Corrective Measures Implementation Report Addendum Former Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

Prepared for:
McClellan Development Authority
Anniston, Alabama

Prepared by:
Groundwater & Environmental Services, Inc.
440 Creamery Way, Suite 500
Exton, PA

In Cooperation with:
Matrix Environmental Services, LLC
283 Rucker Street
Anniston, Alabama 36205

GES Project:
0022825

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1 Introduction

This Corrective Measures Implementation Report (CMIR) has been prepared by Groundwater & Environmental Services, Inc. (GES) in collaboration with Matrix Environmental Services, LLC. (Matrix) on behalf of the McClellan Development Authority (MDA) to document the activities performed to implement groundwater corrective measures at the Former Small Weapons Repair Shop, Parcel 66(7) located at Ft. McClellan in Anniston, Alabama (Site). The groundwater corrective measures implemented at the Site was in-situ chemical oxidation (ISCO), specifically injection of catalyzed hydrogen peroxide using sodium persulfate to catalyze the hydrogen peroxide as presented in the *Second Addendum to Corrective Measures Implementation Plan Former Small Weapons Repair Shop, Parcel 66(7) McClellan, Anniston, Alabama* (Matrix, 2018) and Underground Injection Control (UIC) Permit # ALSI9908667 **(Appendix A)**. Prior groundwater corrective measures implemented at the Site from October 2010 to February 2011 involved anhydrous quicklime blending of soil and direct application of solid potassium permanganate. Details of the prior corrective measures activities are documented in the *Final Corrective Measures Implementation Report (CMIR), Former Small Weapons Repair Shop, Parcel 66(7)* (Matrix, 2013).

ISCO, specifically injection of catalyzed hydrogen peroxide using sodium persulfate to catalyze the hydrogen peroxide, was proposed as the corrective action to address the primary Site chemicals for concern (COCs) in shallow groundwater, including cis-1,2-dichloroethene (cis-1,2-DCE), Trichloroethene (TCE) and Vinyl chloride (VC). The primary objective was to reduce the dissolved-phase levels of VC in groundwater to below the established risk-based target levels (RBTLs). Injection locations and monitoring wells are shown on **Figure 1**.

1.1 Regulatory Framework

The MDA has assumed the responsibility from the United States (U.S.) Department of the Army (Army) for environmental closure of certain sites at McClellan. Transfer of these sites to the MDA was conducted pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 120(h)(3)(C), which allows federal agencies to transfer contaminated property before necessary cleanup has taken place. The basis for the continuing effort at these parcels is an Environmental Services Cooperative Agreement (ESCA) dated September 29, 2003 between the MDA and the Army (Army, 2003). In September 2007, a new ESCA was negotiated into which the 2003 ESCA was incorporated (Army, 2007). In addition, the MDA has negotiated a Cleanup Agreement, most recently amended February 2014, with the Alabama Department of Environmental Management (ADEM) that describes the responsibilities for completing the investigation and remediation of potentially impacted sites at McClellan (ADEM, 2003 and 2014).

1.2 Report Purpose and Organization

The purpose of this CMIR is to document activities performed to implement the ISCO corrective measures for groundwater at the Site.

The remainder of this document is organized as follows:

- Section 2 presents a description of the Site conditions.
- Section 3 provides a description of the corrective measures.
- Section 4 summarizes the implementation of the corrective measures.
- Section 5 contains professional certification information.
- Section 6 contains a list of references used in the document.

2 Site Background

This section summarizes the Site description and physical setting, geology, hydrogeology, and land use information.

2.1 Site Description and Physical Setting

The Site consists of 1.15 acres and is located in the central portion of McClellan at the intersection of Pappy Dunn Blvd and Fremont Road. Two buildings (Buildings 335 and 336) were located within the parcel boundary of the Site. Building 335 formerly housed the Small Weapons Repair Shop where weapons used for training exercises were stored, disassembled, and cleaned using various solvents. It is reported that the main part of Building 335 was used primarily for Tank Repair. Building 336, located just east of Building 335, historically was used as a boiler plant and paint storage area.

The Small Weapons Repair Shop was built in 1941, although it is not known when operations began at this location. The operation was moved to the Consolidated Maintenance Facility (Building 350) in approximately 1991. From 1991 to circa 2003, Building 335 was used by the Alabama National Guard for boiler plant storage. The history of the Site is described in more detail in the *Final CMIP* (Matrix, 2007).

Drainage ditches border the Site along Pappy Dunn Blvd to the north and Fremont Road to the west. Buildings 335 and 336 were removed from the Site in 2007.

2.2 Geology

The majority of Calhoun County, including McClellan, lies within the Appalachian fold-and-thrust structural belt of the Valley and Ridge Province, consisting of southeastward-dipping thrust faults with associated minor folding as the predominant structural features. The fold-and-thrust belt consists of Paleozoic sedimentary rocks that have been asymmetrically folded and thrust-faulted with major structures and faults striking in a northeast-southwest direction. Geologic contacts in this region generally strike parallel to the faults and repetition of lithologic units is common in vertical sequences.

The Site is located within the eroded geologic “window” in the uppermost structural thrust sheet at McClellan. The geologic unit exposed at this parcel is the Mississippian/Ordovician Floyd and Athens Shale, undifferentiated. The Floyd Shale consists of thin-bedded fissile brown to black shale with thin intercalated limestone layers and interbedded sandstone. Athens Shale is

comprised of dark gray to black shale and graptolitic shale with localized interbedded dark gray limestone.

Geologic data collected at the Site indicate the upper part of the residuum consists of brown to brownish-gray to yellowish-orange silty-clay and clay, with occasional intervals of highly weathered shale. This sequence extends from the ground surface to approximate depths of around 10 to 13 feet below ground surface (bgs). Underlying this interval and described as the lower portion of the residuum or transition zone, is a variable thickness of highly weathered light gray to black shale that extends to a maximum depth of approximately 30 feet bgs.

Competent bedrock underlying the transition zone consists of moderately hard, slightly weathered, fractured, dark gray to black shale. Some of the fractures in the shale are filled with quartz and/or dolomite.

2.3 Surface Hydrology

The Site is located on a local topographical divide and is mostly overlain by asphalt or concrete or grass. Surface runoff collects in man-made drainage features located along the northern and western boundaries of the parcel. Runoff from the northern and eastern portions of the parcel collects in a drainage feature along the northern boundary and eventually empties into Cave Creek. Runoff from the southern and western portions of the parcel collect into a drainage feature along the western boundary and eventually empties into Cane Creek and flows west into the Coosa River.

2.4 Hydrogeology

Regional groundwater flow in the vicinity of the Site is from east to west. Groundwater is encountered at the Site at unusually shallow depths, usually less than 10 feet bgs. Groundwater in the residuum zone appears to exhibit radial flow. This apparent groundwater mound creates a flow divide with an east-west trending axis centered under the Site. Groundwater flow in the bedrock and transition zones is also affected by the groundwater mound and flows to the north in the bedrock zone and in a north-westerly direction in the transition zone. These flow directions are expected to be local since the regional groundwater flow direction at McClellan in both residuum and bedrock is northwesterly. Groundwater flow from the Site is expected to revert to regional trends a relatively short distance from the Site.

2.5 Land Use and Land Use Controls

The proposed future land use for the Site is a light industrial and business park. Based on the presence of volatile organic compounds (VOC) in groundwater, MDA has implemented land use controls (LUCs) to limit exposure to groundwater. LUCs include a prohibition on consumptive use or direct contact with groundwater and installation of any well for extraction of groundwater for purposes of consumptive or other uses within the covenant boundary. In accordance with the Cleanup Agreement (CA) and Alabama Uniform Environmental Covenants Act, Code of Alabama 1975, §§ 35-19-1 to 35-19-14 and the ADEM Admin Code r. 335-5, effective May 26, 2009, MDA

filed Environmental Covenant No. FY 12-07.00 in Calhoun County Probate on March 7, 2013, which documents the LUCs.

2.6 Constituents of Concern

Corrective action implemented at the Site addresses groundwater contamination for the following COCs: cis-1,2-DCE, TCE and VC.

3 Corrective Measures Implementation

The selected ISCO chemistry combined hydrogen peroxide and sodium persulfate (Klozur™). This dual oxidant approach combined the reactivity of hydrogen peroxide for the destruction of VOCs with the enhanced stability of sodium persulfate. Hydrogen peroxide catalyzed with persulfate tends to generate less heat and pressure than peroxide catalyzed with iron salts. In addition, post-injection monitoring typically shows that the oxidation-reduction potential (ORP) remains elevated for longer periods with the combined peroxide/persulfate approach.

The combination of hydrogen peroxide and sodium persulfate has several synergistic effects. First, hydroxyl radicals generated from hydrogen peroxide can initiate persulfate radical formation, and vice versa. Secondly, sodium persulfate may destroy a significant portion of the more susceptible contaminants, including natural oxidant demand (NOD), thus allowing the hydroxyl and sulfate radicals to destroy more recalcitrant compounds. Finally, a combination of hydroxyl and sulfate radicals results in a multi-radical attack mechanism, yielding a higher efficiency in destroying contaminants.

3.1 Injection Event

The ISCO injection event was conducted from December 3 through December 14, 2018. A summary of injection volumes for each location is included as **Table 1**. A summary of the groundwater quality field parameters and depth to water readings taken prior, during, and after injections are included as **Table 2**. Pre-injection results collected in October 2018 are included in Appendix E.

After mobilization and setup, the direct push tooling was advanced by Geo Lab Drilling at the first location, upon which refusal was met at approximately 15 feet. Three more locations were attempted, each meeting refusal at approximately 12 to 15 ft bgs. In order to accomplish injection of oxidant into the deeper portion of the target treatment zone, solid stem augers were used to install temporary injection points. Upon successful injection using the first six deep injection points, remaining deep injection points were installed via solid stem or hollow stem augers. Each deep injection point was drilled to a total depth of approximately 30 feet bgs and constructed of 3/4-inch diameter schedule 40 polyvinyl chloride (PVC) with a 10-foot screened interval consisting of 0.010-slot PVC.

An oxidation solution was created consisting of 8% hydrogen peroxide (diluted onsite from 34% using water from a nearby fire hydrant) and adding dry sodium persulfate to create a 10%

over the course of eight days into 13 shallow direct push technology (DPT) points and 13 deep injection points. Individual injection rates ranged from 0.7 to 3 gpm at low pressure (i.e., less than 50 pounds per square inch [psi]). Periodically, during the course of injection activities, daylighting of groundwater/oxidant solution would occur. When daylighting occurred, the injection rate was reduced, the injection point was allowed to rest, and/or injection was ceased. A detailed breakdown of the injection activities is provided in the Geo Lab Drilling Injection Service Report included as **Appendix B**.

After completing injection in each shallow injection point, the downhole direct push tooling was removed and bentonite chips added to the borehole. This abandonment method was utilized to prevent daylighting at that location as injection continued at surrounding locations. The bentonite chips provided a rapid means of sealing each location. After completing injection at each deep injection point, the temporary PVC casing was removed from the location and abandoned by tremie grouting each borehole location from the bottom up. Additional details on the injection point abandonment are included in **Appendix C**.

3.2 Field Monitoring

Field monitoring was completed during the ISCO injection in the treatment area. The monitoring well network consisted of PPMP-66-MW-02RR (note prefix PPMP-66 removed from remainder of document), MW-06R, MW-08, MW-14, MW-16, MW-17, MW-18R, MW-21, MW-22, MW-23R, and MW-24R.

Field data collected during the ISCO injection was reviewed to identify a) changes in subsurface conditions for propagation of oxidants in the subsurface and b) trends that support occurrence of oxidation reactions. Field data was collected before, during, and at the end of injection each day. Field data collection included:

- groundwater quality/geochemical parameters (dissolved oxygen (DO), ORP, conductivity, temperature and pH as well as residual peroxide and persulfate); and
- depth to water.

Increases in DO, ORP, conductivity, and detection of peroxide and/or persulfate, are positive indicators of influence from ISCO injections. Increases in temperature and decreases in pH are also positive indicators of ISCO reactions. Rising head (or mounding) conditions from depth to water measurements also provide an indicator of ISCO influence.

In general, the field data collected during the ISCO injection event (see **Table 2**) showed multiple lines of evidence that oxidants were being distributed throughout the subsurface.

Mounding - The water table in all observation wells indicated mounding ranging from 0.5 feet to a maximum of 6 ft (MW-06R) with several wells mounding to the top of casing.

Temperature – No notable temperature changes were observed.

Dissolved Oxygen – Large increases in DO were observed in the closest observation wells (MW-02RR, MW-06R, and MW-23R) with a maximum DO of 37.18 (MW-02RR). Smaller DO increases were observed in other wells.

pH – Baseline field readings taken prior to the start of the injection event detected elevated levels of pH (i.e., approximately 12 standard pH units) at MW-02RR, MW-06R, and MW-23R. It is suspected that the elevated pH is a residual effect of the lime that had been added during previous excavation and backfill activities. The oxidant solution is very acidic and reduced the pH by more than 2 units in all observation wells indicating oxidant influence, except MW-14 and MW-21.

ORP – Baseline readings generally indicated reducing conditions (negative ORP). As a result of the oxidant solution injection, the ORP was increased substantially in all wells. An ORP near 300 millivolts (mV) is a strong indicator that advanced oxidation is occurring. An ORP near 300 mV was observed at all wells except MW-08, MW-14, and MW-21.

Conductivity – Increases in conductivity were observed at several wells (MW-02RR, MW-06R, MW-16, MW-21, MW-22, MW-23R, and MW-24R).

Oxidant - Baseline field readings taken prior to the start of the injection event detected low levels of oxidant (peroxide and/or persulfate). It is assumed that the test kits were detecting some sort of interference. These low levels were considered as background for comparison with measurements collected during and after injection. Significant levels of peroxide and/or persulfate were detected at MW-02RR, MW-06R, MW-16, MW-21, MW-22, and MW-23R. Low levels of oxidant were detected at MW-08, MW-17, MW-18R, and MW-24R. No oxidant was detected at MW-14.

3.3 Waste Management

Two drums of investigation derived waste (IDW) consisting of soil cuttings were generated during drilling. The waste was disposed at Giant Resource Recovery – Attalla, Inc. in Attalla, AL. The waste manifest is provided in **Appendix D**.

3.4 Modifications from Second Addendum to CMIP

The 2018 CMIP proposed installing 13 injection points to a depth of 30 feet bgs using direct push. DPT refusal occurred approximately 15 feet bgs, so to accomplish injection of oxidant into the deeper portions of the target treatment zone, solid stem and hollow stem augers were used to install temporary injection points. A total of 13 shallow injection points were installed using DPT and 13 deep injection points were installed using augers.

4 Summary

During the ISCO event, 9,750 gallons of oxidant solution (hydrogen peroxide and sodium persulfate) were injected over 8 days into 13 shallow and 13 deep locations. Shallow injection was completed via DPT and ranged from 3 ft bgs to 15 ft bgs. Deep injection was completed via temporary injection points and ranged from 11 ft bgs to 30 ft bgs. Injection flow rates were higher than anticipated (0.75 gpm) and ranged from 0.7 gpm to 3 gpm. Positive indicators of oxidation were generally observed at the monitoring wells, including the presence of oxidants, elevated DO and ORP, and decreased pH. All injection locations were abandoned upon completion of injection activities.

5 Certification

I certify that I currently hold an active license in the State of Alabama and that the corrective measures activities undertaken by Matrix and Groundwater & Environmental Services, Inc. as described in this report were performed in general accordance with the approved 2018 CMIP.

Richard K Evans

Richard Evans, P.E.

Engineer, Alabama P.E. License # 34151-E

6 References

Alabama Department of Environmental Management (ADEM). 2003. *In the Matter of: Anniston-Calhoun County Fort McClellan Development Joint Power Authority Facility*, Cleanup Agreement No. AL4 210 020 562. September.

ADEM. 2014. *In the Matter of: Anniston-Calhoun County Fort McClellan Development Joint Power Authority Facility*, Cleanup Agreement No. AL4210020562 (Mod 4). February.

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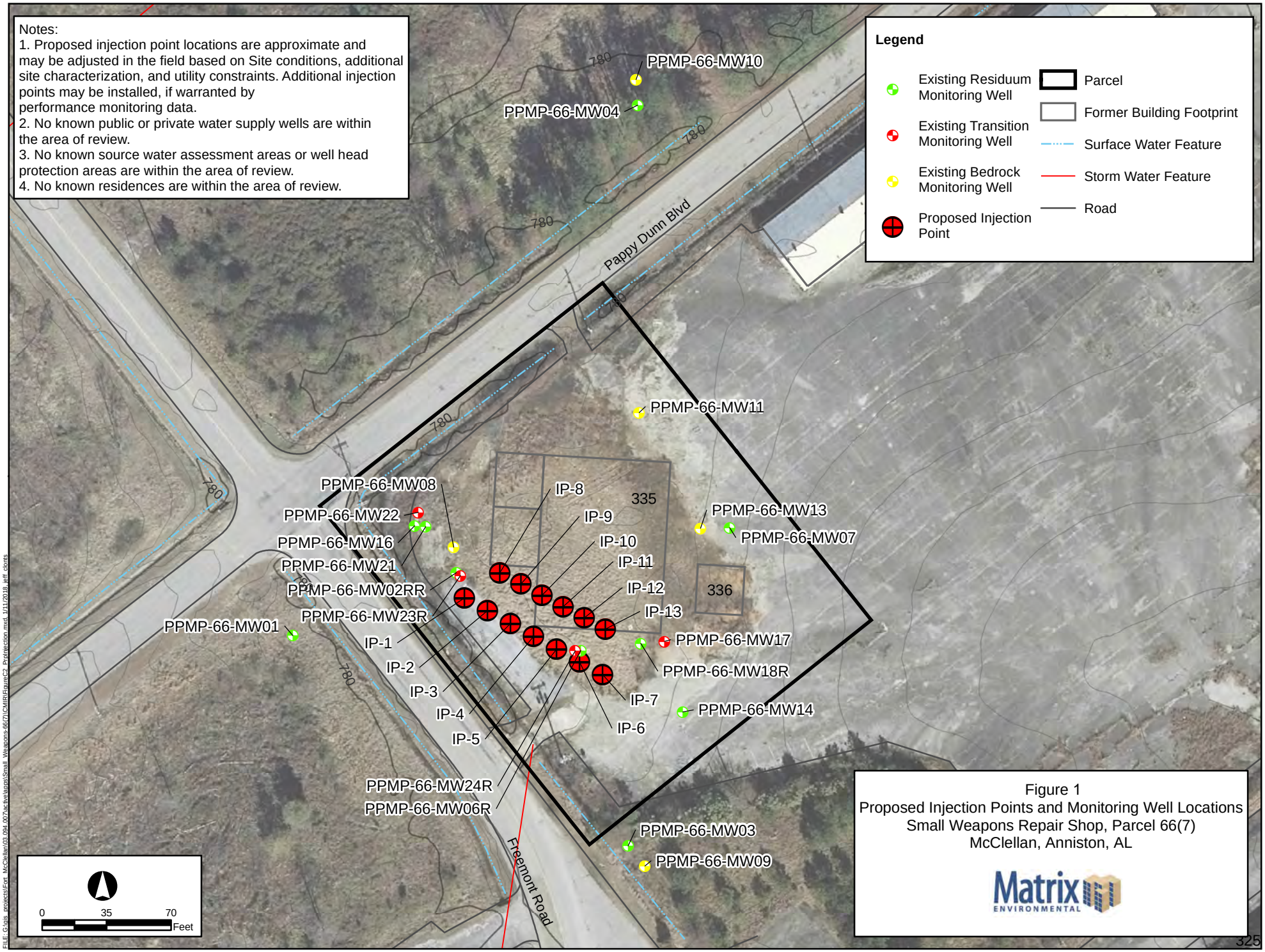
U.S. Department of the Army (Army). 2003. *Cooperative Agreement Award, Agreement No: DASW01-03-2-0001*. September.

Army. 2007. *Cooperative Agreement Award, Agreement No: W9128F-07-2-0163*. September.

