 (WW WELL ABANDONED) 3/2021
MORENO (NOT HOME ALL WATER TURNED OFF)
COLRES TRIPS (2)

* MT PLACED ALL SAMPLE INTO COOLER #21 ALONG W/ 6 DOUBLE BAGGED REG WET ICE PACKS TO KEEP SAMPLES AT/BELOW 4°C DURING SHIPPMENT. MT HAND DEL. COOLER #21 TO UPS FOR OVERNIGHT TO ANATEK LAB IN MOSCOW ID ON 4/8/21 AM

*1 RICHARD WELL 1473M-1 IS ON THE ANNUAL SAMPLE ROUND FOR VOCS AND 1,4 DIOXANE. MT RAN COLRES WITH ANNUAL SAMPLING. USE THIS WELL AS MS/MSD SO THE VOCS MS/MSD ARE TO BE USED BOTH AS COLRES & ANNUAL SAMPLING

COLRES 5/2021

DATE: 5/4/21 - 5/5/21 (TUES/WED)
WEATHER: MOSTLY CLEAR 60S-70S BOTH DAYS
TECH: M. TERRIS

THE FOLLOWING LOCATIONS WERE SAMPLE:

LOCATION	DATE	SAMPLE ID	TIME	WL	PUMP	COMM
BELL	5/4/21	1573R-2-210504	1015	NA	Y	
HUNTER	5/4/21	1573H-1-210504	1100	NA	Y	
WARDIAN	5/4/21	1473D-2-210504	1200	NA	Y	MS/MSD
GREENEN	5/4/21	1073P-1-210504	1300	NA	N	SPRING
CLARK	5/5/21	1073E-3-210505	1000	13.99	N	
ANDERSON	5/5/21	1073L-3-210505	1100	12.01	N	
NERREN	5/5/21	1073D-1-210505	1200	4.47	N	DUPE 1 for
"DUPE	5/5/21	2073D-1-210505	1130		N	DUPE ID

TRIPS COLRES TRIPS "2"

- MT PACKED ABOVE SAMPLES INTO COOLER #21 ALONG W/10 DOUBLE BAGGED REG. WET ICE PACK TO TRY TO KEEP SAMPLES AT/BELOW 4°C DURING SHIPMENT. MT HAND DEL. COOLER # 21 ON 5/5/21 TO UPS FOR OVERNIGHT SHIPMENT TO ANATEK LAB IN MOSCOW ID ON 5/6/21 AM

COLRES 6/2021

DATE: 6/2 & 6/3/2021 (WED/THURS)
WEATHER: SLI CLOUDY HOT 90'S
TECH: M. TERRIS

* THE FOLLOW LOCATIONS WERE SAMPLED:

LOCATION	DATE	SAMPLE ID	TIME	WL	PUMP	COMM
HALPIN	6/2	1073L-1-210602	1330	12.11	N	MS/MSD
LANE	6/2	1073M-3-210602	1415	12.89	N	
LAKE	6/2	1573C-10-210602	1440	NT	Y	
ROX	6/3	1073G-1-210603	1000	167.89	N	
?	6/3	0373A-4-210603	1100	NT	Y	
RESSEMAN	6/3	0373A-2-210603	1200	NT	Y	DUPE
"DUPE	6/3	2373A-2-210603	1230			DUPE ID
"TRIPS"	6/3	TRIP BLANK COLRES(2)				

- MT PACKED ABOVE SAMPLES INTO COOLER #1001 ALONG WITH 8 DOUBLE BAGGED REG. WET ICE PACKS TO KEEP SAMPLES AT/BELOW 4°C WHILE IN SHIPMENT TO LAB VIA UPS. MT HAND DEL. COOLER #1001 UPS FOR PRIORITY OVERNIGHT TO ANATEK LAB IN MOSCOW ID ON 6/4/21 AM