Figures


Notes:
1. Proposed injection point locations are approximate and may be adjusted in the field based on Site conditions, additional site characterization, and utility constraints. Additional injection points may be installed, if warranted by performance monitoring data.
2. No known public or private water supply wells are within the area of review.
3. No known source water assessment areas or well head protection areas are within the area of review.
4. No known residences are within the area of review.
Legend
Existing Residuum Monitoring Well
Existing Transition Monitoring Well
Existing Bedrock Monitoring Well
Proposed Injection Point
Parcel
Former Building Footprint
Surface Water Feature
Storm Water Feature
Road
PPMP-66-MW10
PPMP-66-MW04
PPMP-66-MW11
PPMP-66-MW08
PPMP-66-MW22
PPMP-66-MW16
PPMP-66-MW21
PPMP-66-MW02RR
PPMP-66-MW23R
PPMP-66-MW01
PPMP-66-MW13
PPMP-66-MW07
PPMP-66-MW17
PPMP-66-MW18R
PPMP-66-MW14
PPMP-66-MW24R
PPMP-66-MW06R
PPMP-66-MW03
PPMP-66-MW09
IP-1
IP-2
IP-3
IP-4
IP-5
IP-6
IP-7
IP-8
IP-9
IP-10
IP-11
IP-12
IP-13
335
336
Pappy Dunn Blvd
Freemont Road
780
0
35
70
Feet
Figure 1
Proposed Injection Points and Monitoring Well Locations
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, AL
Matrix ENVIRONMENTAL
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Tables

Table 1
Oxidant Injection Summary
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Well ID	Injection Depth (feet bgs)	Oxidant Injection Rate (gallons per minute)	Total Oxidant Injection Volume (gallons)
IP-1 Shallow	10-12	1.0 - 1.3	291
IP-1 Deep	11-26	1.2 - 1.8	592
IP-2 Shallow	7-13	1.5 - 2.0	566
IP-2 Deep	26-30	0.8 - 1.2	172
IP-3 Shallow	5-13	1.0 - 2.7	404
IP-3 Deep	21-31	1.5 - 2.0	606
IP-4 Shallow	10-12	3.0	220
IP-4 Deep	20-30	1.7 - 1.8	449
IP-5 Shallow	4-12	1.0 - 2.8	639
IP-5 Deep	19-29	1.1 - 1.9	393
IP-6 Shallow	9-11	0.8	192
IP-6 Deep	19-29	1.5 - 2.0	597
IP-7 Shallow	4-12	0.7 - 1.8	243
IP-7 Deep	13-23	1.9	265
IP-8 Shallow	8-12	2.0 - 2.8	260
IP-8 Deep	19-29	1.8 - 2.0	463
IP-9 Shallow	4-12	1.2 - 2.0	180
IP-9 Deep	17-27	1.0	110
IP-10 Shallow	8.5-11.5	1.5 - 1.8	343
IP-10 Deep	20-30	1.0 - 2.5	305
IP-11 Shallow	3-11	1.75	316
IP-11 Deep	20-30	2.4	376
IP-12 Shallow	4-12	2.0 - 2.8	533
IP-12 Deep	18-28	0.9 - 2.1	472
IP-13 Shallow	5-13	1.0 - 1.6	251
IP-13 Deep	19-30	1.0 - 2.0	512
TOTAL			9750

Oxidant solution comprised of 8% hydrogen peroxide/10% sodium persulfate
bgs - below ground surface

Table 2
Groundwater Quality Field Data
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Well ID	Date	Time	Depth to Water (ft bTOC)	Hydrogen Peroxide Test Kit (ppm)	Sodium Persulfate Test Kit (ppm)	Temperature (°C)	Dissolved Oxygen (mg/L)	pH (SU)	Oxidation-Reduction Potential (mV)	Specific Conductivity (mS/cm)
MW-02RR	12/04/2018	8:00	3.80	0	0	21.02	0.90	11.80	-149.4	0.828
	12/05/2018	14:00	3.32	NM	NM	20.94	1.09	11.82	40.3	0.763
	12/05/2018	16:00	TOC	0	0	20.30	1.58	11.84	-45.9	0.712
	12/06/2018	7:45	3.42	0	0	20.92	2.34	10.81	-77.9	0.270
	12/06/2018	11:30	3.36	0	0	20.87	2.47	10.89	-6.3	0.271
	12/06/2018	16:10	TOC	>600	>70	19.62	3.51	2.13	539.5	23.93
	12/07/2018	7:30	TOC	600	>70	20.41	3.69	2.50	510.1	24.42
	12/07/2018	10:15	TOC	NM	NM	22.22	10.24	1.86	656.1	37.67
	12/10/2018	8:30	TOC	>600	>70	19.85	2.16	2.86	468.0	28.31
	12/10/2018	12:00	TOC	>600	>70	21.20	1.69	2.53	470.6	29.04
	12/10/2018	16:00	TOC	>600	>70	21.07	2.18	2.67	470.2	26.20
	12/11/2018	8:00	TOC	>600	>70	20.80	1.78	2.73	462.9	24.14
	12/11/2018	12:30	TOC	>600	>70	19.03	24.80	4.16	587.6	20.48
	12/11/2018	16:00	TOC	>600	>70	NM	NM	NM	NM	NM
	12/12/2018	7:45	TOC	>600	>70	20.70	23.48	1.60	516.3	29.41
	12/13/2018	7:45	TOC	>600	>70	19.92	11.19	0.77	478.3	29.10
	12/14/2018	7:15	NM	>600	>70	NM	NM	NM	NM	NM
	12/14/2018	12:00	TOC	>600	>70	19.22	37.18	0.78	512.8	57.56
MW-06R	12/04/2018	8:00	6.57	0	0.7	20.35	1.14	12.15	-72.2	1.329
	12/05/2018	14:00	4.04	NM	NM	20.86	1.28	12.19	-160.1	1.302
	12/05/2018	16:00	4.02	0.2	2.1	20.70	1.23	12.19	-168.2	1.300
	12/06/2018	7:45	4.14	0.1	1.4	20.57	1.66	12.16	17.5	1.298
	12/06/2018	11:30	4.00	0.2	1.4	20.66	1.60	12.10	-127.1	1.246
	12/06/2018	16:10	3.75	0.2	1.4	20.61	1.94	12.13	27.8	1.192
	12/07/2018	7:30	4.16	0.1	0.7	20.30	1.60	11.97	70.6	1.204
	12/07/2018	10:15	3.82	NM	NM	20.72	2.80	11.15	90.6	1.170
	12/07/2018	12:45	3.75	2	14	20.63	1.86	12.15	-82.7	1.173
	12/07/2018	14:45	3.82	3	21	20.38	1.71	11.84	-32.7	1.176
	12/10/2018	8:30	3.12	35	>70	20.59	2.52	9.19	201.0	1.311
	12/10/2018	12:00	2.18	35	>70	20.42	2.20	9.35	167.7	1.382
	12/10/2018	16:00	2.25	50	>70	20.48	1.94	8.53	106.9	1.495
	12/11/2018	8:00	3.25	25	>70	20.56	2.41	9.36	81.4	1.545
	12/11/2018	12:30	TOC	240	>70	23.16	30.89	2.77	605.6	28.17
	12/11/2018	16:00	TOC	600	>70	NM	NM	NM	NM	NM
	12/12/2018	7:45	3.08	400	>70	20.94	20.73	2.51	515.4	28.01
	12/12/2018	11:45	3.55	600	>70	20.75	8.80	1.57	515.6	28.84
	12/12/2018	16:00	2.29	>600	>70	20.08	17.88	1.12	523.9	33.10
	12/13/2018	7:45	1.88	500	>70	20.97	11.93	1.48	492.8	25.01
	12/13/2018	12:15	1.25	500	>70	20.76	13.12	1.20	486.0	24.31
	12/13/2018	16:00	0.57	400	>70	NM	NM	NM	NM	NM
	12/14/2018	7:15	NM	120	>70	NM	NM	NM	NM	NM
	12/14/2018	12:00	TOC	120	>70	20.10	9.88	3.83	230.3	2.402
MW-08	12/04/2018	8:00	5.97	0	0	19.70	2.93	7.98	-31.3	0.179
	12/06/2018	7:45	4.32	0	0	19.69	3.46	8.62	-12.9	0.182
	12/06/2018	11:30	4.29	0	0	19.70	3.48	8.80	-40.4	0.182
	12/06/2018	16:10	4.03	0	0	19.68	3.59	8.65	224.9	0.183
	12/14/2018	12:00	3.42	0.1	0.7	19.71	3.58	5.04	231.9	0.180
MW-14	12/04/2018	8:00	5.62	0.2	1.4	21.55	1.26	7.06	19.2	1.467
	12/14/2018	12:00	4.24	0.2	1.4	20.22	1.43	6.13	178.4	1.439
MW-16	12/04/2018	8:00	0.60	0	0.7	17.82	0.90	7.27	9.5	0.295
	12/14/2018	12:00	TOC	35	>70	16.92	1.32	4.49	287.9	4.166

Table 2
Groundwater Quality Field Data
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Well ID	Date	Time	Depth to Water (ft bTOC)	Hydrogen Peroxide Test Kit (ppm)	Sodium Persulfate Test Kit (ppm)	Temperature (°C)	Dissolved Oxygen (mg/L)	pH (SU)	Oxidation-Reduction Potential (mV)	Specific Conductivity (mS/cm)
MW-17	12/04/2018	8:00	5.20	0	0	20.63	0.23	7.33	11.5	0.702
	12/07/2018	7:30	4.49	0	0	19.21	1.18	7.46	147.3	0.702
	12/07/2018	10:15	4.40	NM	NM	20.56	1.51	7.25	130.8	0.703
	12/07/2018	12:45	4.29	0.1	0.7	20.57	0.50	7.46	51.1	0.684
	12/07/2018	14:45	4.36	0.1	0.7	20.59	0.46	7.39	70.1	0.688
	12/10/2018	8:30	3.61	0.1	0.7	19.39	6.09	6.87	238.9	0.264
	12/10/2018	12:00	3.48	0.1	0.7	19.57	5.33	7.03	256.3	0.297
	12/10/2018	16:00	3.38	0.2	0.7	18.81	4.99	6.11	122.8	0.338
	12/11/2018	8:00	3.75	0	0	19.58	5.35	6.70	124.4	0.361
	12/11/2018	12:30	3.67	0	0	19.81	4.48	6.44	213.2	0.428
	12/11/2018	16:00	3.70	0.2	1.4	19.89	3.96	6.40	95.5	0.461
	12/12/2018	7:45	3.82	0.1	0.7	19.71	2.52	6.61	152.8	0.568
	12/12/2018	11:45	3.25	0.2	1.4	19.68	2.11	5.68	237.9	0.587
	12/12/2018	16:00	2.79	0.2	1.4	19.50	1.96	4.29	266.0	0.606
	12/13/2018	7:45	3.50	0.1	0.7	19.50	1.35	5.14	390.4	0.650
	12/13/2018	12:15	2.42	0.3	1.4	19.75	1.36	4.78	388.0	0.653
	12/13/2018	16:00	2.77	0.3	1.4	NM	NM	NM	NM	NM
	12/14/2018	7:15	NM	0.2	0.7	NM	NM	NM	NM	NM
	12/14/2018	12:00	3.09	0.3	1..4	18.21	8.56	5.68	181.5	0.113
MW-18R	12/04/2018	8:00	1.00	0	0	16.26	0.17	7.43	31.4	0.523
	12/07/2018	7:30	1.40	0	0	16.15	0.69	7.50	163.7	0.495
	12/07/2018	10:15	0.32	NM	NM	16.05	1.48	7.05	129.9	0.476
	12/07/2018	12:45	0.78	0	0	16.26	0.48	7.91	23.8	0.455
	12/07/2018	14:45	0.70	0	0	16.20	0.55	7.76	57.1	0.438
	12/10/2018	8:30	0.30	0	0	15.83	0.51	6.79	228.7	0.470
	12/10/2018	12:00	TOC	0	0	15.53	1.31	7.24	360.0	0.470
	12/10/2018	16:00	TOC	0.3	1.4	15.45	0.96	5.46	113.0	0.476
	12/11/2018	8:00	0.50	0	0	15.48	1.01	6.84	99.5	0.465
	12/11/2018	12:30	0.10	0	0	15.83	1.15	6.19	226.0	0.475
	12/11/2018	16:00	0.31	0.1	0.7	16.07	0.68	6.23	96.6	0.473
	12/12/2018	7:45	0.88	0.1	0.7	15.52	0.60	6.84	62.3	0.476
	12/12/2018	11:45	TOC	0.1	0.7	15.20	0.95	5.67	194.2	0.485
	12/12/2018	16:00	0.35	0.1	0.7	15.88	2.70	5.59	183.0	0.481
	12/13/2018	7:45	0.95	0	0	15.29	0.80	4.46	390.6	0.477
	12/13/2018	12:15	0.39	0.1	0.7	15.71	1.81	6.06	389.9	0.493
	12/13/2018	16:00	TOC	0.1	0.7	NM	NM	NM	NM	NM
	12/14/2018	7:15	NM	0	0	NM	NM	NM	NM	NM
	12/14/2018	12:00	0.33	0.1	0.7	15.55	6.74	6.92	155.0	0.472
MW-21	12/04/2018	8:00	0.40	0.1	0.7	18.74	0.46	6.88	34.9	0.307
	12/14/2018	12:00	TOC	25	>70	17.08	1.31	5.41	243.8	1.996
MW-22	12/04/2018	8:00	4.18	0.1	0.7	20.68	2.03	7.33	2.8	0.224
	12/14/2018	12:00	2.80	25	>70	19.26	1.88	3.51	301.6	5.257
MW-23R	12/04/2018	8:00	5.64	0	0	21.15	0.49	11.78	-193.6	0.666
	12/05/2018	14:00	4.01	NM	NM	21.06	0.65	11.89	-71.9	0.701
	12/05/2018	16:00	3.97	0	0	20.98	0.84	11.87	-83.6	0.678
	12/06/2018	7:45	4.21	0	0	20.76	0.47	11.80	-110.0	0.708
	12/06/2018	11:30	4.06	0	0	20.97	1.03	11.78	-9.1	0.688
	12/06/2018	16:10	3.88	0.1	0.7	20.90	0.98	11.51	229.1	0.570
	12/07/2018	7:30	4.04	0.2	1.4	20.87	0.62	11.72	-80.2	0.805
	12/07/2018	10:15	4.76	NM	NM	21.09	1.34	10.86	238.1	0.846
	12/07/2018	12:45	5.95	1	7	20.70	0.61	11.14	18.1	0.920
	12/07/2018	14:45	4.30	10	70	20.94	0.38	10.67	76.9	2.277
	12/10/2018	8:30	3.32	3	21	20.77	1.37	7.30	299.0	2.749

Table 2
Groundwater Quality Field Data
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Well ID	Date	Time	Depth to Water (ft bTOC)	Hydrogen Peroxide Test Kit (ppm)	Sodium Persulfate Test Kit (ppm)	Temperature (°C)	Dissolved Oxygen (mg/L)	pH (SU)	Oxidation-Reduction Potential (mV)	Specific Conductivity (mS/cm)
	12/10/2018	12:00	3.27	2	14	20.77	1.51	8.13	188.7	3.084
	12/10/2018	16:00	3.10	2	14	20.79	1.02	6.52	366.2	3.300
	12/11/2018	8:00	3.47	2	7	21.01	1.35	8.31	68.5	3.270
	12/11/2018	12:30	3.22	1	7	20.90	1.08	6.41	363.2	3.527
	12/11/2018	16:00	3.38	4	28	20.71	1.77	7.91	72.5	3.440
	12/12/2018	7:45	3.47	5	35	20.79	1.16	7.09	129.4	4.569
	12/12/2018	11:45	3.28	5	28	20.65	1.33	6.16	247.9	4.395
	12/12/2018	16:00	2.09	6	35	20.89	0.65	5.48	301.5	4.980
	12/13/2018	7:45	3.54	5	35	20.60	1.05	4.88	266.7	5.002
	12/13/2018	9:30	TOC	5	35	20.86	5.93	3.58	359.1	5.170
	12/13/2018	12:15	1.89	15	49	20.59	17.80	5.14	224.2	4.850
	12/13/2018	16:00	3.23	20	49	NM	NM	NM	NM	NM
	12/14/2018	7:15	NM	20	56	NM	NM	NM	NM	NM
	12/14/2018	12:00	3.12	20	56	20.96	20.04	2.46	364.1	5.181
MW-24R	12/04/2018	8:00	5.26	0	0	20.74	0.69	7.57	-129.8	0.753
	12/05/2018	14:00	5.01	NM	NM	20.46	0.62	7.58	-139.6	0.770
	12/05/2018	16:00	4.57	0	0	20.30	0.55	7.70	-154.4	0.786
	12/06/2018	7:45	4.79	0	0	20.26	0.76	7.60	-137.4	0.771
	12/06/2018	11:30	4.46	0	0	20.42	0.79	7.58	-100.4	0.730
	12/06/2018	16:10	4.28	0.1	0.7	20.35	1.22	7.51	104.3	0.705
	12/07/2018	7:30	4.79	0	0	20.36	0.41	7.66	31.7	0.745
	12/07/2018	10:15	4.48	NM	NM	20.13	1.73	7.23	170.1	0.742
	12/07/2018	12:45	4.39	0.1	0.7	20.32	0.69	7.83	-32.4	0.728
	12/07/2018	14:45	4.40	0.2	1.4	20.29	0.47	7.90	-27.5	0.720
	12/10/2018	8:30	3.77	0.2	1.4	20.48	0.48	6.80	260.0	0.669
	12/10/2018	12:00	3.50	0.2	1.4	20.21	0.37	7.24	189.7	0.840
	12/11/2018	8:00	3.84	0.5	3.5	20.09	0.64	7.09	21.3	0.659
	12/11/2018	12:30	3.69	0.6	4.2	20.32	3.36	8.84	306.7	0.626
	12/11/2018	16:00	4.08	0.5	2.8	20.26	1.70	7.14	40.0	0.657
	12/12/2018	7:45	3.80	0.2	1.4	20.10	1.25	6.66	75.9	0.750
	12/12/2018	11:45	3.45	1	7	20.33	1.05	4.98	284.6	0.788
	12/12/2018	16:00	2.30	1	7	20.47	1.00	4.19	354.1	0.838
	12/13/2018	7:45	3.79	0.5	3.5	20.28	1.27	3.77	312.0	0.932
	12/13/2018	12:15	2.35	1	7	20.39	1.03	4.18	373.6	0.991
	12/13/2018	16:00	3.01	1	7	NM	NM	NM	NM	NM
	12/14/2018	7:15	NM	1	7	NM	NM	NM	NM	NM
	12/14/2018	12:00	3.38	2	14	20.26	2.05	4.17	283.0	1.156

NM = Not Measured
TOC = Top of Casing
ft bTOC = feet below top of casing
ppm = parts per million
(°C) = degrees Celcius

mg/L = milligrams per liter
SU = standard units
mV = millivolts
mS/cm = millisiemens per centimeter

Note:
Well ID prefix PPMP-66 has been removed.

Appendix A – UIC Permit

LANCE R. LEFLEUR
DIRECTOR

KAY IVEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov
1400 Coliseum Blvd. 36110-2400 ▪ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ▪ FAX (334) 271-7950

JUN 18 2018

Richard Satkin
McClellan Development Authority
283 Rucker Street, Bldg 3165
Anniston, AL 36205

RE: UIC PERMIT NUMBER ALSI9908667
MDA Small Weapons Repair Shop
Pappy Dunn Blvd and Fremont Road
Fort McClellan, Calhoun County, Alabama

Dear Mr. Satkin:

A UIC Class V Injection Well Permit is enclosed. Please notice the monitoring and reporting requirements, expiration date, duty to apply for renewal, and the requirement to notify the Department when the facility is no longer in use. If the permit does not adequately address your operation, or if you no longer operate an injection well, please notify this office.

FAILURE TO COMPLY WITH THE TERMS AND CONDITIONS OF THIS PERMIT COULD RESULT IN ENFORCEMENT ACTIONS AND/OR FINES BY THE DEPARTMENT. THEREFORE, YOU SHOULD CAREFULLY READ THE ENCLOSED PERMIT AND COMPLY WITH ALL TERMS AND CONDITIONS.

Future monitoring data should be submitted in accordance with the conditions of your permit.

Sincerely,

Joe Kelly
UIC Program

JK/qv

Enclosure

Birmingham Branch
110 Vulcan Road
Birmingham, AL 35209-4702
(205) 942-6168
(205) 941-1603 (FAX)

Decatur Branch
2715 Sandlin Road, S.W.
Decatur, AL 35603-1333
(256) 353-1713
(256) 340-9359 (FAX)

Mobile Branch
2204 Perimeter Road
Mobile, AL 36615-1131
(251) 450-3400
(251) 479-2593 (FAX)

Mobile-Coastal
3664 Dauphin Street, Suite B
Mobile, AL 36608
(251) 304-1176
(251) 304-1189 (FAX)

ADEM
Alabama Department of Environmental Management

UNDERGROUND INJECTION CONTROL PERMIT

PERMITTEE:	**McClellan Development Authority**
FACILITY/LOCATION:	**MDA Small Weapons Repair Shop Pappy Dunn Blvd and Fremont Road Fort McClellan, Calhoun County, Alabama Latitude: N 33.720561/ Longitude W -85.782986**
PERMIT NUMBER:	**ALSI9908667**
INJECTION WELL CLASS:	**Class V**
SOURCE OF POLLUTANTS:	**Injection of hydrogen peroxide and sodium sulfate solution to aid in the remediation of existing groundwater contamination.**

In accordance with and subject to the provisions of the Safe Drinking Water Act, as amended, 42 U.S.C. §§ 300f-300j (the "SWDA"), the Alabama Water Pollution Control Act, as amended, Code of Alabama 1975, §§ 22-22-1 to 22-22-14, (the "AWPCA"), the Alabama Environmental Management Act, as amended, Code of Alabama 1975, §§ 22-22A-1 to 22-22A-15, and rules and regulations adopted thereunder, and subject further to the terms and conditions set forth in this permit, the Permittee is hereby authorized to construct and operate injection well(s) of the above-described class.

ISSUANCE DATE:	June 18, 2018
EFFECTIVE DATE:	June 18, 2018
EXPIRATION DATE:	June 17, 2023

Glenda L. Dunn
Alabama Department of Environmental Management

PART I Authorization to Operate

A. The permittee is authorized to operate Class V Injection Wells, at the facility described in the permit application and in the cover page of this permit, in accordance with the provisions set forth in this permit

B. This permit and the authorization to inject shall remain in effect until the expiration date stated on the cover page of this permit. If the permittee desires to continue injection past the expiration date of this permit, the permittee shall request a permit reissuance at least 180 days prior to expiration of this permit.

PART II Construction Requirements

A. Injection Well Requirements

The permittee shall inject only the hydrogen peroxide and sodium sulfate solution to aid in the remediation of existing groundwater contamination as described in the permit application.

B. Modifications

Approval of the Alabama Department of Environmental Management (ADEM) shall be obtained prior to modification of any injection well activity. Modification shall mean any action that will change the nature of the injection activity, the methods of monitoring injection, or will result in injection of a fluid not specifically authorized by this permit.

C. Operation

The injection wells shall function properly. Should the wells not function properly, the permittee shall take corrective action, to include cessation of injection, as required by ADEM.

PART III Monitoring and Operating Requirements

A. Injection Fluid

The permittee shall not inject any substance that is defined as hazardous or toxic by Federal or State laws or regulations or any substance not identified in the application for this permit. The injection of substances other than those identified in the permit application is prohibited. The permittee shall provide a means for confirmatory sampling of the injection material, should the need arise.

B. Monitoring Wells

1. The permittee shall monitor and limit groundwater in accordance with Appendix A. The injection activity shall not result in exceedence of any established MCL in groundwater outside the areas of contamination.

2. The groundwater monitoring regime must be sufficient to detect any adverse affects to groundwater quality due to the injection activity. The Department may change the sampling requirements if the sampling data indicate a need to do so.

3. Monitoring wells shall be sampled for background water quality prior to injection.

PART IV Records, Reports, & Submittals

A. Records

1. The permittee shall retain all records concerning the data used to complete the permit application, the operation of the wells, and the nature and composition of pollutants injected; to include records of the calibration of instruments, meters and gauges, quality control records, and recordings from continuous monitoring instrumentation; until at least three years after the injection activity ends.

2. When requested by ADEM, the permittee shall deliver copies of any of the records maintained in accordance with this permit.

B. Reports

1. The permittee shall submit to ADEM written confirmation of all injections that occur, including the initial injection. The written confirmation shall be submitted no later than thirty (30) days after the injection and shall include the information listed below:

   a) The date of the injection.

   b) The amount of hydrogen peroxide and sodium sulfate solution injected.

   c) The location(s) of the injection.

2. The permittee shall report to ADEM any of the following:

   a) Any planned action which will change the use of the injection wells, will result in injection of a fluid different from that authorized by this permit, will change the method of operations of any injection well, or will change the method of the monitoring of well operations or injected fluids.

   b) Any planned transfer of ownership of all or part of the permitted facility.

   c) Any relevant facts of which the permittee becomes aware which should have been submitted in a permit application and any corrections to data previously submitted in a permit application.

3. Other Submittals

Studies, engineering reports, plans and specifications, plugging and abandonment plans, logging reports, and other technical documents submitted to comply with this permit shall be prepared by or under the supervision of qualified persons defined by the UIC Regulations of the ADEM.

PART V Plugging and Abandonment

A. The permittee shall perform any abandonment and closure actions that may be required by ADEM to remove a threat to groundwater quality or to the health of persons which is caused by the injection activity.