Appendix C

Extraction Well Inspections/Maintenance Checklists

TECHS: MT
DATE(S): 6/1/20

EXTRACTION WELL MAINTENANCE
QUARTERLY INSPECTION

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
SUMP:											
	VERIFY HI FLOAT ALARM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CLEAN AS NEEDED (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
VFD:											
	CLEAN FILTER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT WIRING/COMPONENTS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PIPING:											
	EXERCISE GATE VALVE (2X)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT PIPING FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT AIR/VAC VALVE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PIT:											
	INSPECT FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK ZERO READING	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PCP:											
	CLEAN (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT ALL WIRING/RELAYS/COMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK INDICATOR LIGHTS/REPLACE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK SLC/KE CARD LIGHTS BATT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TURN FAN TO WARM/COOL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CLEAN FILTERS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK/TIGHTEN ALL CABLES/RADIO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DESSICANT CHANGE OUT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	UPS BATTERY CHECK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
VAULT:											
	CLEAN AND INSPECT (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT LADDER BOLTS/RUNGS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT LID BOLTS UPPER/LOWER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK/TIGHTEN MAGNET WELL/LID	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
FINAL:											
	RESET RADIO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	RESET WELL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IS PIT OPEN?	O	O	O	O	O	O	O	O	O	O
	IS GATE VALVE OPEN?	C	C	C	C	C	C	C	C	C	C

QUARTERLY PRE SAMPLE INSPECTION & CLEAN

EXTRA NOTES:

TECHS: MT
DATE(S): 8/7/20

EXTRACTION WELL MAINTENANCE
QUARTERLY INSPECTION

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
SUMP:											
	VERIFY HI FLOAT ALARM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CLEAN AS NEEDED (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
VFD:											
	CLEAN FILTER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT WIRING/COMPONENTS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PIPING:											
	EXERCISE GATE VALVE (2X)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT PIPING FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT AIR/VAC VALVE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PIT:											
	INSPECT FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK ZERO READING	A	A	A	A	A	A	A	A	A	A
NOTES:	A = ANNUAL										
PCP:											
	CLEAN (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT ALL WIRING/RELAYS/COMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK INDICATOR LIGHTS/REPLACE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK SLC/KE CARD LIGHTS BATT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TURN FAN TO WARM/COOL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CLEAN FILTERS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK/TIGHTEN ALL CABLES/RADIO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DESSICANT CHANGE OUT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	UPS BATTERY CHECK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:	CHANGED OUT BATT IN SLC / KE CARDS & UPS BATTERY IN ALL VAULTS										
VAULT:											
	CLEAN AND INSPECT (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT LADDER BOLTS/RUNGS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT LID BOLTS UPPER/LOWER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK/TIGHTEN MAGNET WELL/LID	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:	NEED NEW FANS IN E-3 & W-1										
FINAL:											
	RESET RADIO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	RESET WELL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IS PIT OPEN?	O	O	O	O	O	O	O	O	O	O
	IS GATE VALVE OPEN?	C	C	C	C	C	C	C	C	C	C

EXTRA NOTES: QUARTERLY PRE-SAMPLE INSPECTION & CLEANING OF EXTRACTION WELLS

TECHS: M. TERRIS
DATE(S): 10/1/2020

EXTRACTION WELL MAINTENANCE QUARTERLY INSPECTION

10/1/2020

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
SUMP:											
	VERIFY HI FLOAT ALARM	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CLEAN AS NEEDED (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
VFD:											
	CLEAN FILTER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT WIRING/COMPONENTS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:	NEED FAN IN E-3 & W1 (ORDERED)										
PIPING:											
	EXERCISE GATE VALVE (2X)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT PIPING FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT AIR/VAC VALVE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PIT:											
	INSPECT FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK ZERO READING	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
PCP:											
	CLEAN (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT ALL WIRING/RELAYS/COMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK INDICATOR LIGHTS/REPLACE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK SLC/KE CARD LIGHTS BATT	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	TURN FAN TO WARM/COOL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CLEAN FILTERS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK/TIGHTEN ALL CABLES/RADIO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	DESSICANT CHANGE OUT	✓	NEW (NEEDS REPLACED)								
	UPS BATTERY CHECK	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:	ORDER NEW DESSICANT, NEED REPLACED ~~ORDERED~~										
VAULT:											
	CLEAN AND INSPECT (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT LADDER BOLTS/RUNGS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	INSPECT LID BOLTS UPPER/LOWER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	CHECK/TIGHTEN MAGNET WELL/LID	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
NOTES:											
FINAL:											
	RESET RADIO	NEW	NEW	RADIO'S							
	RESET WELL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	IS PIT OPEN?										
	IS GATE VALVE OPEN?	C	C	C	C	C	C	C	C	C	C

EXTRA NOTES:

TECHS: M. TERRIS
DATE(S): 1/15/2021

EXTRACTION WELL MAINTENANCE QUARTERLY INSPECTION

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3	
SUMP:												
	VERIFY HI FLOAT ALARM											
	CLEAN AS NEEDED (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
NOTES:												
VFD:												
	CLEAN FILTER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
	INSPECT WIRING/COMPONENTS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
NOTES:	OPENED ALL VFD ✓ CLEANED											
PIPING:												
	EXERCISE GATE VALVE (2X)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	INSPECT PIPING FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	INSPECT AIR/VAC VALVE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
NOTES:	✓ ALL PIPING ALL LOOKS GOOD											
PIT:												
	INSPECT FOR LEAKS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CHECK ZERO READING	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	A
NOTES:												
PCP:												
	CLEAN (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	INSPECT ALL WIRING/RELAYS/COMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CHECK INDICATOR LIGHTS/REPLACE	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CHECK SLC/KE CARD LIGHTS BATT	—	—	—	—	—	—	—	—	—	—	A
	TURN FAN TO WARM/COOL	—	—	—	—	—	—	—	—	—	—	A
	CLEAN FILTERS	—	—	—	—	—	—	—	—	—	—	A
	CHECK/TIGHTEN ALL CABLES/RADIO	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	DESSICANT CHANGE OUT											
	UPS BATTERY CHECK	—	—	—	—	—	—	—	—	—	—	A
NOTES:												
VAULT:												
	CLEAN AND INSPECT (SHOPVAC)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	INSPECT LADDER BOLTS/RUNGS	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	INSPECT LID BOLTS UPPER/LOWER	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	CHECK/TIGHTEN MAGNET WELL/LID	—	—	—	—	—	—	—	—	—	—	A
NOTES:												
FINAL:												
	RESET RADIO	NO RADIOS WORK ANYLONGER										
	RESET WELL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	IS PIT OPEN?	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	
	IS GATE VALVE OPEN?	C	C	C	C	C	C	C	C	C	C	

NO RADIOS WORK RUNNING MANUAL WHEN SAMPLING.

EXTRA NOTES:

TECHS: MT
DATE(S): 3/3/2021 / 4/1/21

EXTRACTION WELL MAINTENANCE QUARTERLY INSPECTION

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
SUMP:	(MOVED)	80.22'			86.63'	184.15'	149.18'		174.59'	170.49	171.99
	VERIFY HI FLOAT ALARM	Y	✓	✓	✓	N	✓	✓	✓	N	✓
	CLEAN AS NEEDED (SHOPVAC)	Y	✓	✓	✓	Y	✓	✓	✓	Y	✓

NOTES:

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
VFD:	CLEAN FILTER	✓	✓	✓	✓	Y	✓	✓	✓	Y	✓
	INSPECT WIRING/COMPONENTS	✓	✓	✓	✓	Y	✓	Y	✓	Y	✓

NOTES: E-3 & W-3 NEED NEW FANS

Y A/C NEW VFD FAN

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
PIPING:	EXERCISE GATE VALVE (2X)	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	INSPECT PIPING FOR LEAKS	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	INSPECT AIR/VAC VALVE	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓

NOTES:

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
PIT:	INSPECT FOR LEAKS	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	CHECK ZERO READING	—	—	—	—	[illegible]	—	—	—	—	—

NOTES:

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
PCP:	CLEAN (SHOPVAC)	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	INSPECT ALL WIRING/RELAYS/COMP	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	CHECK INDICATOR LIGHTS/REPLACE	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	CHECK SLC/KE CARD LIGHTS BATT	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	TURN FAN TO WARM/COOL	—	—	—	—	Y	—	—	—	—	—
	CLEAN FILTERS	✓	✓	✓	✓	Y	N	✓	✓	✓	✓
	CHECK/TIGHTEN ALL CABLES/RADIO	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	DESSICANT CHANGE OUT	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	UPS BATTERY CHECK	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓

NOTES: NEW UPS / SLIC / KE BATT IN EVERY WELL

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
VAULT:	CLEAN AND INSPECT (SHOPVAC)	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	INSPECT LADDER BOLTS/RUNGS	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	INSPECT LID BOLTS UPPER/LOWER	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓
	CHECK/TIGHTEN MAGNET WELL/LID	✓	✓	✓	✓	Y	✓	✓	✓	✓	✓

NOTES:

TASK	MAINTENANCE	CP-S1	CP-S4	CP-S5	CP-S6	CP-E1	CP-E2	CP-E3	CP-W1	CP-W2	CP-W3
FINAL:	RESET RADIO	N	N	N	N	N	N	N	N	N	N
	RESET WELL	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	IS PIT OPEN?	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
	IS GATE VALVE OPEN?	C	C	C	C	C	C	C	C	C	C

EXTRA NOTES: ALL IN ALL VAULT LOOK GREAT!!

183.22'