B. Upon the end of use for each injection well, the permittee shall plug and abandon each well in a manner which protects each USDW from pollution by surface water and which prevents the movement of any pollutant or formation fluid from one USDW to another or from one formation to another and which isolates the injection zone

PART VI Permit Modification, Revocation, Suspension, and Termination

A. ADEM may impose emergency additional conditions to this permit when necessary to protect waters of the state from pollution. These conditions may include suspension of the permit to inject and shall remain in effect until the permit is modified, revoked, suspended or terminated in accordance with the UIC Regulations of the ADEM.

B. Non-emergency permit modification, revocation, suspension, and termination actions shall be accomplished in accordance with ADEM Administrative Code Rule 335-6-8.

PART VII General Provisions

A. The permittee shall comply with all provisions of the UIC Regulations of the ADEM and shall comply with all provisions of this permit and shall reduce or halt injection if needed to maintain compliance with the permit and regulations.

B. The permittee shall comply with all applicable Federal and State hazardous waste management regulations.

C. The permittee shall allow members of the ADEM staff to:

1. Access property and records of the permittee for purposes of inspection.

2. Collect samples of the injected fluids, process and wastewater streams associated with the permitted injection wells.

3. Collect samples from any monitoring wells.

4. Obtain copies of records upon request.

D. The permittee shall immediately take all reasonable steps to minimize or correct any adverse environmental impact resulting from the operation of the permitted injection wells.

E. This permit does not convey any property rights of any sort, or any exclusive privilege.

F. The filing of a request by the permittee for a permit modification, revocation, and reissuance, or termination, or a notification of planned changes or anticipated noncompliance does not stay any permit condition.

G. Any noncompliance with this permit constitutes a violation of the Alabama Water Pollution Control Act and/or the Underground Injection Control Regulations and is grounds for enforcement action such as permit termination, revocation, modification; or denial of a permit renewal application.

H. Injection into waters of the state, which in this case is groundwater, in accordance with this permit shall not result in the exceedance of any primary or secondary Maximum Contaminant Level (MCL) in groundwater as established by the Environmental Protection Agency. Injection into groundwater, in accordance with this permit shall not result in a violation of a surface water quality standard.

I. All provisions of ADEM Admin. Code Rule 335-6-8-.12 are incorporated as terms and conditions of this permit by reference

APPENDIX A

Groundwater monitoring wells PPMP-66-MW03, PPMP-66-MW04, PPMP-66-MW07, PPMP-66-MW14, and PPMP-66-MW21 shall be sampled prior to startup and then as specified below.

EFFLUENT CHARACTERISTIC	UNITS	DISCHARGE LIMITS	MONITORING REQUIREMENTS	
			FREQUENCY	SAMPLE TYPE
Sulfate	mg/L	Report	*	Grab
Iron	mg/L	Report	*	Grab
pH	mg/L	Report	*	Grab

* One month post injection;
* Quarterly for the first year post injection;
* Two semi-annual monitoring events during the second year post injection;
* Modifications, if any, will be established in writing from ADEM to permittee and shall not be less than 1 monitoring event per year.

Appendix B – Injection Services Report

March 2019

Injection Services Report

Prepared for:

Groundwater & Environmental Services, Inc.

440 Creamery Way, Suite 500
Exton, PA 19341

Prepared by:

800 Bill Rutledge Road
Winder, GA 30680
(770) 868-5407
www.geolabdrilling.com

December 2018

Injection Summary

GES - Ft. McClellan, AL - Injection Summary

	Date	Time On-Site	Time Off-Site	Lunch Break (hrs)	Total Hydrogen Peroxide Injected (gal)	Total Sodium Persulfate Injected (lbs)	Total Solution Volume Injected (gal)
Monday	12/3/2018	8:00 AM	3:45 PM	0.0	-	-	-
Tuesday	12/4/2018	7:00 AM	4:15 PM	0.5	-	-	-
Wednesday	12/5/2018	7:00 AM	5:00 PM	0.0	105	386	455
Thursday	12/6/2018	7:15 AM	4:45 PM	0.0	210	771	910
Friday	12/7/2018	7:00 AM	3:00 PM	0.0	360	1,322	1,560
Monday	12/10/2018	8:20 AM	4:30 PM	0.0	300	1,102	1,300
Tuesday	12/11/2018	7:45 AM	5:00 PM	0.0	420	1,543	1,820
Wednesday	12/12/2018	7:30 AM	5:00 PM	0.0	330	1,212	1,430
Thursday	12/13/2018	7:00 AM	5:00 PM	0.0	331	1,653	1,950
Friday	12/14/2018	7:00 AM	12:30 PM	0.0	56	276	325
				Design	2,112	8,265	9,776
				Injected	2,112	8,265	9,750
				Balance	-	-	26
				Daily Average	264	1,033	1,219

Daily Summary Notes

Monday, December 03, 2018

Summary: Project setup day. Received deliveries. Peroxide not delivered. Early day called by GES due to peroxide delay.

Tuesday, December 04, 2018

Summary: GES completed baseline readings at onsite monitoring wells. Peroxide arrived at 11am. Attempted 4 locations with direct push and hit refusal at approx 15' bgs at each location. Switched over to solid stem auger and set 2 deep injection points. Water injection test attempted at first location and failed. Decided to switch from using bentonite to grout to seal deep injection points. Winterized injection system at end of day due to freezing temps.

Wednesday, December 05, 2018

Summary: Grout not completely set at deep injection points due to cold weather. Injected on shallow injection points and installed 4 deep injection points. Winterized injection system at end of day due to freezing temps.

Thursday, December 06, 2018

Summary: Temps in the low 20s when arriving onsite. The freezing temps resulted a slightly slower startup. Injected on 3 simultaneous locations for most of the day. Observed quite a bit of off-gassing from reagent reaction throughout the day. Successful injection into deep treatment zone. Received delivery of remaining persulfate and peroxide today. Winterized injection system at end of day due to potential freezing temps at night.

Friday, December 07, 2018

Summary: Encountered some rain today, but temps stayed above freezing which allowed us to get started injecting earlier in the day. Injected on 3 simultaneous locations throughout the day which included both deep and shallow points. Successfully injected over 1,500 gallons of ASP for the day. Winterized injection system at end of day due to potential freezing over the weekend.

Monday, December 10, 2018

Summary: Attempted deep injection point installation at IP-13, but broke 5' of auger and had to abandon the location. Drilled and installed deep injection point at IP-12. Injected on 3 simultaneous locations throughout the day. Winterized injection system at end of day due to freezing temps.

Tuesday, December 11, 2018

Summary: Successfully installed deep injection points IP-5, IP-6, IP-10, and IP-13. Injected on 3 simultaneous locations throughout the day and successfully injected over 1,800 gallons for the day. Winterized injection system at end of day due to freezing temps at night.

Wednesday, December 12, 2018

Summary: Successfully installed deep injection points IP-3, IP-4, and IP-11. Injected on 3 simultaneous deep injection locations throughout most of the day. Freezing temps in the morning caused a slightly slower start for the day. Freezing conditions not anticipated for the rest of the week which will save on startup/breakdown time each day.

Thursday, December 13, 2018

Summary: Got an early start with injection activities and successfully injected over 1,900 gallons for the day. Drilling crew stayed busy today with point abandonment as well as shallow injection point installation. Remaining volume to be injected is 325 gallons based on remaining chemical onsite.

Friday, December 14, 2018

Summary: Completed injection by 10:15 AM and began point abandonment. Put down topsoil in heavily rutted areas and performed site cleanup. Offsite by 12:30 PM.

Project Photos

Geo Lab Custom Injection System

Site Set-Up

Reagents Stored in Secondary Containment

Injection System / Safety Shower & Eye Wash

Injection Flow and Pressure Monitoring

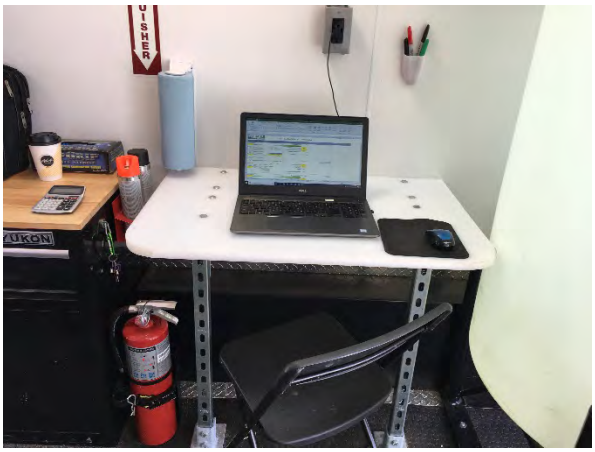
Hydrant Used for Dilution Water

Klozur Sodium Persulfate

34% Hydrogen Peroxide

Deep Injection Point Drilling

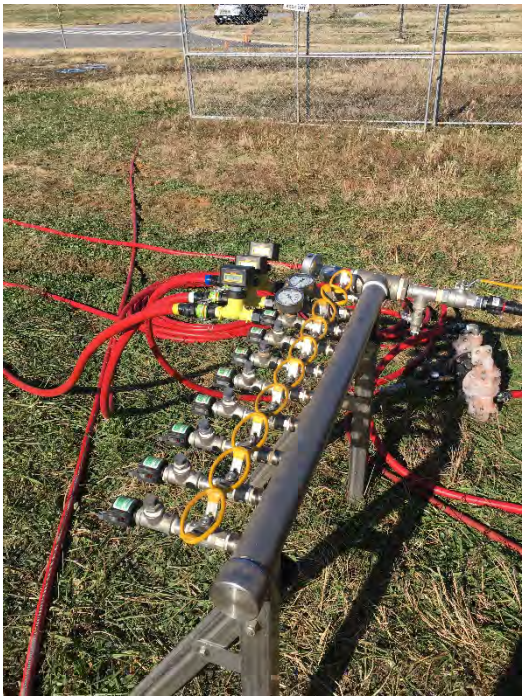
Shallow Inject Point



Injection Operator Work Station

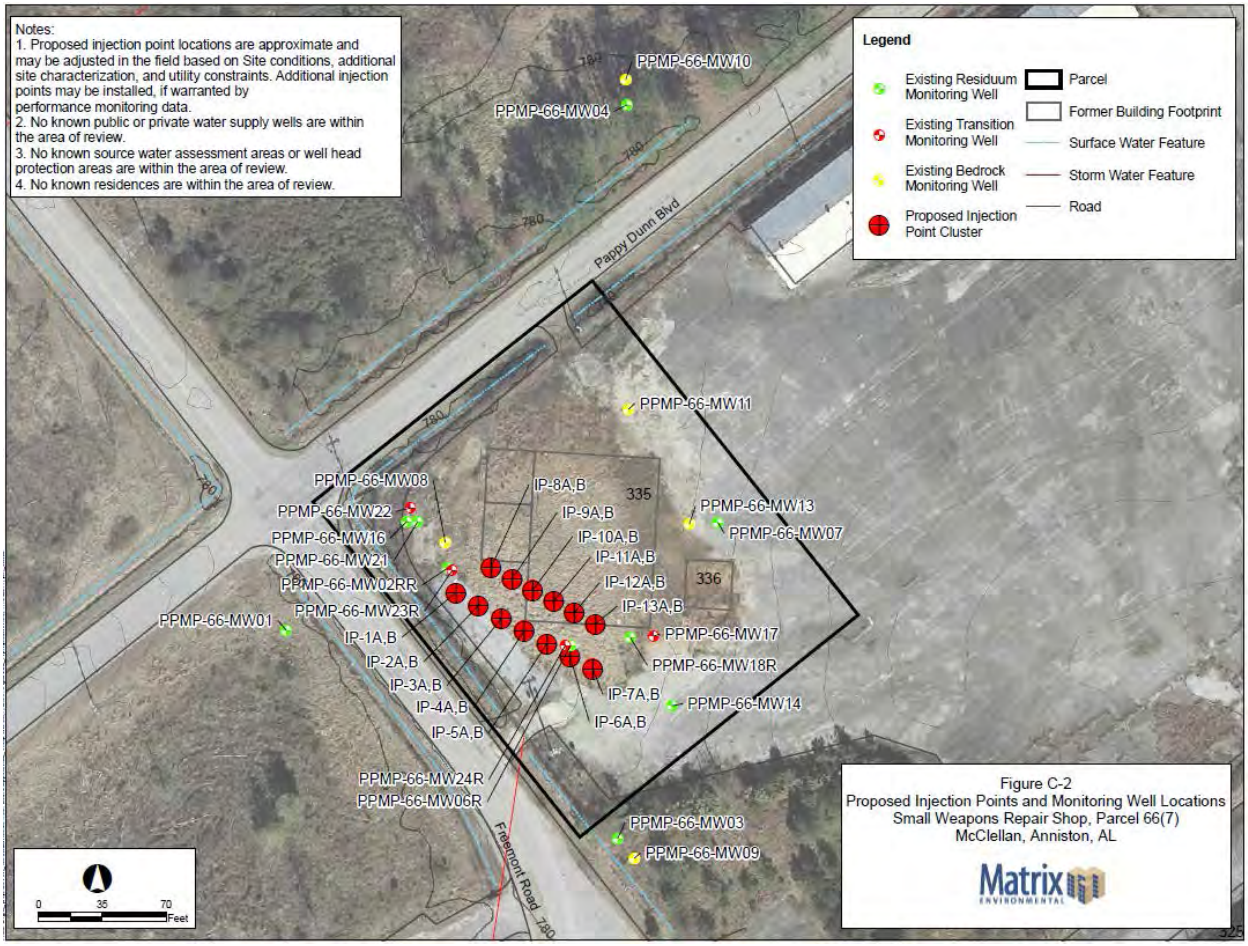
Reagent Mix Tanks

Injecting into Deep Injection Points



Multi-Point Manifold w/flow & Pressure Monitoring

Site Map


Notes:
1. Proposed injection point locations are approximate and may be adjusted in the field based on Site conditions, additional site characterization, and utility constraints. Additional injection points may be installed, if warranted by performance monitoring data.
2. No known public or private water supply wells are within the area of review.
3. No known source water assessment areas or well head protection areas are within the area of review.
4. No known residences are within the area of review.
Legend
Existing Residuum Monitoring Well
Existing Transition Monitoring Well
Existing Bedrock Monitoring Well
Proposed Injection Point Cluster
Parcel
Former Building Footprint
Surface Water Feature
Storm Water Feature
Road
PPMP-66-MW10
PPMP-66-MW04
Pappy Dunn Blvd
PPMP-66-MW11
PPMP-66-MW08
PPMP-66-MW22
PPMP-66-MW16
PPMP-66-MW21
PPMP-66-MW02RR
PPMP-66-MW23R
PPMP-66-MW01
IP-1A,B
IP-2A,B
IP-3A,B
IP-4A,B
IP-5A,B
IP-8A,B
IP-9A,B
IP-10A,B
IP-11A,B
IP-12A,B
IP-13A,B
335
336
PPMP-66-MW13
PPMP-66-MW07
PPMP-66-MW17
PPMP-66-MW18R
IP-7A,B
IP-6A,B
PPMP-66-MW14
PPMP-66-MW24R
PPMP-66-MW06R
PPMP-66-MW03
PPMP-66-MW09
Freeport Road
0
35
70
Feet
Figure C-2
Proposed Injection Points and Monitoring Well Locations
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, AL
Matrix

Appendix – Injection Logs

Injection Point ID	Date	Start Time	End Time	Injection Interval (bgs)	Average Pressure (psi)	Average Flow Rate (gpm)	Hydrogen Peroxide (gal)	Sodium Persulfate (lbs)	Total Solution (gal)	Notes
IP-1 Shallow	12/10/18	10:50 AM	1:22 PM	10' - 12'	10	1.0	31.4	115.3	136	Daylighting/off-gassing observed within the injection area.
		1:35 PM	3:35 PM		10	1.3	35.8	131.4	155	Daylighting/off-gassing observed within the injection area.
IP-1 Deep	12/11/18	9:14 AM	11:55 AM	11' - 26'	10	1.2	36.7	134.8	159	
		12:50 PM	4:45 PM		8	1.8	99.9	367.1	433	Daylighting/off-gassing observed within the injection area.
Total Peroxide 204	Total Persulfate 749	Total Solution 883	Original Design 1,000	Additional Notes:						
IP-2 Shallow	12/11/18	10:10 AM	11:55 AM	13' - 15'	10	2.0	42.9	157.7	186	
		12:50 PM	2:20 PM	10' - 12'	10	1.5	41.1	150.9	178	Daylighting/off-gassing observed within the injection area.
		2:22 PM	4:45 PM	7' - 9'	10	1.5	46.6	171.2	202	Daylighting/off-gassing observed within the injection area.
IP-2 Deep	12/6/18	12:45 PM	1:30 PM	28' - 30'	15	1.2	11.5	42.4	50	Daylighting/off-gassing near monitoring wells.
	12/7/18	8:15 AM	9:16 AM	28' - 30'	10	0.9	18.5	67.8	80	Daylighting/off-gassing near monitoring wells.
		12:20 PM	2:03 PM	26' - 28'	10	0.8	9.7	35.6	42	Daylighting/off-gassing near monitoring wells.
Total Peroxide 170	Total Persulfate 626	Total Solution 738	Original Design 900	Additional Notes:						
IP-3 Shallow	12/10/18	11:02 AM	1:22 PM	11' - 13'	10	2.7	50.5	185.6	219	
		1:35 PM	2:57 PM	8' - 10'	10	2.0	33.5	122.9	145	
		2:57 PM	3:35 PM	5' - 7'	10	1.0	9.2	33.9	40	
IP-3 Deep	12/12/18	4:00 PM	4:42 PM	21' - 31'	40	2.0	20.5	75.4	89	
	12/13/18	8:10 AM	9:50 AM		30	1.5	25.7	128.0	151	
		9:59 AM	12:10 PM		20	1.5	33.2	165.3	195	Daylighting/off-gassing observed within the injection area.
		2:35 PM	4:06 PM		15	1.9	29.1	145.0	171	Daylighting/off-gassing observed within the injection area.
Total Peroxide 202	Total Persulfate 856	Total Solution 1010	Original Design 500	Additional Notes: Observed reagent off-gas and water level increase in nearby monitoring well while injecting into IP-3 Deep.						
IP-4 Shallow	12/5/18	12:50 PM	1:05 PM	10' - 12'	20	3.0	5.8	21.2	25	Daylighting observed at deep injection point. Re-sealed point with bentonite.
		1:50 PM	2:33 PM		20	3.0	30.0	110.2	130	
		3:00 PM	3:22 PM		20	3.0	15.0	55.1	65	
IP-4 Deep	12/13/18	8:10 AM	9:50 AM	20' - 30'	20	1.7	28.9	144.1	170	
		9:59 AM	12:31 PM		20	1.8	47.4	236.5	279	No daylighting observed at this point.
Total Peroxide 127	Total Persulfate 567	Total Solution 669	Original Design 500	Additional Notes:						

Injection Point ID	Date	Start Time	End Time	Injection Interval (bgs)	Average Pressure (psi)	Average Flow Rate (gpm)	Hydrogen Peroxide (gal)	Sodium Persulfate (lbs)	Total Solution (gal)	Notes
IP-5 Shallow	12/5/18	12:08 PM	12:47 PM	10' - 12'	40	2.5	15.0	55.1	65	
		1:08 PM	1:48 PM		25	2.8	24.2	89.0	105	
		2:35 PM	2:58 PM		20	2.5	15.0	55.1	65	
	12/10/18	11:15 AM	1:22 PM		15	2.7	51.7	189.9	224	
		1:35 PM	2:55 PM	7' - 9'	15	2.0	32.3	118.7	140	Off-gassing observed approx. 15' from injection location..
		2:55 PM	3:35 PM	4' - 6'	10	1.0	9.2	33.9	40	Off-gassing observed approx. 15' from injection location..
IP-5 Deep	12/12/18	9:40 AM	12:50 PM	19' - 29'	10	1.9	62.3	228.9	270	Daylighting/off-gassing observed within the injection area.
		1:05 PM	2:57 PM		8	1.1	28.4	104.3	123	Daylighting/off-gassing observed within the injection area.
Total Peroxide	Total Persulfate	Total Solution	Original Design	Additional Notes:						
238	875	1032	1,000							
IP-6 Shallow	12/6/18	10:51 AM	4:07 PM	9' - 11'	90	0.8	44.3	162.8	192	Off-gassing observed approx. 15' from injection location. High pressure.
IP-6 Deep	12/12/18	1:05 PM	4:42 PM	19' - 29'	20	1.5	78.0	286.5	338	
	12/13/18	8:10 AM	9:50 AM		20	2.0	33.8	168.7	199	
		9:59 AM	10:37 AM		20	1.7	10.2	50.9	60	
Total Peroxide	Total Persulfate	Total Solution	Original Design	Additional Notes:						
166	669	789	1,000							
IP-7 Shallow	12/13/18	2:35 PM	4:06 PM	10' - 12'	45	1.8	28.6	142.4	168	Daylighting/off-gassing observed within the injection area.
	12/14/18	8:25 AM	9:04 AM	7' - 9'	20	1.5	10.0	50.0	59	
		9:04 AM	9:27 AM	4' - 6'	5	0.7	2.7	13.6	16	Daylighting/off-gassing observed within the injection area.
IP-7 Deep	12/7/18	9:27 AM	11:46 AM	13' - 23'	10	1.9	61.2	224.6	265	Daylighting/off-gas observed 10' away from injection point.
Total Peroxide	Total Persulfate	Total Solution	Original Design	Additional Notes:						
102	431	508	500							
IP-8 Shallow	12/7/18	10:10 AM	11:20 AM	10' - 12'	30	2.8	42.7	156.8	185	
		1:24 PM	2:03 PM	8' - 10'	10	2.0	17.3	63.6	75	Daylighting/off-gassing observed within the injection area.
IP-8 Deep	12/6/18	2:40 PM	4:07 PM	19' - 29'	15	1.8	31.4	115.3	136	Off-gassing of reagent observed within the area.
	12/7/18	12:55 PM	2:03 PM		15	2.0	29.1	106.8	126	Off-gassing of reagent observed within the area.
	12/10/18	9:30 AM	11:09 AM		15	2.0	46.4	170.4	201	Off-gassing of reagent observed within the area.
Total Peroxide	Total Persulfate	Total Solution	Original Design	Additional Notes:						
167	613	723	926							

Injection Point ID	Date	Start Time	End Time	Injection Interval (bgs)	Average Pressure (psi)	Average Flow Rate (gpm)	Hydrogen Peroxide (gal)	Sodium Persulfate (lbs)	Total Solution (gal)	Notes
IP-9 Shallow	12/14/18	8:25 AM	8:58 AM	10' - 12'	20	2.0	11.1	55.1	65	Off-gassing of reagent observed within the area.
		8:58 AM	9:36 AM	7' - 9'	10	1.5	10.7	53.4	63	Off-gassing of reagent observed within the area.
		9:36 AM	10:15 AM	4' - 6'	5	1.2	8.8	44.1	52	Off-gassing of reagent observed within the area.
IP-9 Deep	12/6/18	12:20 PM	2:15 PM	17' - 27'	120	1.0	25.4	93.2	110	Injection point increased in pressure throughout the injection event.
Total Peroxide 56	Total Persulfate 246	Total Solution 290	Original Design 500	Additional Notes:						
IP-10 Shallow	12/6/18	9:35 AM	12:01 PM	10.5' - 11.5'	20	1.8	37.4	137.3	162	
		1:45 PM	4:07 PM	10.5' - 11.5'	20	1.5	33.7	123.8	146	
	12/7/18	11:23 AM	11:46 AM	8.5' - 10.5'	15	1.8	8.1	29.7	35	
IP-10 Deep	12/12/18	11:03 AM	12:50 PM	20' - 30'	40	1.0	17.3	63.6	75	Daylighting/off-gassing observed within the injection area.
		1:05 PM	3:43 PM		75	2.5	53.1	195.0	230	Pressure increased and stopped daylighting. Injecting smoothly.
Total Peroxide 150	Total Persulfate 549	Total Solution 648	Original Design 500	Additional Notes:						
IP-11 Shallow	12/6/18	9:37 AM	12:10 PM	9' - 11'	20	1.75	26.3	96.6	114	
	12/7/18	8:19 AM	8:52 AM	7' - 9'	10	1.75	17.3	63.6	75	
		8:52 AM	9:28 AM	5' - 7'	8	1.75	17.3	63.6	75	
		9:28 AM	9:49 AM	3' - 5'	5	1.75	12.0	44.1	52	Daylighting/off-gassing observed within the injection area.
IP-11 Deep	12/13/18	10:50 AM	12:31 PM	20' - 30'	55	2.4	41.8	208.5	246	
		1:00 PM	1:55 PM		40	2.4	22.1	110.2	130	
Total Peroxide 137	Total Persulfate 587	Total Solution 692	Original Design 650	Additional Notes:						
IP-12 Shallow	12/7/18	8:04 AM	9:12 AM	10' - 12'	60	2.8	40.4	148.3	175	
		9:12 AM	9:59 AM	8' - 10'	55	2.7	27.7	101.7	120	
		9:59 AM	11:04 AM	6' - 8'	45	2.0	32.3	118.7	140	
		11:04 AM	11:46 AM	4' - 6'	35	2.0	22.6	83.1	98	
IP-12 Deep	12/11/18	10:17 AM	11:55 AM	18' - 28'	25	1.9	40.4	148.3	175	
		12:50 PM	2:45 PM		15	2.1	55.8	205.1	242	Daylighting/off-gassing observed within the injection area.
	12/12/18	9:40 AM	10:50 AM		5	0.9	12.7	46.6	55	Daylighting/off-gassing observed within the injection area.
Total Peroxide 232	Total Persulfate 852	Total Solution 1005	Original Design 900	Additional Notes:						

GES - Ft. McClellan
Field Data Sheet

Injection Point ID	Date	Start Time	End Time	Injection Interval (bgs)	Average Pressure (psi)	Average Flow Rate (gpm)	Hydrogen Peroxide (gal)	Sodium Persulfate (lbs)	Total Solution (gal)	Notes
IP-13 Shallow	12/13/18	2:15 PM	4:06 PM	11' - 13'	45	1.6	30.8	153.4	181	
	12/14/18	8:25 AM	8:54 AM	8' - 10'	30	1.5	7.0	34.8	41	
		8:54 AM	9:28 AM	5' - 7'	10	1.0	4.9	24.6	29	Daylighting/off-gassing observed within the injection area.
IP-13 Deep	12/7/18	12:16 PM	12:30 PM	19' - 29'	25	1.0	3.9	14.4	17	Daylighting from around deep injection point.
	12/11/18	2:50 PM	4:45 PM	20' - 30'	20	2.0	56.5	207.7	245	
	12/12/18	9:40 AM	12:50 PM		20	1.5	57.7	211.9	250	Daylighting/off-gassing observed within the injection area.

Total Peroxide	Total Persulfate	Total Solution	Original Design	Additional Notes:
161	647	763	900	

2,112	8,265.0	9,750
Peroxide	Persulfate	Total Vol.

Appendix C – Injection Point Abandonment Summary

GEOLAB Drilling

Ft. McClellan Injection Point Abandonment

Boring	Total Depth (ft)	Abandonment Mehtod	Slurry Volume (gal)	Portland Cement (lbs)	Bentonite (lbs)
IP-1 Shallow	12	Bentonite Pack	x	x	25
IP-1 Deep	30	Tremie Grout	4.5	70	x
IP-2 Shallow	15	Bentonite Pack	x	x	35
IP-2 Deep	30	Tremie Grout	5	75	x
IP-3 Shallow	13	Bentonite Pack	x	x	30
IP-3 Deep	31	Tremie Grout	6	85	x
IP-4 Shallow	12	Bentonite Pack	x	x	25
IP-4 Deep	30	Tremie Grout	5	75	x
IP-5 Shallow	12	Bentonite Pack	x	x	25
IP-5 Deep	30	Tremie Grout	5	75	x
IP-6 Shallow	11	Bentonite Pack	x	x	25
IP-6 Deep	30	Tremie Grout	4.75	70	x
IP-7 Shallow	12	Bentonite Pack	x	x	25
IP-7 Deep	30	Tremie Grout	5	75	x
IP-8 Shallow	12	Bentonite Pack	x	x	25
IP-8 Deep	30	Tremie Grout	5	75	x
IP-9 Shallow	12	Bentonite Pack	x	x	25
IP-9 Deep	30	Tremie Grout	4.5	70	x
IP-10 Shallow	11.5	Bentonite Pack	x	x	25
IP-10 Deep	30	Tremie Grout	5	75	x
IP-11 Shallow	11	Bentonite Pack	x	x	25
IP-11 Deep	30	Tremie Grout	5	75	x
IP-12 Shallow	12	Bentonite Pack	x	x	25
IP-12 Deep	30	Tremie Grout	5	75	x
IP-13 Shallow	13	Bentonite Pack	x	x	30
IP-13 Deep	30	Tremie Grout	5	75	x

Note:
Shallow injection points were abandoned by pulling tools and adding bentonite chips to borehole. Deep injection points were abandoned using a tremie pipe and grouting from the bottom up.

Appendix D – Waste Manifest

207989

NON-HAZARDOUS WASTE MANIFEST

1. Generator ID Number	2. Page 1 of	3. Emergency Response Phone	4. Waste Tracking Number
CESQG	1	(205)595-8188	02142019-001

GENERATOR

5. Generator's Name and Mailing Address: McClellan Development Authority
4975 Bains Gap Road
Anniston, AL 36205
Generator's Phone: 256-236-2011

Generator's Site Address (if different than mailing address):

6. Transporter 1 Company Name: One Stop Environmental, LLC
U.S. EPA ID Number: ALR000037853

7. Transporter 2 Company Name:
U.S. EPA ID Number:

8. Designated Facility Name and Site Address: Giant Resource Recovery-Attalla, Inc.
1229 Valley Drive
Attala, Alabama 35954
Facility's Phone: 256-538-3800
U.S. EPA ID Number:

	9. Waste Shipping Name and Description	10. Containers No.	10. Containers Type	11. Total Quantity	12. Unit Wt./Vol.	
1	Non-Hazardous/Non-Regulated waste	2	DM	110	G	
2.						
3.						
4.						

13. Special Handling Instructions and Additional Information
Profile # 68450

14. GENERATOR'S/OFFEROR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by the proper shipping name, and are classified, packaged, marked and labeled/placarded, and are in all respects in proper condition for transport according to applicable international and national governmental regulations.

Generator's/Offeror's Printed/Typed Name: Richard Satkin on behalf of McClellan Development Authority
Signature: Richard Satkin McClellan Development Authority
Month: 02 Day: 14 Year: 19

INT'L

15. International Shipments ☐ Import to U.S. ☐ Export from U.S. Port of entry/exit:
Transporter Signature (for exports only): Date leaving U.S.:

TRANSPORTER

16. Transporter Acknowledgment of Receipt of Materials

Transporter 1 Printed/Typed Name: Jason Holmes
Signature:
Month: 02 Day: 14 Year: 19

Transporter 2 Printed/Typed Name:
Signature:
Month: Day: Year:

DESIGNATED FACILITY

17. Discrepancy

17a. Discrepancy Indication Space ☐ Quantity ☐ Type ☐ Residue ☐ Partial Rejection ☐ Full Rejection

Manifest Reference Number:

17b. Alternate Facility (or Generator)
U.S. EPA ID Number:
Facility's Phone:

17c. Signature of Alternate Facility (or Generator)
Month: Day: Year:

18. Designated Facility Owner or Operator: Certification of receipt of materials covered by the manifest except as noted in Item 17a

Printed/Typed Name: Anna Hollis
Signature: Anna Hollis
Month: 3 Day: 1 Year: 19

169-BLC-O 5 11977 (Rev. 9/09)

DESIGNATED FACILITY TO GENERATOR

Appendix E – Pre-Injection Sampling Results

Tables

Table 4-1: Groundwater Elevations,
Pre-Injection
Small Weapons Repair Shop, Parcel 66(7), McClellan, Anniston, Alabama

Well Location	Well Type	Ground Elevation (feet msl)	TOC Elevation (feet msl)	Date Measured	Well Depth (feet BTOC)	Depth to Water (feet BTOC)	Groundwater Elevation (feet msl)
October 2018 Sampling Event							
PPMP-66-MW01	residuum	780.10	782.12	10/29/18	26.03	7.69	774.43
PPMP-66-MW02RR	residuum	780.59	780.37	10/29/18	23.50	3.33	777.04
PPMP-66-MW03	residuum	781.11	780.74	10/29/18	28.27	6.46	774.28
PPMP-66-MW04	residuum	779.99	781.90	10/29/18	26.40	7.49	774.41
PPMP-66-MW06R	residuum	781.45	781.41	10/29/18	27.80	3.98	777.43
PPMP-66-MW07	residuum	782.41	782.17	10/29/18	28.65	7.37	774.80
PPMP-66-MW08	bedrock	780.89	780.66	10/29/18	73.90	6.07	774.59
PPMP-66-MW09	bedrock	781.14	780.88	10/29/18	74.80	6.23	774.65
PPMP-66-MW10	bedrock	779.79	782.01	10/29/18	77.40	8.78	773.23
PPMP-66-MW11	bedrock	781.10	780.89	10/29/18	84.35	6.39	774.50
PPMP-66-MW13	bedrock	781.93	781.65	10/29/18	74.30	6.71	774.94
PPMP-66-MW14	residuum	781.92	781.70	10/29/18	20.71	7.05	774.65
PPMP-66-MW16	residuum	780.86	780.47	10/29/18	12.75	5.93	774.54
PPMP-66-MW17	transition	781.63	781.29	10/29/18	17.71	6.28	775.01
PPMP-66-MW18R	residuum	781.68	781.25	10/29/18	15.00	5.54	775.71
PPMP-66-MW21	residuum	780.78	780.44	10/29/18	14.40	3.17	777.27
PPMP-66-MW22	transition	780.79	780.44	10/29/18	24.71	5.83	774.61
PPMP-66-MW23R	transition	781.12	780.87	10/29/18	29.25	5.09	775.78
PPMP-66-MW24R	transition	781.57	781.20	10/29/18	34.15	5.94	775.26

Notes:
BTOC = Below top of casing
LTM = Long-term monitoring
msl = Mean sea level
TOC = Top of casing

Table 4-4: Field Parameters, Pre-Injection
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Well ID	Well Type	Sample Date	Temperature (^{o}C)	Conductivity (µs/cm)	Dissolved Oxygen (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Persulfate (mg/L)	H2O2 (mg/L)
10/31/18 - Pre-Injection sampling											
PPMP-66-MW01	residuum	10/30/2018	22.07	3317	2.12	-40.5	2.157	16.31	6.94	1.4	0
PPMP-66-MW02RR	residuum	10/31/2018	24.62	1689	0.99	-290.5	1.097	6.09	11.71	1.4	0
PPMP-66-MW03	residuum	10/29/2018	21.00	2404	5.44	3.6	1.56	31.4	6.88	0	0
PPMP-66-MW04	residuum	10/29/2018	23.30	2387	0.99	-74.8	1.553	1.79	6.83	0	0
PPMP-66-MW06R	residuum	10/31/2018	23.00	1161	3.30	-117.6	0.755	6.82	11.61	1.4	0
PPMP-66-MW07	residuum	10/29/2018	24.97	3102	1.11	-35.4	2.015	18.58	6.69	1.4	0
PPMP-66-MW08	bedrock	10/30/2018	23.70	1391	2.01	14.9	0.897	6.41	7.01	0	0
PPMP-66-MW11	bedrock	10/29/2018	21.10	319.1	0.73	-52.6	0.207	14.42	7.81	0	0
PPMP-66-MW13	bedrock	10/29/2018	28.65	2258.0	1.62	-98.7	1.468	7.0	7.17	1.4	0
PPMP-66-MW14	residuum	10/29/2018	24.41	2083	0.99	-60.8	1.354	57.15	6.82	2.8	0
PPMP-66-MW16	residuum	10/30/2018	25.15	681	0.79	22.7	0.438	8.03	6.39	1.4	0
PPMP-66-MW17	transition	10/30/2018	20.70	715	1.82	-47.1	0.462	28.2	7.13	0	0
PPMP-66-MW18R	residuum	10/30/2018	23.00	674	1.05	56.4	0.436	11.9	7.22	0.7	0
PPMP-66-MW21	residuum	10/31/2018	22.42	455	1.87	96.6	0.296	8.2	6.34	0.7	0
PPMP-66-MW22	transition	10/30/2018	25.18	709.0	0.82	-85.5	0.461	38.2	7.18	2.1	0
PPMP-66-MW23R	transition	10/30/2018	22.90	1187	0.89	-212.2	0.774	29.8	11.52	0.7	0
PPMP-66-MW24R	transition	10/31/2018	21.7	806	1.99	-105.1	0.527	41.0	7.23	0.7	0

Notes:

^{o}C = Degrees Celsius
mg/L = Milligrams per liter
µs/cm = Microsiemens per centimeter
mV = Millivolts
NM = Not measured
NTU = Nephelometric turbidity units
ORP = Oxidation-reduction potential
TDS = Total Dissolved Solids

Table 4-5a: Groundwater Analytical Results for COCs and Degradation Products
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW01	Residuum Well PPMP-66-MW02RR	Bedrock Well PPMP-66-MW04
		10/30/18	10/31/18	10/29/18
COCs		Pre-Injection	Pre-Injection	Pre-Injection
Cis-1,2-Dichloroethene	991	< 1	42 (JM)	< 1
Trichloroethene	205	< 1	27 (JM)	< 1
Vinyl Chloride	3.86	< 1	20	< 1
Degradation Products				
1,1-Dichloroethene	4800	< 1	0.67 J	< 1
Trans-1,2-Dichloroethene	1950	< 1	26	< 1

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW06R	Residuum Well PPMP-66-MW07	Bedrock Well PPMP-66-MW08
		10/31/18	10/29/18	10/30/18
COCs		Pre-Injection	Pre-Injection	Pre-Injection
Cis-1,2-Dichloroethene	991	33	< 1	< 1
Trichloroethene	205	71	< 1	< 1
Vinyl Chloride	3.86	1.8	< 1	< 1
Degradation Products				
1,1-Dichloroethene	4800	1.5	< 1	< 1
Trans-1,2-Dichloroethene	1950	2.4	< 1	< 1

VOCs (µg/L)	GS RBTL	Bedrock Well PPMP-66-MW11	Bedrock Well PPMP-66-MW13	Residuum Well PPMP-66-MW14
		10/29/18	10/29/18	10/29/18
COCs		Pre-Injection	Pre-Injection	Pre-Injection
Cis-1,2-Dichloroethene	991	< 1	< 1	< 1
Trichloroethene	205	< 1	< 1	< 1
Vinyl Chloride	3.86	< 1	< 1	< 1
Degradation Products				
1,1-Dichloroethene	4800	< 1	< 1	< 1
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1

VOCs (µg/L)	GS RBTL	Residuum Well PPMP-66-MW16	Transition Well PPMP-66-MW17	Residuum Well PPMP-66-MW18R
		10/30/18	10/30/18	10/30/18
COCs		Pre-Injection	Pre-Injection	Pre-Injection
Cis-1,2-Dichloroethene	991	< 1	0.55 J	1.1
Trichloroethene	205	< 1	0.98 J	< 1
Vinyl Chloride	3.86	< 1	< 1	< 1
Degradation Products				
1,1-Dichloroethene	4800	< 1	< 1	< 1
Trans-1,2-Dichloroethene	1950	< 1	< 1	< 1

Table 4-5a: Groundwater Analytical Results for COCs and Degradation Products
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

VOCs (µg/L)	GS RBTL	Transition Well PPMP-66-MW22	Transition Well PPMP-66-MW23R	Transition Well PPMP-66-MW24R
		10/30/2018	10/30/18	10/31/18
COCs		**Pre-Injection**	**Pre-Injection**	**Pre-Injection**
Cis-1,2-Dichloroethene	991	< 1	86	0.47 J
Trichloroethene	205	< 1	80	< 1
Vinyl Chloride	3.86	< 1	29	< 1
Degradation Products				
1,1-Dichloroethene	4800	< 1	5.1	< 1
Trans-1,2-Dichloroethene	1950	< 1	40	< 1

Notes:
< = Indicates the analyte was not detected at the reported quantitation limit shown.
µg/L = micrograms per liter
COCs = Constituents of concern
GS = Groundskeeper
(nv) = Not validated
LTM = Long-term monitoring
RBTL = Risk-Based Target Level (10^{-5} Risk)
VOCs = Volatile Organic Compounds

* Groundwater samples were collected from the original wells during the historical and baseline rounds (i.e., from March 2001 through October 2010). Groundwater samples were collected from the replacement wells (noted with a "R" suffix) during the LTM rounds from May 2011 to the present, with the exception of well Groundwater samples were collected from replacement well PPMP-66-MW02R from May 2011 through PPMP-66-MW02R. May 2013 and from the second replacement well PPMP-66-MW02RR from January 2014 to the present.

Lab Flag:
J = Estimated detection. The analyte is positively identified and the concentration is less than the reporting limit but greater than the method detection limit.
F2 = MS/MSD RPD exceeds control limits.

Result exceeds GS RBTL

Table 4-5b: Groundwater Analytical Results for Iron and Sulfate
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

	PPMP-66-MW01	PPMP-66-MW02RR	PPMP-66-MW03	PPMP-66-MW04
	10/30/18	10/31/18	10/29/18	10/29/18
Iron SW6020A (µg/L)	Pre-ISO	Pre-ISO	Pre-ISO	Pre-ISO
Iron	2100	44 J	2400	--
Iron, dissolved	27 J	< 100	27 J	--
Sulfate (mg/L)				
Sulfate	1800 F2 F1	29	1100	980

	PPMP-66-MW06R	PPMP-66-MW07	PPMP-66-MW08	PPMP-66-MW11
	10/31/18	10/29/18	10/30/18	10/29/18
Iron SW6020A (µg/L)	Pre-ISO	Pre-ISO	Pre-ISO	Pre-ISO
Iron	< 100	2200	--	--
Iron, dissolved	< 100	< 100	--	--
Sulfate (mg/L)				
Sulfate	11	1400	610	49

	PPMP-66-MW13	PPMP-66-MW14	PPMP-66-MW16	PPMP-66-MW17
	10/29/18	10/29/18	10/30/18	10/30/18
Iron SW6020A (µg/L)	Pre-ISO	Pre-ISO	Pre-ISO	Pre-ISO
Iron	--	4900	340	380
Iron, dissolved	--	60 J	230	< 100
Sulfate (mg/L)				
Sulfate	960	710	140	130

	PPMP-66-MW18R	PPMP-66-MW21	PPMP-66-MW22	PPMP-66-MW23R
	10/30/18	10/31/18	10/30/18	10/30/18
Iron SW6020A (µg/L)	Pre-ISO	Pre-ISO	Pre-ISO	Pre-ISO
Iron	360	130	--	160
Iron, dissolved	29 J	< 100	--	< 100
Sulfate (mg/L)				
Sulfate	31	94	120	24

	PPMP-66-MW24R
	10/31/18
Iron SW6020A (µg/L)	Pre-ISO
Iron	1700
Iron, dissolved	33 J
Sulfate (mg/L)	
Sulfate	81

Notes:

GS = Groundskeeper

µg/L = micrograms per liter

mg/L = milligrams per iter

Lab Qualifier:

F1 = MS and/or MSD recovery is outside acceptance limits.

F2 = MS/MSD RPD exceeds control limits.

J = Estimated detection. The analyte is positively identified and the concentration is less than the reporting limit but > MDL

Figures

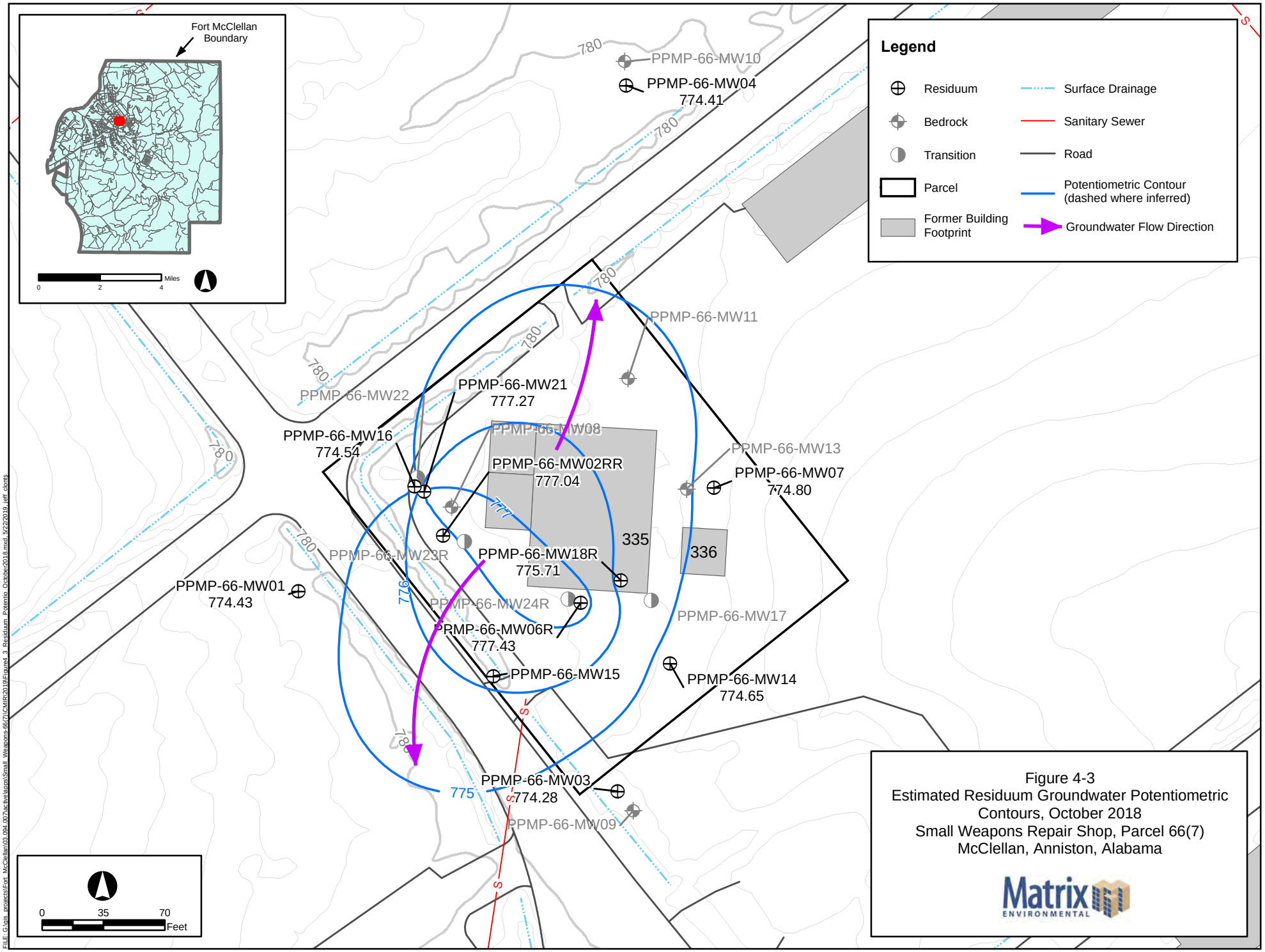


Figure 4-3
Estimated Residuum Groundwater Potentiometric Contours, October 2018
Small Weapons Repair Shop, Parcel 66(7)
McClellan, Anniston, Alabama

Matrix ENVIRONMENTAL

FILE: G:\gis_projects\Fort_McClellan\03.094.007\active\reports\Small_Weapons-66(7)\CMR2019\Figure4_3_Residuum_Potentio_October2018.mxd 5/22/2019 jeff_clonts

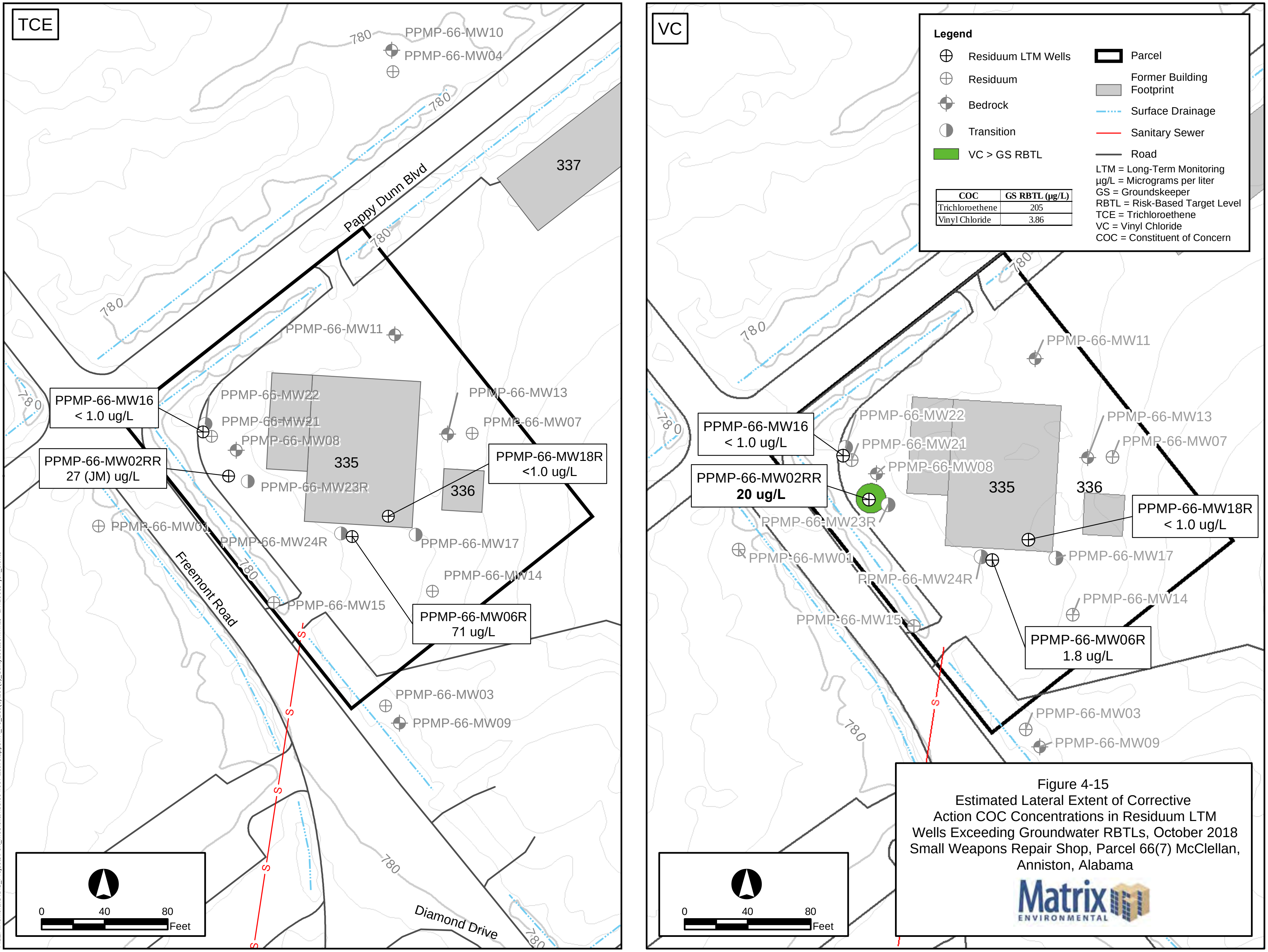


Figure 4-15
Estimated Lateral Extent of Corrective Action COC Concentrations in Residuum LTM Wells Exceeding Groundwater RBTLs, October 2018
Small Weapons Repair Shop, Parcel 66(7) McClellan, Anniston, Alabama

FILE: \\Hemera\GIS\GIS_Projects\Fort_McClellan\03.094.007\activeapps\TA_T6_183(6)\183(6)_UtilityLocation.mxd, 1/7/2008, jeff_clonts

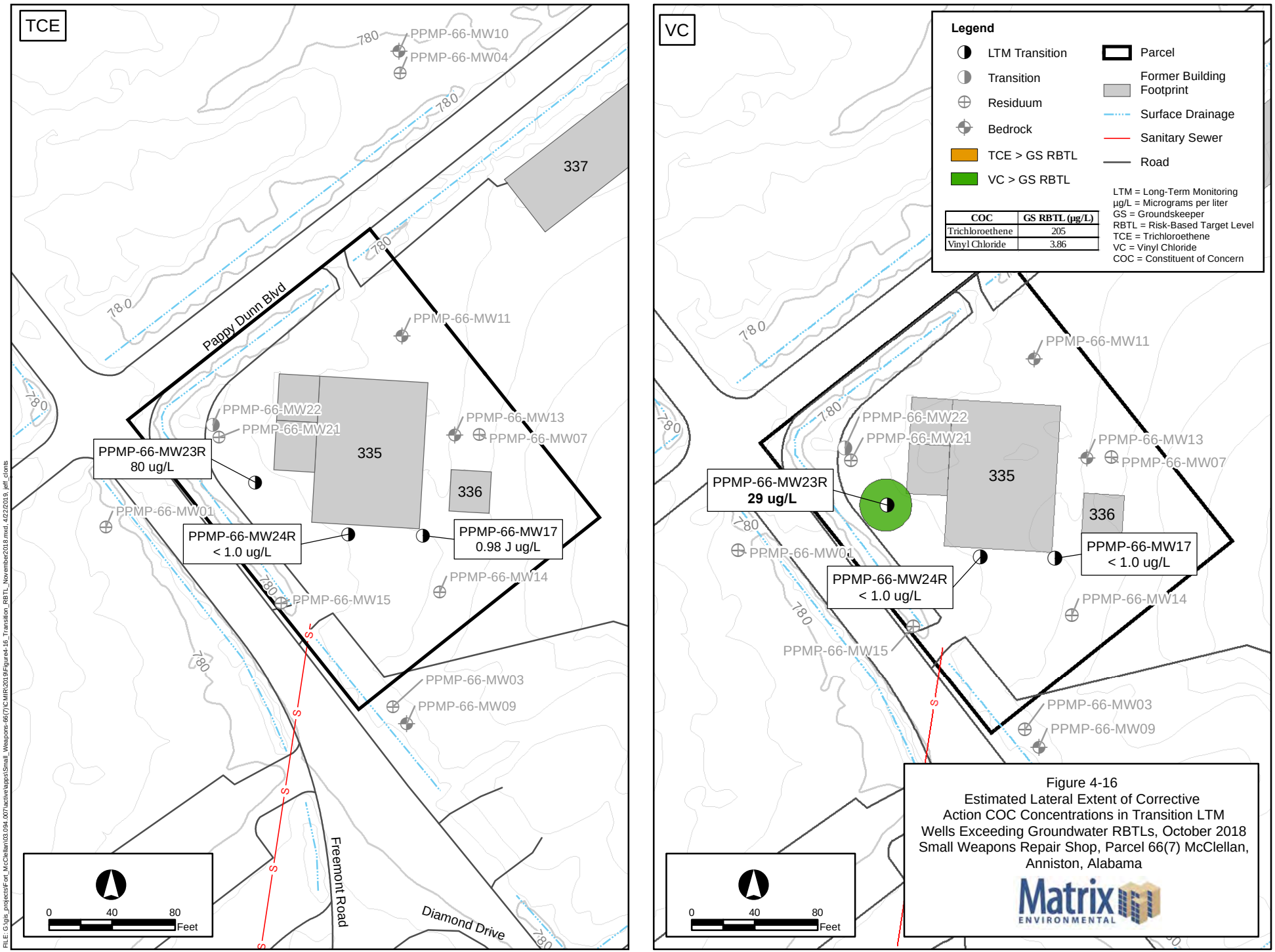


Figure 4-16
Estimated Lateral Extent of Corrective Action COC Concentrations in Transition LTM Wells Exceeding Groundwater RBTLs, October 2018
Small Weapons Repair Shop, Parcel 66(7) McClellan, Anniston, Alabama

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FILE: G:\gis_projects\Fort_McClellan\03.09\4.007\active\apps\Small_Weapons-66(7)\CMIR\2018\Figure4-16_Transition_RBTL_November2018.mxd, 4/22/2019, jeff_cloris

Groundwater Sampling Documentation

Matrix Environmental Services
283 Rucker Street
Anniston, Alabama 36205
(256) 847-0780
(256) 847-0905

Project Name
McClellan

Project Number
18.094.19-22.2

GROUNDWATER LEVELS

Field Personnel	Measuring Equipment	Date
Tulley/Meadows	Solinst Water Level Meter	10/29/2018

Conditions
Sunny, 70°

Well ID	Casing Diameter	Date	Time	Depth to Water (feet)	Well Depth (feet)	Water Column (feet)	Initials
PPMP-66-MW01	2	10/29/2018	10:00	7.69	26.03	18.34	JT
PPMP-66-MW02RR	2	10/29/2018	9:47	3.33	23.50	20.17	JT
PPMP-66-MW03	2	10/29/2018	10:18	6.46	28.00	21.54	JT
PPMP-66-MW04	2	10/29/2018	10:00	7.49	26.50	19.01	JT
PPMP-66-MW06R	2	10/29/2018	10:07	3.98	27.80	23.82	JT
PPMP-66-MW07	2	10/29/2018	10:15	7.37	28.65	21.28	JT
PPMP-66-MW08	4	10/29/2018	9:53	6.07	73.90	67.83	JT
PPMP-66-MW09	4	10/29/2018	10:18	6.23	74.75	68.52	JT
PPMP-66-MW10	4	10/29/2018	10:05	8.78	77.41	68.63	JT
PPMP-66-MW11	4	10/29/2018	10:10	6.39	84.35	77.96	JT
PPMP-66-MW13	4	10/29/2018	10:13	6.71	74.03	67.32	JT
PPMP-66-MW14	2	10/29/2018	10:15	7.05	20.71	13.66	JT
PPMP-66-MW16	2	10/29/2018	9:56	5.93	12.75	6.82	JT
PPMP-66-MW17	2	10/29/2018	10:11	6.28	17.71	11.43	JT
PPMP-66-MW18R	2	10/29/2018	10:10	5.54	15.00	9.46	JT
PPMP-66-MW21	2	10/29/2018	9:55	3.17	14.40	11.23	JT
PPMP-66-MW22	2	10/29/2018	9:58	5.83	24.65	18.82	JT
PPMP-66-MW23R	2	10/29/2018	9:45	5.09	29.25	24.16	JT
PPMP-66-MW24R	2	10/29/2018	10:05	5.94	34.15	28.21	JT

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW01	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 7.69 feet	**Sample Method** Low Flow	**Sampler** S.Meadows	**Date** 10/30/2018
Well Depth (TOC) 26.03 feet		**Location (Site)** SWR	**Begin Time** 9:30
Water Column Thickness 18.34 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 16.5
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI556MPS; Solinst Water Level Meter; Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 2.93 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 782.12 feet			**Persulfate (ppm)** 1.4; **H_2O_2 (ppm)** 0.0
Groundwater Elevation 774.43 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
0950	0	20.98	3205	2.52	-37.7	2.083	80.87	6.93	Clear	Clear	None
0955	250	21.46	2872	6.11	-30.2	1.867	56.19	7.17	Clear	Clear	None
1000	250	21.09	2853	4.18	-19.0	1.854	24.13	7.03	Clear	Clear	None
1005	250	20.99	2865	4.08	-18.1	1.864	24.33	7.01	Clear	Clear	None
1010	250	20.95	2881	3.68	-17.1	1.875	23.86	7.00	Clear	Clear	None
1015	250	21.00	2954	3.42	-20.6	1.923	23.22	6.98	Clear	Clear	None
1020	250	21.25	3076	2.77	-27.7	2.003	21.52	6.96	Clear	Clear	None
1025	250	21.57	3232	2.32	-37.4	2.103	18.06	6.95	Clear	Clear	None
1030	250	21.75	3271	2.14	-39.9	2.127	17.93	6.94	Clear	Clear	None
1035	250	22.07	3317	2.12	-40.5	2.157	16.31	6.94	Clear	Clear	None
1036	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
45	2250	No	

QA/QC Samples DUP 301

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW02RR	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 3.33 feet	**Sample Method** Low Flow	**Sampler** s. meadows	**Date** 10/31/2018
Well Depth (TOC) 23.50 feet		**Location (Site)** SWR	**Begin Time** 10:50
Water Column Thickness 20.17 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 20
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.23 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** overcast	**Calibration** Field 10/31/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 780.37 feet			**Persulfate (ppm)** 1.4 / **H_2O_2 (ppm)** 0
Groundwater Elevation 777.04 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1110	0	23.23	1557	2.19	-241.3	1.018	7.10	11.65	Clear	Clear	None
1115	250	23.19	1652	1.99	-251.7	1.076	6.52	11.68	Clear	Clear	None
1120	250	23.18	1700	1.82	-259.6	1.107	6.74	11.71	Clear	Clear	None
1125	250	23.21	1715	1.67	-264.5	1.117	6.69	11.72	Clear	Clear	None
1130	250	23.78	1736	1.41	-273.7	1.129	6.48	11.73	Clear	Clear	None
1135	250	24.68	1728	1.20	-280.8	1.123	6.18	11.72	Clear	Clear	None
1140	250	24.94	1715	1.07	-286.6	1.114	6.39	11.71	Clear	Clear	None
1145	250	24.50	1701	1.03	-290.7	1.105	6.02	11.72	Clear	Clear	None
1150	250	24.62	1689	0.99	-290.5	1.097	6.09	11.71	Clear	Clear	None
1151	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
41	2000	No	

QA/QC Samples MS/MSD

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW03	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 6.46 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/29/2018
Well Depth (TOC) 28 feet		**Location (Site)** SWR	**Begin Time** 14:10
	Equipment Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 19.0
Water Column Thickness 21.54 feet		**Sample Suite** See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 70	**Meters** YSI Pro Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.45 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Sunny	**Calibration** Field 10/29/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 780.74 feet			**Persulfate (ppm)** N/A; **H_2O_2 (ppm)** N/A
Groundwater Elevation 774.28 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
14:35	0	21.50	2395	5.37	-1.4	1.56	103.40	6.89	cloudy	brown	none
14:40	500	21.30	2400	6.20	-19.1	1.56	68.55	6.87	cloudy	brown	none
14:45	500	21.10	2403	4.37	5.7	1.56	74.12	6.87	cloudy	brown	none
14:50	500	21.10	2403	3.96	3.4	1.56	45.08	6.88	cloudy	none	none
14:55	500	21.10	2400	5.34	2.5	1.56	31.08	6.88	cloudy	none	none
15:00	500	21.10	2403	5.47	-3.5	1.56	29.75	6.87	cloudy	none	none
15:05	500	21.00	2404	5.44	3.6	1.56	31.41	6.88	cloudy	none	none
15:06	—	—	Collected			Sample		Suite	—		

10/29/18

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
30	3000	No	

QA/QC Samples N/A

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW04	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 7.49 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/29/2018
Well Depth (TOC) 26.5 feet		**Location (Site)** SWR	**Begin Time** 10:35
Water Column Thickness 19.01 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 15.0
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI Pro Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.04 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Sunny	**Calibration** Field 10/29/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 781.90 feet			**Persulfate (ppm)** 0.0 / **H_2O_2 (ppm)** 0.0
Groundwater Elevation 774.41 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
11:05	0	22.50	2236	1.75	7.3	1.456	1.86	6.83	clear	none	none
11:10	400	22.20	2256	2.19	-11.8	1.469	1.42	6.83	clear	none	none
11:15	400	22.50	2311	1.83	-40.6	1.508	1.94	6.83	clear	none	none
11:20	400	22.70	2339	1.73	-56.3	1.521	1.71	6.83	clear	none	none
11:25	400	23.00	2344	1.54	-57.4	1.527	1.99	6.83	clear	none	none
11:30	400	23.30	2365	1.28	-67.1	1.534	2.04	6.83	clear	none	none
11:35	400	23.30	2371	1.18	-67.5	1.54	1.84	6.83	clear	none	none
11:40	400	22.90	2387	1.29	-54.6	1.547	1.91	6.83	clear	none	none
11:45	400	22.80	2385	1.09	-68.2	1.547	1.81	6.83	clear	none	none
11:50	400	22.80	2387	1.05	-74.2	1.553	1.88	6.83	clear	none	none
11:55	400	23.10	2385	1.08	-74.5	1.553	1.93	6.83	clear	none	none
12:00	400	23.30	2387	0.99	-74.8	1.553	1.79	6.83	clear	none	none

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
55	4400	No	12:01 Collected Sample Suite

QA/QC Samples	Signature
N/A	

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW06R	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 4 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/31/2018
Well Depth (TOC) 27.8 feet		**Location (Site)** SWR	**Begin Time** 10:45
Water Column Thickness 23.8 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 19
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 68	**Meters** YSI Pro Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.81 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Sunny	**Calibration** Field 10/31/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 781.41 feet			**Persulfate (ppm)** 1.4 / **H_2O_2 (ppm)** 0.0
Groundwater Elevation 777.41 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
11:00	0	23.40	1788	0.97	-174.2	1.1635	22.96	11.75	Clear	Clear	None
11:05	400	23.50	1683	1.18	-299.3	1.0855	17.41	11.74	Clear	Clear	None
11:10	400	23.60	1619	1.13	-170.7	1.0465	8.41	11.73	Clear	Clear	None
11:15	400	23.50	1505	1.54	-162.3	0.975	9.85	11.71	Clear	Clear	None
11:20	400	23.50	1492	1.55	-161.2	0.9685	7.22	11.70	Clear	Clear	None
11:25	400	23.20	1386	1.85	-149.0	0.897	6.86	11.68	Clear	Clear	None
11:30	400	23.50	1210	2.74	-129.8	0.7865	7.28	11.61	Clear	Clear	None
11:35	400	22.70	1141	3.24	-117.7	0.754	6.41	11.61	Clear	Clear	None
11:40	400	22.90	1162	3.24	-117.8	0.754	6.01	11.61	Clear	Clear	None
11:45	400	23.00	1161	3.30	-117.6	0.755	6.82	11.61	Clear	Clear	None
11:46			Collected Sample Suite								

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
11:45	3600	No	

QA/QC Samples N/A

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW07	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 7.37 feet	**Sample Method** Low Flow	**Sampler** S.Meadows	**Date** 10/29/2018
Well Depth (TOC) 28.65 feet		**Location (Site)** SWR	**Begin Time** 11:00
Water Column Thickness 22.27 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 20
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.56 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** sunny	**Calibration** Field 10/29/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 782.17 feet			**Persulfate (ppm)** 1.4 / **H_2O_2 (ppm)** 0.0
Groundwater Elevation 774.8 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1110	0	24.25	3025	3.21	6.7	1.966	62.28	6.73	Clear	Clear	None
1115	400	24.13	3035	1.83	-10.1	1.973	58.42	6.70	Clear	Clear	None
1120	400	24.05	3074	1.54	-20.8	2.001	53.16	6.69	Clear	Clear	None
1125	400	24.27	3096	1.41	-28.7	2.012	44.81	6.68	Clear	Clear	None
1130	400	24.63	3100	1.27	-33.5	2.014	31.32	6.69	Clear	Clear	None
1135	400	24.86	3099	1.19	-35.3	2.015	28.14	6.69	Clear	Clear	None
1140	400	24.99	3100	1.12	-37.6	2.016	22.81	6.69	Clear	Clear	None
1145	400	24.91	3103	1.12	-35.9	2.016	19.62	6.69	Clear	Clear	None
1150	400	24.97	3102	1.11	-35.4	2.015	18.58	6.69	Clear	Clear	None
1151	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
40	3200	No	

QA/QC Samples	Signature
N/A	

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW08	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 6.07 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/30/2018
Well Depth (TOC) 73.9 feet		**Location (Site)** SWR	**Begin Time** 11:30
Water Column Thickness 67.83 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 66
		Sample Suite See COCs	
Casing Diameter 4 inches	**Temperature (°F)** 65	**Meters** YSI Pro Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 44.09 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A **Persulfate (ppm)** 0.0 / **H_2O_2 (ppm)** 0.0
Well Elevation (TOC) 780.66 feet			
Groundwater Elevation 774.59 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
11:50	0	21.60	361.2	5.90	40.6	0.234	13.08	7.73	clear	none	none
11:55	500	22.90	1873	3.96	11.8	1.2025	9.72	6.96	clear	none	none
12:00	500	23.30	1705	1.59	6.7	1.0985	8.09	6.96	clear	none	none
12:05	500	23.60	1387	1.74	9.8	0.884	7.88	7.01	clear	none	none
12:10	500	23.90	1317	1.80	11.2	0.858	7.42	7.02	clear	none	none
12:15	500	23.90	1305	1.89	12.0	0.845	6.89	7.02	clear	none	none
12:20	500	23.60	1390	1.99	15.0	0.897	6.03	7.02	clear	none	none
12:25	500	23.60	1392	2.01	15.0	0.897	5.85	7.01	clear	none	none
12:30	500	23.70	1391	2.01	14.9	0.897	6.41	7.01	clear	none	none
12:31	Collected Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
40	4000	No	

QA/QC Samples N/A

Signature 10/30/18

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW11	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 6.39 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/29/2018
Well Depth (TOC) 84.35 feet		**Location (Site)** SWR	**Begin Time** 12:25
Water Column Thickness 77.96 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 73
		Sample Suite See COCs	
Casing Diameter 4 inches	**Temperature (°F)** 65	**Meters** YSI Pro; Solinst Water Level Meter; Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 50.67 gallons (1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4)	**Weather Conditions** Sunny	**Calibration** Field 10/29/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 780.89 feet			**Persulfate (ppm)** 0.0; **H_2O_2 (ppm)** 0.0
Groundwater Elevation 774.5 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
12:40	0	21.20	306	5.95	4.4	0.2015	31.45	7.60	clear	none	none
12:45	250	20.70	321	2.53	-33.6	0.2087	31.07	7.81	clear	none	none
12:50	250	20.70	321.1	2.29	-35.3	0.2087	30.88	7.81	clear	none	none
12:55	250	20.80	321.2	1.72	-48.2	0.2087	27.45	7.84	clear	none	none
13:00	250	20.70	321.2	1.50	-56.2	0.2087	21.36	7.85	clear	none	none
13:05	250	21.20	321	0.82	-61.5	0.208	23.87	7.83	clear	none	none
13:10	250	21.00	320.9	0.81	-60.9	0.208	20.01	7.82	clear	none	none
13:15	250	20.90	319.5	0.80	-59.2	0.2074	17.07	7.82	clear	none	none
13:20	250	21.10	319.1	0.76	-52.3	0.2074	14.21	7.81	clear	none	none
13:25	250	21.10	319	0.74	-52.4	0.2074	13.99	7.81	clear	none	none
13:30	250	21.10	319.1	0.73	-52.6	0.2074	14.42	7.81	clear	none	none
13:31	—	Collected	Sample	Suite					—		

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
50	2500	No	

QA/QC Samples	Signature
N/A	

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW13	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 6.71 feet	**Sample Method** Low Flow	**Sampler** S.Meadows	**Date** 10/29/2018
Well Depth (TOC) 74.03 feet		**Location (Site)** SWR	**Begin Time** 12:45
Water Column Thickness 67.32 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 66.6
		Sample Suite See COCs	
Casing Diameter 4 inches	**Temperature (°F)**	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 43.76 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions**	**Calibration** Field 10/29/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 781.65 feet			**Persulfate (ppm)** 1.4 / **H_2O_2 (ppm)** 0
Groundwater Elevation 774.94 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1315	0	30.05	389	5.44	71.8	0.257	8.62	7.65	Clear	Clear	None
1320	250	29.32	1392	4.69	-32.7	0.901	4.13	7.27	Clear	Clear	None
1325	250	29.07	2009	3.53	-79.2	1.324	3.72	7.21	Clear	Clear	None
1330	250	28.80	2166	2.95	-86.5	1.41	4.02	7.20	Clear	Clear	None
1335	250	28.84	2240	2.28	-94.5	1.455	6.23	7.19	Clear	Clear	None
1340	250	29.09	2246	2.11	-95.5	1.461	6.16	7.19	Clear	Clear	None
1345	250	29.27	22.58	1.83	-94.7	1.467	7.51	7.18	Clear	Clear	None
1350	250	29.19	22.58	1.74	-98.6	1.47	6.89	7.17	Clear	Clear	None
1355	250	28.66	2263	1.61	-99.2	1.468	7.03	7.17	Clear	Clear	None
1400	250	28.65	2258	1.62	-98.7	1.468	6.96	7.17	Clear	Clear	None
1401	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
45	2250	No	

QA/QC Samples	Signature
N/A	

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW14	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 7.05 feet	**Sample Method** Low Flow	**Sampler** S.Meadows	**Date** 10/29/2018
Well Depth (TOC) 20.71 feet		**Location (Site)** SWR	**Begin Time** 3:15
Water Column Thickness 13.66 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 15.00
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 2.19 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** sunny	**Calibration** Field 10/29/2018	**Ferrous Iron (Fe II) (mg/L)**
Well Elevation (TOC) 781.7 feet			**Persulfate (ppm)** 2.8 / **H_2O_2 (ppm)** 0
Groundwater Elevation 774.65 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1525	0	24.82	2095	1.16	-60.9	1.362	116.80	6.82	Cloudy	Brown	None
1530	250	24.81	2096	1.15	-60.7	1.362	104.10	6.82	Cloudy	Brown	None
1535	250	24.60	2096	1.11	-62.2	1.363	89.14	6.82	Cloudy	Brown	None
1540	250	24.45	2095	1.05	-61.0	1.36	74.00	6.82	Clear	Clear	None
1545	250	24.46	2090	1.01	-62.0	1.358	62.67	6.82	Clear	Clear	None
1550	250	24.41	2086	0.99	-60.1	1.355	58.32	6.82	Clear	Clear	None
1555	250	24.41	2083	0.99	-60.8	1.354	57.15	6.82	Clear	Clear	None
1556	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
30	1500	No	

QA/QC Samples N/A

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW16	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 5.93 feet	**Sample Method** Low Flow	**Sampler** S. Meadows	**Date** 10/30/2018
Well Depth (TOC) 12.75 feet		**Location (Site)** SWR	**Begin Time** 13:30
	Equipment Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 8
Water Column Thickness 6.82 feet		**Sample Suite** See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 1.09 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 780.47 feet			**Persulfate (ppm)** 1.4 / **H_2O_2 (ppm)** 0
Groundwater Elevation 774.54 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1350	0	25.53	710	2.91	58.0	0.461	39.71	6.45	Clear	Clear	None
1355	350	25.53	703	2.09	59.8	0.456	31.08	6.44	Clear	Clear	None
1400	350	25.47	696	1.53	56.4	0.452	26.14	6.42	Clear	Clear	None
1405	350	25.36	689	1.37	46.0	0.448	11.73	6.40	Clear	Clear	None
1410	350	25.29	680	1.25	38.1	0.442	10.24	6.38	Clear	Clear	None
1415	350	25.22	675	1.14	32.5	0.439	9.11	6.38	Clear	Clear	None
1420	350	25.24	668	0.96	20.8	0.434	9.86	6.36	Clear	Clear	None
1425	350	25.14	668	0.84	19.3	0.434	8.32	6.36	Clear	Clear	None
1430	350	25.25	670	0.83	21.2	0.436	7.95	6.37	Clear	Clear	None
1435	350	25.15	681	0.79	22.7	0.438	8.03	6.39	Clear	Clear	None
1436	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
45	3150	No	

QA/QC Samples N/A

Signature

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW17	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 6.28 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/30/2018
Well Depth (TOC) 17.71 feet		**Location (Site)** SWR	**Begin Time** 8:05
Water Column Thickness 11.43 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 15
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 50	**Meters** YSI Pro Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 1.83 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 781.29 feet			**Persulfate (ppm)** 0.0 / **H_2O_2 (ppm)** 0.0
Groundwater Elevation 775.01 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
8:40	0	17.70	749	6.17	224.7	0.4875	38.70	7.03	cloudy	none	none
8:45	250	17.90	771	3.44	204.1	0.5005	39.09	7.15	cloudy	none	none
8:50	250	18.80	790	1.77	131.2	0.5135	40.11	7.13	cloudy	none	none
8:55	250	18.90	785	1.71	114.1	0.507	39.88	7.13	cloudy	none	none
9:00	250	18.90	775	1.61	75.1	0.5005	43.05	7.13	cloudy	none	none
9:05	250	20.40	759	1.07	26.7	0.494	42.29	7.11	cloudy	none	none
9:10	250	20.70	743	1.95	-1.1	0.481	38.42	7.12	cloudy	none	none
9:15	250	20.70	740	1.27	-18.3	0.481	31.05	7.11	cloudy	none	none
9:20	250	20.70	731	4.92	-41.6	0.4745	28.11	7.12	cloudy	none	none
9:25	250	20.70	725	4.36	-49.9	0.468	29.89	7.12	cloudy	none	none
9:30	250	20.80	720	0.73	-55.1	0.468	31.43	7.12	cloudy	none	none
9:35	250	20.70	715	1.82	-47.1	0.4615	28.15	7.13	cloudy	none	none

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
70	2750	No	See page 2

QA/QC Samples	Signature
N/A	

Matrix ENVIRONMENTAL

Matrix Environmental Services
1601 Blake Street, Suite 200
Denver, Colorado 80202
(303) 572-0200
(303) 572-0202

Station Name/Sample ID: PPMP-66-MW17

Project: McClellan

Date: 10/30/2018

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
9:40	250	20.8	713	1.93	-46.8	0.4615	30.85	7.13	cloudy	none	none
9:45	250	20.8	712	1.85	-47.6	0.4615	29.74	7.13	cloudy	none	none
9:50	250	20.7	711	1.31	-47.5	0.4615	31.24	7.13	cloudy	none	none
9:51	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
70	3450	No	

QA/QC Samples
N/A

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW18R	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 5.54 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/30/2018
Well Depth (TOC) 15 feet		**Location (Site)** SWR	**Begin Time** 10:15
Water Column Thickness 9.46 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 10
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI Pro; Solinst Water Level Meter; Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 1.51 gallons	**Weather Conditions** Sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4			**Persulfate (ppm)** 0.7; **H_2O_2 (ppm)** 0.0
Well Elevation (TOC) 781.25 feet			
Groundwater Elevation 775.71 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
10:25	0	22.20	675	1.33	26.2	0.442	49.76	7.21	cloudy	none	none
10:30	375	22.30	676	0.95	53.1	0.442	22.08	7.28	clear	none	none
10:35	375	22.50	675	0.79	58.1	0.4355	14.77	7.23	clear	none	none
10:40	375	22.70	674	1.24	56.5	0.4355	12.01	7.23	clear	none	none
10:45	375	22.90	674	1.02	55.7	0.4355	13.74	7.22	clear	none	none
10:50	375	23.00	674	1.22	56.1	0.4355	12.88	7.21	clear	none	none
10:55	375	23.00	674	1.03	56.5	0.4355	12.03	7.22	clear	none	none
11:00	375	23.00	674	1.05	56.4	0.4355	11.91	7.22	clear	none	none
11:01	—	—	Collected		Sample		Suite	—			

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
35	2625	No	

QA/QC Samples N/A

Signature 10/30/18

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW21	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 3.17 feet	**Sample Method** Low Flow	**Sampler** stephen Meadows	**Date** 10/31/2018
Well Depth (TOC) 14.4 feet		**Location (Site)** SWR	**Begin Time** 08:55
Water Column Thickness 11.23 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 10.00
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 1.80 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Overcast	**Calibration** Field 10/31/2018	**Ferrous Iron (Fe II) (mg/L)** **Persulfate (ppm)** 0.7 **H_2O_2 (ppm)** 0.0
Well Elevation (TOC) 780.44 feet			
Groundwater Elevation 777.27 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
0910	0	21.79	454	2.58	129.6	0.295	10.67	6.34	Clear	Clear	None
0915	250	21.77	453	2.39	116.5	0.295	9.18	6.34	Clear	Clear	None
0920	250	21.85	453	2.13	110.3	0.294	9.21	6.34	Clear	Clear	None
0925	250	21.98	453	2.03	106.0	0.294	9.52	6.34	Clear	Clear	None
0930	250	22.20	452	1.95	101.4	0.294	8.94	6.34	Clear	Clear	None
0935	250	22.40	453	1.79	98.7	0.295	8.64	6.34	Clear	Clear	None
0940	250	22.40	454	1.86	97.8	0.295	8.81	6.34	Clear	Clear	None
0945	250	22.36	455	1.83	97.1	0.296	8.07	6.34	Clear	Clear	None
0950	250	22.42	455	1.87	96.6	0.296	8.24	6.34	Clear	Clear	None
0951	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
40	2000	No	

QA/QC Samples	Signature
N/A	

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW22	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 5.83 feet	**Sample Method** Low Flow	**Sampler** S.Meadows	**Date** 10/30/2018
Well Depth (TOC) 24.65 feet		**Location (Site)** SWR	**Begin Time** 11:37
Water Column Thickness 18.82 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 20.00
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 60	**Meters** YSI 556 MPS Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.01 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 780.44 feet			**Persulfate (ppm)** 2.1 / **H_2O_2 (ppm)** 0
Groundwater Elevation 774.61 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1200	0	23.77	785	1.03	-86.8	0.509	150.20	7.14	Cloudy	Brown	None
1205	400	23.77	715	0.98	-89.2	0.465	120.40	7.15	Cloudy	Brown	None
1210	400	24.24	712	0.90	-88.8	0.463	96.19	7.15	Cloudy	Brown	None
1215	400	24.47	710	0.90	-88.6	0.462	61.43	7.16	Cloudy	Brown	None
1220	400	24.69	710	0.88	-88.1	0.462	55.09	7.16	Cloudy	Brown	None
1225	400	24.89	709	0.83	-87.2	0.461	46.00	7.17	Cloudy	Brown	None
1230	400	25.02	710	0.81	-86.6	0.461	44.18	7.17	Clear	Clear	None
1235	400	25.18	709	0.82	-85.5	0.461	38.22	7.18	Clear	Clear	None
1236	Collect Sample Suite										

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
35	2800	No	

QA/QC Samples	Signature
N/A	

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW23R	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 5.09 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/30/2018
Well Depth (TOC) 29.25 feet		**Location (Site)** SWR	**Begin Time** 12:55
Water Column Thickness 24.16 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 25
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 72	**Meters** YSI Pro Solinst Water Level Meter Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 3.87 gallons 1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4	**Weather Conditions** Sunny	**Calibration** Field 10/30/2018	**Ferrous Iron (Fe II) (mg/L)** N/A
Well Elevation (TOC) 780.87 feet			**Persulfate (ppm)** 0.7 / **H_2O_2 (ppm)** 0.0
Groundwater Elevation 775.78 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
1315	0	22.20	1148	1.23	-207.1	0.7475	31.74	11.48	clear	none	none
1320	375	22.00	1134	0.82	-223.5	0.7345	39.41	11.50	clear	none	none
1325	375	22.70	1119	0.89	-222.0	0.728	30.79	11.49	clear	none	none
1330	375	22.80	1124	1.12	-289.0	0.728	31.22	11.50	clear	none	none
1335	375	22.70	1183	0.92	-222.1	0.767	30.44	11.52	clear	none	none
1340	375	23.00	1187	0.80	-225.8	0.7735	33.86	11.52	clear	none	none
1345	375	23.10	1186	0.77	-222.2	0.7735	29.70	11.52	clear	none	none
13:50	375	23.10	1186	0.72	-212.3	0.7735	31.42	11.52	clear	none	none
1355	375	23.00	1187	0.85	-211.8	0.7735	30.44	11.52	clear	none	none
14:00	375	22.90	1187	0.89	-212.2	0.7735	29.76	11.52	clear	none	none
14:01			Collected Sample Suite								10/30/18

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
45	3375	No	very small particles in sample

QA/QC Samples N/A

Signature

Matrix ENVIRONMENTAL

Matrix Environmental Services
283 Rucker Street
Anniston, AL 36205
(256) 847-0780

Station Name/Sample ID	
PPMP-66-MW24R	
Project	**Project Number**
McClellan	18.094.19-22.2

GROUNDWATER SAMPLING LOG

Groundwater Depth (TOC) 5.96 feet	**Sample Method** Low Flow	**Sampler** Tulley	**Date** 10/31/2018
Well Depth (TOC) 34.15 feet		**Location (Site)** SWR	**Begin Time** 8:30
Water Column Thickness 28.19 feet	**Equipment** Geotech Bladder Pump	**Laboratory** TestAmerica	**Sample Depth** 30.0
		Sample Suite See COCs	
Casing Diameter 2 inches	**Temperature (°F)** 61	**Meters** YSI Pro; Solinst Water Level Meter; Geotech Geocontrol PRO	**Serial numbers**
Casing Volume 4.51 gallons (1"=x0.04 2"=x0.16 4"=x0.65 6"=x1.47 8"=x10.4)	**Weather Conditions** Overcast	**Calibration** Field 10/31/2018	**Ferrous Iron (Fe II) (mg/L)** N/A; **Persulfate (ppm)** 0.7; **H_2O_2 (ppm)** 0.0
Well Elevation (TOC) 781.20 feet			
Groundwater Elevation 775.24 feet	**Parameter Stabilization** temp +/- 1° DO +/- 10% Turbidity +/- 10% cond +/- 3% ORP +/- 10mV pH +/- 0.1 unit	**Product Observed (yes/no)** N/A	**Depth to product** N/A

Time	Volume removed (mL)	Temp (°C)	Cond (µS/cm)	DO (mg/L)	ORP (mV)	TDS (g/L)	Turbidity (NTU)	pH	Description		
									clarity	color	odor
9:10	0	21.60	785	4.27	-116.6	0.507	47.54	7.32	Cloudy	Clear	None
9:15	375	21.60	776	3.78	-116.1	0.507	54.87	7.33	Cloudy	Clear	None
9:20	375	21.40	770	2.10	-107.3	0.5005	50.11	7.31	Cloudy	Clear	None
9:25	375	21.50	775	2.00	-103.9	0.507	45.43	7.28	Cloudy	Clear	None
9:30	375	21.80	779	2.08	-104.0	0.507	41.41	7.27	Cloudy	Clear	None
9:35	375	21.60	784	2.03	-103.4	0.507	40.79	7.25	Cloudy	Clear	None
9:40	375	21.60	787	2.06	-103.3	0.5135	41.71	7.24	Cloudy	Clear	None
9:45	375	21.90	792	2.30	-105.3	0.5135	40.22	7.24	Cloudy	Clear	None
9:50	375	21.20	805	1.96	-102.8	0.5215	42.74	7.23	Cloudy	Clear	None
9:55	375	21.60	807	2.02	-105.1	0.5265	41.55	7.23	Cloudy	Clear	None
10:00	375	21.70	806	1.99	-105.1	0.5265	40.99	7.23	Cloudy	Clear	None
10:01											

Total Time (min.)	Total Volume Removed	Well pumped dry (yes/no)	Notes
40	3750	No	

QA/QC Samples
Dup 301

Signature

Chain-of-Custody Forms

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

Laboratory TestAmerica
Lab Contact Jon Lawhon
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Parcel 66(7), Fmr Small Weapons Repair Shop
Task # 18.094.19-22.2

COC Number
Cooler ID 1 of 2
Page 1 of 2

Samplers Signature

SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260B - VOC* 3 - 40 mL vials, HCl	SW6020A Iron (total) 1-250 mL poly, HNO3	SW6020A Iron (dissolved) 1-250 mL poly, none	SW9056A Sulfate 1 - 125mL poly, none	SW8260B - VOC* TB 2 - 40 mL vials, HCl
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW04	NS	MW	WQ	G	10/29/18	1201	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW11	NS	MW	WQ	G	10/29/18	1331	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW07	NS	MW	WQ	G	10/29/18	1151	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW13	NS	MW	WQ	G	10/29/18	1401	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW03	NS	MW	WQ	G	10/29/18	1506		1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW14	NS	MW	WQ	G	10/29/18	1556	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW17	NS	MW	WQ	G	10/30/18	950	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW18R	NS	MW	WQ	G	10/30/18	1101	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW01	NS	MW	WQ	G	10/30/18	1036	1	1	1	1	
McClellan Field QC	DUP301	FD	WQ	W	G	10/31/18	N/A	1	1	1	1	
McClellan Field QC	EB121	EB	WQ	W	G	10/31/18	1330	1	1	1	1	
McClellan Field QC	MATERIAL092	Material Blank	WQ	W	G	10/31/18	1300	1	1	1	1	
McClellan Field QC	TB489	TB	WQ	W	G	10/31/18	1400					1

NOTES:

***VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC**

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water

Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water

White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt

Relinquished by (Signature): Date/Time: 10/31/18 1600 Received by (Signature): Fedex

Relinquished by (Signature): Date/Time: Received by (Signature):

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

COC Number 5471
Cooler ID 2 of 2
Page ~~2 of 2~~ 10/31/18

Laboratory TestAmerica
Lab Contact Jon Lawhon
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Parcel 66(7), Fmr Small Weapons Repair Shop
Task # 18.094.19-22.2

Samplers Signature

SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260B - VOC* 3-40 mL vials, HCl	SW6020A Iron (total) 1-250 mL poly, HNO3	SW6020A Iron (dissolved) 1-250 mL poly, none	SW9056A Sulfate 1-125mL poly, none	SW8260B - VOC* TB 2-40 mL vials, HCl
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW22	NS	MW	WQ	G	10/30/18	1236	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW16	NS	MW	WQ	G	10/30/18	1436	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW21	NS	MW	WQ	G	10/31/18	0951		1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08	NS	MW	WQ	G	10/30/18	1231	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW23R	NS	MW	WQ	G	10/30/18	1401	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	NS	MW	WQ	G	10/31/18	11:51	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	MS/MSD	MW	WQ	G	10/31/18	11:51	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW24R	NS	MW	WQ	G	10/31/18	1001	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	NS	MW	WQ	G	10/31/18	1146	1	1	1	1	
McClellan Field QC	DUP300	FD	WQ	W	G	N/A	N/A	1	1	1		
McClellan Field QC	TB490	TB	WQ	W	G	10/31/18	1409					1

NOTES:

***VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC**

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water

Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water

White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt

Relinquished by (Signature): Date/Time: 10/31/18 1600 Received by (Signature): Fedex

Relinquished by (Signature): Date/Time: Received by (Signature):

Laboratory Reports

TestAmerica
THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

TestAmerica Laboratories, Inc.
TestAmerica Savannah
5102 LaRoche Avenue
Savannah, GA 31404
Tel: (912)354-7858

TestAmerica Job ID: 680-160066-1
Client Project/Site: Parcel 66(7),Fmr Small Weapons Shop

For:
Matrix Environmental Services, LLC
1601 Blake Street
Suite 200
Denver, Colorado 80202

Attn: Ms. Betty Van Pelt

Kathryn Smith

Authorized for release by:
11/13/2018 4:54:06 PM
Kathryn Smith, Manager of Project Management
(912)250-0275
kathy.smith@testamericainc.com

Designee for

Jon Lawhon, Project Manager I
(912)250-0283
jon.lawhon@testamericainc.com

Definitions/Glossary

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Qualifiers

GC/MS VOA

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
F1	MS and/or MSD Recovery is outside acceptance limits.

HPLC/IC

Qualifier	Qualifier Description
U	Indicates the analyte was analyzed for but not detected.
4	MS, MSD: The analyte present in the original sample is greater than 4 times the matrix spike concentration; therefore, control limits are not applicable.
E	Result exceeded calibration range.
F1	MS and/or MSD Recovery is outside acceptance limits.
F2	MS/MSD RPD exceeds control limits

Metals

Qualifier	Qualifier Description
J	Result is less than the RL but greater than or equal to the MDL and the concentration is an approximate value.
U	Indicates the analyte was analyzed for but not detected.

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
¤	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Sample Summary

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
680-160066-1	PPMP-66-MW04	Water	10/29/18 12:01	11/01/18 09:50
680-160066-2	PPMP-66-MW11	Water	10/29/18 13:31	11/01/18 09:50
680-160066-3	PPMP-66-MW07	Water	10/29/18 11:51	11/01/18 09:50
680-160066-4	PPMP-66-MW13	Water	10/29/18 14:01	11/01/18 09:50
680-160066-5	PPMP-66-MW03	Water	10/29/18 15:06	11/01/18 09:50
680-160066-6	PPMP-66-MW14	Water	10/29/18 15:56	11/01/18 09:50
680-160066-7	PPMP-66-MW17	Water	10/30/18 09:50	11/01/18 09:50
680-160066-8	PPMP-66-MW18R	Water	10/30/18 11:01	11/01/18 09:50
680-160066-9	PPMP-66-MW01	Water	10/30/18 10:36	11/01/18 09:50
680-160066-10	DUP301	Water	10/31/18 00:00	11/01/18 09:50
680-160066-11	EB121	Water	10/31/18 13:30	11/01/18 09:50
680-160066-12	MATERIAL092	Water	10/31/18 13:00	11/01/18 09:50
680-160066-13	TB489	Water	10/31/18 14:00	11/01/18 09:50
680-160066-14	PPMP-66-MW22	Water	10/30/18 12:36	11/01/18 09:50
680-160066-15	PPMP-66-MW16	Water	10/30/18 14:36	11/01/18 09:50
680-160066-16	PPMP-66-MW21	Water	10/31/18 09:51	11/01/18 09:50
680-160066-17	PPMP-66-MW08	Water	10/30/18 12:31	11/01/18 09:50
680-160066-18	PPMP-66-MW23R	Water	10/30/18 14:01	11/01/18 09:50
680-160066-19	PPMP-66-MW02RR	Water	10/31/18 11:51	11/01/18 09:50
680-160066-20	PPMP-66-MW24R	Water	10/31/18 10:01	11/01/18 09:50
680-160066-21	PPMP-66-MW06R	Water	10/31/18 11:46	11/01/18 09:50
680-160066-22	DUP300	Water	10/31/18 00:00	11/01/18 09:50
680-160066-23	TB490	Water	10/31/18 14:09	11/01/18 09:50

Job ID: 680-160066-1

Laboratory: TestAmerica Savannah

Narrative

CASE NARRATIVE
Client: Matrix Environmental Services, LLC
Project: Parcel 66(7),Fmr Small Weapons Shop

Report Number: 680-160066-1

With the exceptions noted as flags or footnotes, standard analytical protocols were followed in the analysis of the samples and no problems were encountered or anomalies observed. In addition all laboratory quality control samples were within established control limits, with any exceptions noted below. Each sample was analyzed to achieve the lowest possible reporting limit within the constraints of the method. In the event of interference or analytes present at high concentrations, samples may be diluted. For diluted samples, the reporting limits are adjusted relative to the dilution required.

RECEIPT
The samples were received on 11/01/2018; the samples arrived in good condition, properly preserved and on ice. The temperatures of the 2 coolers at receipt time were 1.6º C and 4.0º C.

VOLATILE ORGANIC COMPOUNDS (GC-MS)
Samples PPMP-66-MW04 (680-160066-1), PPMP-66-MW11 (680-160066-2), PPMP-66-MW07 (680-160066-3), PPMP-66-MW13 (680-160066-4), PPMP-66-MW14 (680-160066-6), PPMP-66-MW17 (680-160066-7), PPMP-66-MW18R (680-160066-8), PPMP-66-MW01 (680-160066-9), DUP301 (680-160066-10), EB121 (680-160066-11), MATERIAL092 (680-160066-12), TB489 (680-160066-13), PPMP-66-MW22 (680-160066-14), PPMP-66-MW16 (680-160066-15), PPMP-66-MW08 (680-160066-17), PPMP-66-MW23R (680-160066-18), PPMP-66-MW02RR (680-160066-19), PPMP-66-MW24R (680-160066-20), PPMP-66-MW06R (680-160066-21), DUP300 (680-160066-22) and TB490 (680-160066-23) were analyzed for Volatile Organic Compounds (GC-MS) in accordance with EPA SW-846 Method 8260B. The samples were analyzed on 11/09/2018, 11/10/2018 and 11/12/2018.

cis-1,2-Dichloroethene and Trichloroethene recovered low for the MS/MSD of sample PPMP-66-MW02RR (680-160066-19) in batch 680-547031.

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

METALS (ICPMS) - DISSOLVED
Samples PPMP-66-MW07 (680-160066-3), PPMP-66-MW03 (680-160066-5), PPMP-66-MW14 (680-160066-6), PPMP-66-MW17 (680-160066-7), PPMP-66-MW18R (680-160066-8), PPMP-66-MW01 (680-160066-9), DUP301 (680-160066-10), EB121 (680-160066-11), MATERIAL092 (680-160066-12), PPMP-66-MW16 (680-160066-15), PPMP-66-MW21 (680-160066-16), PPMP-66-MW23R (680-160066-18), PPMP-66-MW02RR (680-160066-19), PPMP-66-MW24R (680-160066-20), PPMP-66-MW06R (680-160066-21) and DUP300 (680-160066-22) were analyzed for Metals (ICPMS) - Dissolved in accordance with EPA SW-846 Method 6020A. The samples were prepared and analyzed on 11/09/2018.

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

METALS (ICPMS)
Samples PPMP-66-MW07 (680-160066-3), PPMP-66-MW03 (680-160066-5), PPMP-66-MW14 (680-160066-6), PPMP-66-MW17 (680-160066-7), PPMP-66-MW18R (680-160066-8), PPMP-66-MW01 (680-160066-9), DUP301 (680-160066-10), EB121 (680-160066-11), MATERIAL092 (680-160066-12), PPMP-66-MW16 (680-160066-15), PPMP-66-MW21 (680-160066-16), PPMP-66-MW23R (680-160066-18), PPMP-66-MW02RR (680-160066-19), PPMP-66-MW24R (680-160066-20), PPMP-66-MW06R (680-160066-21) and DUP300 (680-160066-22) were analyzed for metals (ICPMS) in accordance with EPA SW-846 Method 6020A. The samples were prepared on 11/05/2018 and 11/07/2018 and analyzed on 11/06/2018 and 11/08/2018.

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

ANIONS BY ION CHROMATOGRAPHY (28 DAY)
Samples PPMP-66-MW04 (680-160066-1), PPMP-66-MW11 (680-160066-2), PPMP-66-MW07 (680-160066-3), PPMP-66-MW13 (680-160066-4), PPMP-66-MW03 (680-160066-5), PPMP-66-MW14 (680-160066-6), PPMP-66-MW17 (680-160066-7), PPMP-66-MW18R

Job ID: 680-160066-1 (Continued)

Laboratory: TestAmerica Savannah (Continued)

(680-160066-8), PPMP-66-MW01 (680-160066-9), DUP301 (680-160066-10), EB121 (680-160066-11), MATERIAL092 (680-160066-12), PPMP-66-MW22 (680-160066-14), PPMP-66-MW16 (680-160066-15), PPMP-66-MW21 (680-160066-16), PPMP-66-MW08 (680-160066-17), PPMP-66-MW23R (680-160066-18), PPMP-66-MW02RR (680-160066-19), PPMP-66-MW24R (680-160066-20), PPMP-66-MW06R (680-160066-21) and DUP300 (680-160066-22) were analyzed for Anions by Ion Chromatography (28 Day) in accordance with SW 846 9056A. The samples were analyzed on 11/09/2018 and 11/12/2018.

Sulfate recovered low for the MS/MSD of sample PPMP-66-MW22 (680-160066-14) in batch 680-546901.

Sulfate recovered low for the MSD of sample DUP300MSD (680-160066-22) in batch 680-547192. Sulfate exceeded the RPD limit.

Samples PPMP-66-MW04 (680-160066-1)[100X], PPMP-66-MW07 (680-160066-3)[100X], PPMP-66-MW13 (680-160066-4)[25X], PPMP-66-MW03 (680-160066-5)[100X], PPMP-66-MW14 (680-160066-6)[10X], PPMP-66-MW17 (680-160066-7)[10X], PPMP-66-MW01 (680-160066-9)[100X], PPMP-66-MW16 (680-160066-15)[10X], PPMP-66-MW08 (680-160066-17)[25X] and DUP300 (680-160066-22) [100X] required dilution prior to analysis. The reporting limits have been adjusted accordingly.

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

Client Sample ID: PPMP-66-MW04

Lab Sample ID: 680-160066-1
Date Collected: 10/29/18 12:01
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 15:24	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 15:24	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 15:24	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 15:24	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 15:24	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*92*		*80 - 120*		*11/12/18 15:24*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 122*		*11/12/18 15:24*	*1*
1,2-Dichloroethane-d4 (Surr)	*104*		*73 - 131*		*11/12/18 15:24*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/12/18 15:24*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**980**		100	40	mg/L			11/12/18 12:05	100

Client Sample ID: PPMP-66-MW11

Lab Sample ID: 680-160066-2
Date Collected: 10/29/18 13:31
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 15:01	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 15:01	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 15:01	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 15:01	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 15:01	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*11/12/18 15:01*	*1*
Dibromofluoromethane (Surr)	*98*		*80 - 122*		*11/12/18 15:01*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*73 - 131*		*11/12/18 15:01*	*1*
Toluene-d8 (Surr)	*101*		*80 - 120*		*11/12/18 15:01*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**49**		1.0	0.40	mg/L			11/09/18 16:29	1

Client Sample ID: PPMP-66-MW07

Lab Sample ID: 680-160066-3
Date Collected: 10/29/18 11:51
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/10/18 01:22	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/10/18 01:22	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/10/18 01:22	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/10/18 01:22	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/10/18 01:22	1

Client Sample ID: PPMP-66-MW07

Lab Sample ID: 680-160066-3

Date Collected: 10/29/18 11:51

Matrix: Water

Date Received: 11/01/18 09:50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*11/10/18 01:22*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 122*		*11/10/18 01:22*	*1*
1,2-Dichloroethane-d4 (Surr)	*81*		*73 - 131*		*11/10/18 01:22*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/10/18 01:22*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1400**		100	40	mg/L			11/12/18 12:17	100

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2200**		100	25	ug/L		11/07/18 11:33	11/08/18 12:57	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 22:20	1

Client Sample ID: PPMP-66-MW13

Lab Sample ID: 680-160066-4

Date Collected: 10/29/18 14:01

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/10/18 01:47	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/10/18 01:47	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/10/18 01:47	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/10/18 01:47	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/10/18 01:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*11/10/18 01:47*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 122*		*11/10/18 01:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*78*		*73 - 131*		*11/10/18 01:47*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/10/18 01:47*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**960**		25	10	mg/L			11/12/18 12:30	25

Client Sample ID: PPMP-66-MW03

Lab Sample ID: 680-160066-5

Date Collected: 10/29/18 15:06

Matrix: Water

Date Received: 11/01/18 09:50

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1100**		100	40	mg/L			11/12/18 12:43	100

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2400**		100	25	ug/L		11/05/18 14:30	11/06/18 21:12	1

Client Sample ID: PPMP-66-MW03

Lab Sample ID: 680-160066-5

Date Collected: 10/29/18 15:06

Matrix: Water

Date Received: 11/01/18 09:50

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	**27**	**J**	100	25	ug/L		11/09/18 09:40	11/09/18 22:28	1

Client Sample ID: PPMP-66-MW14

Lab Sample ID: 680-160066-6

Date Collected: 10/29/18 15:56

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/10/18 02:11	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/10/18 02:11	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/10/18 02:11	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/10/18 02:11	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/10/18 02:11	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*11/10/18 02:11*	*1*
Dibromofluoromethane (Surr)	*91*		*80 - 122*		*11/10/18 02:11*	*1*
1,2-Dichloroethane-d4 (Surr)	*81*		*73 - 131*		*11/10/18 02:11*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/10/18 02:11*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**710**		10	4.0	mg/L			11/12/18 12:56	10

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**4900**		100	25	ug/L		11/05/18 14:30	11/06/18 21:20	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	**60**	**J**	100	25	ug/L		11/09/18 09:40	11/09/18 22:43	1

Client Sample ID: PPMP-66-MW17

Lab Sample ID: 680-160066-7

Date Collected: 10/30/18 09:50

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.55**	**J**	1.0	0.41	ug/L			11/12/18 19:29	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 19:29	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 19:29	1
Trichloroethene	**0.98**	**J**	1.0	0.48	ug/L			11/12/18 19:29	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 19:29	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*11/12/18 19:29*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 122*		*11/12/18 19:29*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*73 - 131*		*11/12/18 19:29*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/12/18 19:29*	*1*

Client Sample ID: PPMP-66-MW17

Lab Sample ID: 680-160066-7

Date Collected: 10/30/18 09:50

Matrix: Water

Date Received: 11/01/18 09:50

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**130**		10	4.0	mg/L			11/12/18 13:09	10

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**380**		100	25	ug/L		11/05/18 14:30	11/06/18 21:01	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 23:02	1

Client Sample ID: PPMP-66-MW18R

Lab Sample ID: 680-160066-8

Date Collected: 10/30/18 11:01

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**1.1**		1.0	0.41	ug/L			11/12/18 15:47	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 15:47	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 15:47	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 15:47	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 15:47	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*11/12/18 15:47*	*1*
Dibromofluoromethane (Surr)	*100*		*80 - 122*		*11/12/18 15:47*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*73 - 131*		*11/12/18 15:47*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*11/12/18 15:47*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**31**		1.0	0.40	mg/L			11/09/18 18:25	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**360**		100	25	ug/L		11/05/18 14:30	11/06/18 21:16	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	**29**	**J**	100	25	ug/L		11/09/18 09:40	11/09/18 22:39	1

Client Sample ID: PPMP-66-MW01

Lab Sample ID: 680-160066-9

Date Collected: 10/30/18 10:36

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/10/18 02:36	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/10/18 02:36	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/10/18 02:36	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/10/18 02:36	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/10/18 02:36	1

Client Sample ID: PPMP-66-MW01

Lab Sample ID: 680-160066-9

Date Collected: 10/30/18 10:36

Matrix: Water

Date Received: 11/01/18 09:50

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*11/10/18 02:36*	*1*
Dibromofluoromethane (Surr)	*92*		*80 - 122*		*11/10/18 02:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*83*		*73 - 131*		*11/10/18 02:36*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/10/18 02:36*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**1900**		100	40	mg/L			11/12/18 18:32	100

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**2200**		100	25	ug/L		11/05/18 14:30	11/06/18 21:08	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	**25**	**J**	100	25	ug/L		11/09/18 09:40	11/09/18 22:47	1

Client Sample ID: DUP301

Lab Sample ID: 680-160066-10

Date Collected: 10/31/18 00:00

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.42**	**J**	1.0	0.41	ug/L			11/10/18 03:00	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/10/18 03:00	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/10/18 03:00	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/10/18 03:00	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/10/18 03:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*101*		*80 - 120*		*11/10/18 03:00*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 122*		*11/10/18 03:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*80*		*73 - 131*		*11/10/18 03:00*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/10/18 03:00*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**81**		1.0	0.40	mg/L			11/09/18 18:51	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**1700**		100	25	ug/L		11/07/18 11:33	11/08/18 13:19	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	**33**	**J**	100	25	ug/L		11/09/18 09:40	11/09/18 23:29	1

Client Sample ID: EB121

Lab Sample ID: 680-160066-11

Date Collected: 10/31/18 13:30

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 19:52	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 19:52	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 19:52	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 19:52	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 19:52	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*		*11/12/18 19:52*	*1*
Dibromofluoromethane (Surr)	*97*		*80 - 122*		*11/12/18 19:52*	*1*
1,2-Dichloroethane-d4 (Surr)	*93*		*73 - 131*		*11/12/18 19:52*	*1*
Toluene-d8 (Surr)	*97*		*80 - 120*		*11/12/18 19:52*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.40	U	1.0	0.40	mg/L			11/09/18 19:04	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	25	U	100	25	ug/L		11/05/18 14:30	11/06/18 20:41	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 22:51	1

Client Sample ID: MATERIAL092

Lab Sample ID: 680-160066-12

Date Collected: 10/31/18 13:00

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/09/18 17:35	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/09/18 17:35	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/09/18 17:35	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/09/18 17:35	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/09/18 17:35	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/09/18 17:35*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 122*		*11/09/18 17:35*	*1*
1,2-Dichloroethane-d4 (Surr)	*79*		*73 - 131*		*11/09/18 17:35*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/09/18 17:35*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.40	U	1.0	0.40	mg/L			11/09/18 19:17	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	25	U	100	25	ug/L		11/07/18 11:33	11/08/18 13:16	1

Client Sample ID: MATERIAL092
Lab Sample ID: 680-160066-12
Date Collected: 10/31/18 13:00
Matrix: Water
Date Received: 11/01/18 09:50

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 23:25	1

Client Sample ID: TB489
Lab Sample ID: 680-160066-13
Date Collected: 10/31/18 14:00
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 13:28	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 13:28	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 13:28	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 13:28	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 13:28	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*11/12/18 13:28*	*1*
Dibromofluoromethane (Surr)	*103*		*80 - 122*		*11/12/18 13:28*	*1*
1,2-Dichloroethane-d4 (Surr)	*102*		*73 - 131*		*11/12/18 13:28*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*11/12/18 13:28*	*1*

Client Sample ID: PPMP-66-MW22
Lab Sample ID: 680-160066-14
Date Collected: 10/30/18 12:36
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/09/18 16:46	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/09/18 16:46	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/09/18 16:46	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/09/18 16:46	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/09/18 16:46	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*11/09/18 16:46*	*1*
Dibromofluoromethane (Surr)	*91*		*80 - 122*		*11/09/18 16:46*	*1*
1,2-Dichloroethane-d4 (Surr)	*81*		*73 - 131*		*11/09/18 16:46*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/09/18 16:46*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**120**		1.0	0.40	mg/L			11/09/18 19:42	1

Client Sample ID: PPMP-66-MW16
Lab Sample ID: 680-160066-15
Date Collected: 10/30/18 14:36
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 17:43	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 17:43	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 17:43	1

Client Sample ID: PPMP-66-MW16
Lab Sample ID: 680-160066-15
Date Collected: 10/30/18 14:36
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 17:43	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 17:43	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*11/12/18 17:43*	*1*
Dibromofluoromethane (Surr)	*99*		*80 - 122*		*11/12/18 17:43*	*1*
1,2-Dichloroethane-d4 (Surr)	*100*		*73 - 131*		*11/12/18 17:43*	*1*
Toluene-d8 (Surr)	*99*		*80 - 120*		*11/12/18 17:43*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**140**		10	4.0	mg/L			11/12/18 13:35	10

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**340**		100	25	ug/L		11/05/18 14:30	11/06/18 21:04	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	**230**		100	25	ug/L		11/09/18 09:40	11/09/18 22:24	1

Client Sample ID: PPMP-66-MW21
Lab Sample ID: 680-160066-16
Date Collected: 10/31/18 09:51
Matrix: Water
Date Received: 11/01/18 09:50

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**94**		1.0	0.40	mg/L			11/09/18 21:26	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**130**		100	25	ug/L		11/07/18 11:33	11/08/18 13:00	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 23:14	1

Client Sample ID: PPMP-66-MW08
Lab Sample ID: 680-160066-17
Date Collected: 10/30/18 12:31
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/10/18 04:14	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/10/18 04:14	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/10/18 04:14	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/10/18 04:14	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/10/18 04:14	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/10/18 04:14*	*1*
Dibromofluoromethane (Surr)	*90*		*80 - 122*		*11/10/18 04:14*	*1*

Client Sample ID: PPMP-66-MW08

Lab Sample ID: 680-160066-17

Date Collected: 10/30/18 12:31

Matrix: Water

Date Received: 11/01/18 09:50

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
1,2-Dichloroethane-d4 (Surr)	*81*		*73 - 131*		*11/10/18 04:14*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/10/18 04:14*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**610**		25	10	mg/L			11/12/18 13:48	25

Client Sample ID: PPMP-66-MW23R

Lab Sample ID: 680-160066-18

Date Collected: 10/30/18 14:01

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**86**		1.0	0.41	ug/L			11/10/18 03:49	1
1,1-Dichloroethene	**5.1**		1.0	0.36	ug/L			11/10/18 03:49	1
trans-1,2-Dichloroethene	**40**		1.0	0.37	ug/L			11/10/18 03:49	1
Trichloroethene	**80**		1.0	0.48	ug/L			11/10/18 03:49	1
Vinyl chloride	**29**		1.0	0.50	ug/L			11/10/18 03:49	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/10/18 03:49*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 122*		*11/10/18 03:49*	*1*
1,2-Dichloroethane-d4 (Surr)	*79*		*73 - 131*		*11/10/18 03:49*	*1*
Toluene-d8 (Surr)	*98*		*80 - 120*		*11/10/18 03:49*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**24**		1.0	0.40	mg/L			11/09/18 21:52	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**160**		100	25	ug/L		11/05/18 14:30	11/06/18 20:34	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 22:59	1

Client Sample ID: PPMP-66-MW02RR

Lab Sample ID: 680-160066-19

Date Collected: 10/31/18 11:51

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**42**		1.0	0.41	ug/L			11/12/18 17:20	1
1,1-Dichloroethene	**0.67**	**J**	1.0	0.36	ug/L			11/12/18 17:20	1
trans-1,2-Dichloroethene	**26**		1.0	0.37	ug/L			11/12/18 17:20	1
Trichloroethene	**27**		1.0	0.48	ug/L			11/12/18 17:20	1
Vinyl chloride	**20**		1.0	0.50	ug/L			11/12/18 17:20	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*91*		*80 - 120*		*11/12/18 17:20*	*1*

Client Sample ID: PPMP-66-MW02RR

Lab Sample ID: 680-160066-19

Date Collected: 10/31/18 11:51

Matrix: Water

Date Received: 11/01/18 09:50

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

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
Dibromofluoromethane (Surr)	*102*		*80 - 122*		*11/12/18 17:20*	*1*
1,2-Dichloroethane-d4 (Surr)	*103*		*73 - 131*		*11/12/18 17:20*	*1*
Toluene-d8 (Surr)	*102*		*80 - 120*		*11/12/18 17:20*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**29**		1.0	0.40	mg/L			11/09/18 22:05	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**44**	**J**	100	25	ug/L		11/07/18 11:33	11/08/18 12:37	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 22:01	1

Client Sample ID: PPMP-66-MW24R

Lab Sample ID: 680-160066-20

Date Collected: 10/31/18 10:01

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	**0.47**	**J**	1.0	0.41	ug/L			11/09/18 18:00	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/09/18 18:00	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/09/18 18:00	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/09/18 18:00	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/09/18 18:00	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/09/18 18:00*	*1*
Dibromofluoromethane (Surr)	*92*		*80 - 122*		*11/09/18 18:00*	*1*
1,2-Dichloroethane-d4 (Surr)	*80*		*73 - 131*		*11/09/18 18:00*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/09/18 18:00*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	**75**		1.0	0.40	mg/L			11/09/18 22:44	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	**1900**		100	25	ug/L		11/05/18 14:30	11/06/18 20:57	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 23:06	1

Client Sample ID: PPMP-66-MW06R

Lab Sample ID: 680-160066-21

Date Collected: 10/31/18 11:46

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	33		1.0	0.41	ug/L			11/12/18 19:05	1
1,1-Dichloroethene	1.5		1.0	0.36	ug/L			11/12/18 19:05	1
trans-1,2-Dichloroethene	2.4		1.0	0.37	ug/L			11/12/18 19:05	1
Trichloroethene	71		1.0	0.48	ug/L			11/12/18 19:05	1
Vinyl chloride	1.8		1.0	0.50	ug/L			11/12/18 19:05	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/12/18 19:05*	*1*
Dibromofluoromethane (Surr)	*96*		*80 - 122*		*11/12/18 19:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*94*		*73 - 131*		*11/12/18 19:05*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/12/18 19:05*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	11		1.0	0.40	mg/L			11/09/18 22:57	1

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	25	U	100	25	ug/L		11/05/18 14:30	11/06/18 20:53	1

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 23:10	1

Client Sample ID: DUP300

Lab Sample ID: 680-160066-22

Date Collected: 10/31/18 00:00

Matrix: Water

Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/09/18 17:10	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/09/18 17:10	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/09/18 17:10	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/09/18 17:10	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/09/18 17:10	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*11/09/18 17:10*	*1*
Dibromofluoromethane (Surr)	*87*		*80 - 122*		*11/09/18 17:10*	*1*
1,2-Dichloroethane-d4 (Surr)	*79*		*73 - 131*		*11/09/18 17:10*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/09/18 17:10*	*1*

Method: 9056A - Anions, Ion Chromatography

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	1800	F2 F1	100	40	mg/L			11/12/18 14:01	100

Method: 6020A - Metals (ICP/MS) - Total Recoverable

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	2100		100	25	ug/L		11/05/18 14:30	11/06/18 20:38	1

Client Sample ID: DUP300
Lab Sample ID: 680-160066-22
Date Collected: 10/31/18 00:00
Matrix: Water
Date Received: 11/01/18 09:50

Method: 6020A - Metals (ICP/MS) - Dissolved

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	27	J	100	25	ug/L		11/09/18 09:40	11/09/18 22:55	1

Client Sample ID: TB490
Lab Sample ID: 680-160066-23
Date Collected: 10/31/18 14:09
Matrix: Water
Date Received: 11/01/18 09:50

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

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 13:51	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 13:51	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 13:51	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 13:51	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 13:51	1

Surrogate	*%Recovery*	*Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*11/12/18 13:51*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 122*		*11/12/18 13:51*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*73 - 131*		*11/12/18 13:51*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*11/12/18 13:51*	*1*

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

Lab Sample ID: MB 680-546892/9
Matrix: Water
Analysis Batch: 546892

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/09/18 10:36	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/09/18 10:36	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/09/18 10:36	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/09/18 10:36	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/09/18 10:36	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*98*		*80 - 120*		*11/09/18 10:36*	*1*
Dibromofluoromethane (Surr)	*88*		*80 - 122*		*11/09/18 10:36*	*1*
1,2-Dichloroethane-d4 (Surr)	*78*		*73 - 131*		*11/09/18 10:36*	*1*
Toluene-d8 (Surr)	*96*		*80 - 120*		*11/09/18 10:36*	*1*

Lab Sample ID: LCS 680-546892/4
Matrix: Water
Analysis Batch: 546892

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
cis-1,2-Dichloroethene			50.0	51.0		ug/L		102	80 - 120		
1,1-Dichloroethene			50.0	50.5		ug/L		101	76 - 120		
trans-1,2-Dichloroethene			50.0	50.0		ug/L		100	80 - 120		
Trichloroethene			50.0	48.9		ug/L		98	80 - 120		
Vinyl chloride			50.0	60.5		ug/L		121	71 - 128		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*104*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*83*		*73 - 131*
Toluene-d8 (Surr)	*97*		*80 - 120*

Lab Sample ID: LCSD 680-546892/5
Matrix: Water
Analysis Batch: 546892

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			50.0	50.4		ug/L		101	80 - 120	1	20
1,1-Dichloroethene			50.0	50.1		ug/L		100	76 - 120	1	20
trans-1,2-Dichloroethene			50.0	49.4		ug/L		99	80 - 120	1	20
Trichloroethene			50.0	46.5		ug/L		93	80 - 120	5	20
Vinyl chloride			50.0	55.5		ug/L		111	71 - 128	9	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*81*		*73 - 131*
Toluene-d8 (Surr)	*92*		*80 - 120*

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

Lab Sample ID: MB 680-547031/10
Matrix: Water
Analysis Batch: 547031

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/09/18 22:55	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/09/18 22:55	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/09/18 22:55	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/09/18 22:55	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/09/18 22:55	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*		*11/09/18 22:55*	*1*
Dibromofluoromethane (Surr)	*89*		*80 - 122*		*11/09/18 22:55*	*1*
1,2-Dichloroethane-d4 (Surr)	*79*		*73 - 131*		*11/09/18 22:55*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/09/18 22:55*	*1*

Lab Sample ID: LCS 680-547031/5
Matrix: Water
Analysis Batch: 547031

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
cis-1,2-Dichloroethene			50.0	50.7		ug/L		101	80 - 120		
1,1-Dichloroethene			50.0	50.3		ug/L		101	76 - 120		
trans-1,2-Dichloroethene			50.0	50.4		ug/L		101	80 - 120		
Trichloroethene			50.0	47.9		ug/L		96	80 - 120		
Vinyl chloride			50.0	57.5		ug/L		115	71 - 128		

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*
Dibromofluoromethane (Surr)	*92*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*84*		*73 - 131*
Toluene-d8 (Surr)	*94*		*80 - 120*

Lab Sample ID: LCSD 680-547031/6
Matrix: Water
Analysis Batch: 547031

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene			50.0	49.6		ug/L		99	80 - 120	2	20
1,1-Dichloroethene			50.0	49.3		ug/L		99	76 - 120	2	20
trans-1,2-Dichloroethene			50.0	49.3		ug/L		99	80 - 120	2	20
Trichloroethene			50.0	47.3		ug/L		95	80 - 120	1	20
Vinyl chloride			50.0	54.3		ug/L		109	71 - 128	6	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*91*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*81*		*73 - 131*
Toluene-d8 (Surr)	*93*		*80 - 120*

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

Lab Sample ID: 680-160066-19 MS
Matrix: Water
Analysis Batch: 547031

Client Sample ID: PPMP-66-MW02RR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	42		50.0	76.9	F1	ug/L		69	80 - 122
1,1-Dichloroethene	0.67	J	50.0	53.6		ug/L		106	74 - 125
trans-1,2-Dichloroethene	26		50.0	66.6		ug/L		81	78 - 123
Trichloroethene	27		50.0	63.1	F1	ug/L		73	80 - 123
Vinyl chloride	20		50.0	72.4		ug/L		106	68 - 132

Surrogate	*MS %Recovery*	*MS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*100*		*80 - 120*
Dibromofluoromethane (Surr)	*92*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*78*		*73 - 131*
Toluene-d8 (Surr)	*98*		*80 - 120*

Lab Sample ID: 680-160066-19 MSD
Matrix: Water
Analysis Batch: 547031

Client Sample ID: PPMP-66-MW02RR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	42		50.0	75.3	F1	ug/L		66	80 - 122	2	20
1,1-Dichloroethene	0.67	J	50.0	52.7		ug/L		104	74 - 125	2	20
trans-1,2-Dichloroethene	26		50.0	66.0		ug/L		79	78 - 123	1	20
Trichloroethene	27		50.0	60.7	F1	ug/L		68	80 - 123	4	20
Vinyl chloride	20		50.0	71.5		ug/L		104	68 - 132	1	20

Surrogate	*MSD %Recovery*	*MSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Dibromofluoromethane (Surr)	*88*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*78*		*73 - 131*
Toluene-d8 (Surr)	*94*		*80 - 120*

Lab Sample ID: MB 680-547152/10
Matrix: Water
Analysis Batch: 547152

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 13:05	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 13:05	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 13:05	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 13:05	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 13:05	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*93*		*80 - 120*		*11/12/18 13:05*	*1*
Dibromofluoromethane (Surr)	*102*		*80 - 122*		*11/12/18 13:05*	*1*
1,2-Dichloroethane-d4 (Surr)	*101*		*73 - 131*		*11/12/18 13:05*	*1*
Toluene-d8 (Surr)	*100*		*80 - 120*		*11/12/18 13:05*	*1*

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

Lab Sample ID: LCS 680-547152/4
Matrix: Water
Analysis Batch: 547152

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	50.0	45.8		ug/L		92	80 - 120
1,1-Dichloroethene	50.0	50.1		ug/L		100	76 - 120
trans-1,2-Dichloroethene	50.0	46.4		ug/L		93	80 - 120
Trichloroethene	50.0	47.2		ug/L		94	80 - 120
Vinyl chloride	50.0	50.1		ug/L		100	71 - 128

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*90*		*80 - 120*
Dibromofluoromethane (Surr)	*94*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*95*		*73 - 131*
Toluene-d8 (Surr)	*95*		*80 - 120*

Lab Sample ID: LCSD 680-547152/5
Matrix: Water
Analysis Batch: 547152

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	50.0	48.8		ug/L		98	80 - 120	6	20
1,1-Dichloroethene	50.0	51.9		ug/L		104	76 - 120	4	20
trans-1,2-Dichloroethene	50.0	49.9		ug/L		100	80 - 120	7	20
Trichloroethene	50.0	50.5		ug/L		101	80 - 120	7	20
Vinyl chloride	50.0	53.6		ug/L		107	71 - 128	7	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*95*		*80 - 120*
Dibromofluoromethane (Surr)	*100*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*98*		*73 - 131*
Toluene-d8 (Surr)	*102*		*80 - 120*

Lab Sample ID: MB 680-547166/20
Matrix: Water
Analysis Batch: 547166

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
cis-1,2-Dichloroethene	0.41	U	1.0	0.41	ug/L			11/12/18 18:42	1
1,1-Dichloroethene	0.36	U	1.0	0.36	ug/L			11/12/18 18:42	1
trans-1,2-Dichloroethene	0.37	U	1.0	0.37	ug/L			11/12/18 18:42	1
Trichloroethene	0.48	U	1.0	0.48	ug/L			11/12/18 18:42	1
Vinyl chloride	0.50	U	1.0	0.50	ug/L			11/12/18 18:42	1

Surrogate	*MB %Recovery*	*MB Qualifier*	*Limits*	*Prepared*	*Analyzed*	*Dil Fac*
4-Bromofluorobenzene (Surr)	*99*		*80 - 120*		*11/12/18 18:42*	*1*
Dibromofluoromethane (Surr)	*95*		*80 - 122*		*11/12/18 18:42*	*1*
1,2-Dichloroethane-d4 (Surr)	*95*		*73 - 131*		*11/12/18 18:42*	*1*
Toluene-d8 (Surr)	*95*		*80 - 120*		*11/12/18 18:42*	*1*

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

Lab Sample ID: LCS 680-547166/16
Matrix: Water
Analysis Batch: 547166

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
cis-1,2-Dichloroethene	50.0	49.6		ug/L		99	80 - 120
1,1-Dichloroethene	50.0	49.4		ug/L		99	76 - 120
trans-1,2-Dichloroethene	50.0	51.8		ug/L		104	80 - 120
Trichloroethene	50.0	47.5		ug/L		95	80 - 120
Vinyl chloride	50.0	50.0		ug/L		100	71 - 128

Surrogate	*LCS %Recovery*	*LCS Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*97*		*80 - 120*
Dibromofluoromethane (Surr)	*100*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*99*		*73 - 131*
Toluene-d8 (Surr)	*100*		*80 - 120*

Lab Sample ID: LCSD 680-547166/17
Matrix: Water
Analysis Batch: 547166

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
cis-1,2-Dichloroethene	50.0	47.4		ug/L		95	80 - 120	5	20
1,1-Dichloroethene	50.0	48.6		ug/L		97	76 - 120	2	20
trans-1,2-Dichloroethene	50.0	51.0		ug/L		102	80 - 120	2	20
Trichloroethene	50.0	47.5		ug/L		95	80 - 120	0	20
Vinyl chloride	50.0	50.8		ug/L		102	71 - 128	2	20

Surrogate	*LCSD %Recovery*	*LCSD Qualifier*	*Limits*
4-Bromofluorobenzene (Surr)	*96*		*80 - 120*
Dibromofluoromethane (Surr)	*98*		*80 - 122*
1,2-Dichloroethane-d4 (Surr)	*97*		*73 - 131*
Toluene-d8 (Surr)	*99*		*80 - 120*

Method: 9056A - Anions, Ion Chromatography

Lab Sample ID: MB 680-546901/21
Matrix: Water
Analysis Batch: 546901

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.40	U	1.0	0.40	mg/L			11/09/18 13:15	1

Lab Sample ID: LCS 680-546901/22
Matrix: Water
Analysis Batch: 546901

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	10.0	9.58		mg/L		96	87 - 112

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: LCSD 680-546901/23
Matrix: Water
Analysis Batch: 546901

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate			10.0	9.60		mg/L		96	87 - 112	0	15

Lab Sample ID: 680-160066-14 MS
Matrix: Water
Analysis Batch: 546901

Client Sample ID: PPMP-66-MW22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate	120		10.0	124	E 4	mg/L		74	87 - 112		

Lab Sample ID: 680-160066-14 MSD
Matrix: Water
Analysis Batch: 546901

Client Sample ID: PPMP-66-MW22
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	120		10.0	124	E 4	mg/L		75	87 - 112	0	15

Lab Sample ID: 680-160066-3 DU
Matrix: Water
Analysis Batch: 546901

Client Sample ID: PPMP-66-MW07
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	1400	E		1350	E	mg/L				0.08	15

Lab Sample ID: 680-160066-12 DU
Matrix: Water
Analysis Batch: 546901

Client Sample ID: MATERIAL092
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier		DU Result	DU Qualifier	Unit	D			RPD	RPD Limit
Sulfate	0.40	U		0.40	U	mg/L				NC	15

Lab Sample ID: MB 680-546949/53
Matrix: Water
Analysis Batch: 546949

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.40	U	1.0	0.40	mg/L			11/09/18 20:34	1

Lab Sample ID: LCS 680-546949/54
Matrix: Water
Analysis Batch: 546949

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

Analyte			Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits		
Sulfate			10.0	9.44		mg/L		94	87 - 112		

Lab Sample ID: LCSD 680-546949/55
Matrix: Water
Analysis Batch: 546949

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

Analyte			Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate			10.0	9.41		mg/L		94	87 - 112	0	15

Lab Sample ID: 680-160066-19 MS
Matrix: Water
Analysis Batch: 546949

Client Sample ID: PPMP-66-MW02RR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	29		10.0	39.1		mg/L		101	87 - 112

Lab Sample ID: 680-160066-19 MSD
Matrix: Water
Analysis Batch: 546949

Client Sample ID: PPMP-66-MW02RR
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	29		10.0	39.0		mg/L		100	87 - 112	0	15

Lab Sample ID: 680-160066-22 DU
Matrix: Water
Analysis Batch: 546949

Client Sample ID: DUP300
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	DU Result	DU Qualifier	Unit	D	RPD	RPD Limit
Sulfate	1700	E	1710	E	mg/L		0.4	15

Lab Sample ID: MB 680-547192/2
Matrix: Water
Analysis Batch: 547192

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.40	U	1.0	0.40	mg/L			11/12/18 11:09	1

Lab Sample ID: LCS 680-547192/3
Matrix: Water
Analysis Batch: 547192

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	10.0	10.2		mg/L		102	87 - 112

Lab Sample ID: LCSD 680-547192/4
Matrix: Water
Analysis Batch: 547192

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.0	10.6		mg/L		106	87 - 112	4	15

Lab Sample ID: 680-160066-22 MS
Matrix: Water
Analysis Batch: 547192

Client Sample ID: DUP300
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	1800	F2 F1	1000	2920		mg/L		111	87 - 112

Lab Sample ID: 680-160066-22 MSD
Matrix: Water
Analysis Batch: 547192

Client Sample ID: DUP300
Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	1800	F2 F1	1000	2490	F2 F1	mg/L		68	87 - 112	16	15

Method: 9056A - Anions, Ion Chromatography (Continued)

Lab Sample ID: MB 680-547228/33
Matrix: Water
Analysis Batch: 547228

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

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Sulfate	0.40	U	1.0	0.40	mg/L			11/12/18 17:53	1

Lab Sample ID: LCS 680-547228/34
Matrix: Water
Analysis Batch: 547228

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

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Sulfate	10.0	10.4		mg/L		104	87 - 112

Lab Sample ID: LCSD 680-547228/35
Matrix: Water
Analysis Batch: 547228

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

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Sulfate	10.0	10.5		mg/L		105	87 - 112	1	15

Method: 6020A - Metals (ICP/MS)

Lab Sample ID: MB 680-546288/1-A
Matrix: Water
Analysis Batch: 546572

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 546288

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	25	U	100	25	ug/L		11/05/18 14:30	11/06/18 20:07	1

Lab Sample ID: LCS 680-546288/2-A
Matrix: Water
Analysis Batch: 546572

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 546288

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	5000	5050		ug/L		101	80 - 120

Lab Sample ID: MB 680-546596/1-A
Matrix: Water
Analysis Batch: 546948

Client Sample ID: Method Blank
Prep Type: Total Recoverable
Prep Batch: 546596

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Iron	25	U	100	25	ug/L		11/07/18 11:33	11/08/18 12:30	1

Lab Sample ID: LCS 680-546596/2-A
Matrix: Water
Analysis Batch: 546948

Client Sample ID: Lab Control Sample
Prep Type: Total Recoverable
Prep Batch: 546596

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	2500	2730		ug/L		109	80 - 120

Method: 6020A - Metals (ICP/MS) (Continued)

Lab Sample ID: 680-160066-19 MS
Matrix: Water
Analysis Batch: 546948

Client Sample ID: PPMP-66-MW02RR
Prep Type: Total Recoverable
Prep Batch: 546596

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Iron	44	J	2500	2750		ug/L		108	75 - 125

Lab Sample ID: 680-160066-19 MSD
Matrix: Water
Analysis Batch: 546948

Client Sample ID: PPMP-66-MW02RR
Prep Type: Total Recoverable
Prep Batch: 546596

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Iron	44	J	2500	2670		ug/L		105	75 - 125	3	20

Lab Sample ID: MB 680-546937/1-B
Matrix: Water
Analysis Batch: 547058

Client Sample ID: Method Blank
Prep Type: Dissolved
Prep Batch: 546938

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Dissolved Iron	25	U	100	25	ug/L		11/09/18 09:40	11/09/18 21:54	1

Lab Sample ID: LCS 680-546937/2-B
Matrix: Water
Analysis Batch: 547058

Client Sample ID: Lab Control Sample
Prep Type: Dissolved
Prep Batch: 546938

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Iron	5000	5490		ug/L		110	80 - 120

Lab Sample ID: 680-160066-19 MS
Matrix: Water
Analysis Batch: 547058

Client Sample ID: PPMP-66-MW02RR
Prep Type: Dissolved
Prep Batch: 546938

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits
Dissolved Iron	25	U	5000	4820		ug/L		96	75 - 125

Lab Sample ID: 680-160066-19 MSD
Matrix: Water
Analysis Batch: 547058

Client Sample ID: PPMP-66-MW02RR
Prep Type: Dissolved
Prep Batch: 546938

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Dissolved Iron	25	U	5000	4940		ug/L		99	75 - 125	2	20

GC/MS VOA

Analysis Batch: 546892

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-12	MATERIAL092	Total/NA	Water	8260B	
680-160066-14	PPMP-66-MW22	Total/NA	Water	8260B	
680-160066-20	PPMP-66-MW24R	Total/NA	Water	8260B	
680-160066-22	DUP300	Total/NA	Water	8260B	
MB 680-546892/9	Method Blank	Total/NA	Water	8260B	
LCS 680-546892/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-546892/5	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 547031

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-3	PPMP-66-MW07	Total/NA	Water	8260B	
680-160066-4	PPMP-66-MW13	Total/NA	Water	8260B	
680-160066-6	PPMP-66-MW14	Total/NA	Water	8260B	
680-160066-9	PPMP-66-MW01	Total/NA	Water	8260B	
680-160066-10	DUP301	Total/NA	Water	8260B	
680-160066-17	PPMP-66-MW08	Total/NA	Water	8260B	
680-160066-18	PPMP-66-MW23R	Total/NA	Water	8260B	
MB 680-547031/10	Method Blank	Total/NA	Water	8260B	
LCS 680-547031/5	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-547031/6	Lab Control Sample Dup	Total/NA	Water	8260B	
680-160066-19 MS	PPMP-66-MW02RR	Total/NA	Water	8260B	
680-160066-19 MSD	PPMP-66-MW02RR	Total/NA	Water	8260B	

Analysis Batch: 547152

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-1	PPMP-66-MW04	Total/NA	Water	8260B	
680-160066-2	PPMP-66-MW11	Total/NA	Water	8260B	
680-160066-8	PPMP-66-MW18R	Total/NA	Water	8260B	
680-160066-13	TB489	Total/NA	Water	8260B	
680-160066-15	PPMP-66-MW16	Total/NA	Water	8260B	
680-160066-19	PPMP-66-MW02RR	Total/NA	Water	8260B	
680-160066-23	TB490	Total/NA	Water	8260B	
MB 680-547152/10	Method Blank	Total/NA	Water	8260B	
LCS 680-547152/4	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-547152/5	Lab Control Sample Dup	Total/NA	Water	8260B	

Analysis Batch: 547166

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-7	PPMP-66-MW17	Total/NA	Water	8260B	
680-160066-11	EB121	Total/NA	Water	8260B	
680-160066-21	PPMP-66-MW06R	Total/NA	Water	8260B	
MB 680-547166/20	Method Blank	Total/NA	Water	8260B	
LCS 680-547166/16	Lab Control Sample	Total/NA	Water	8260B	
LCSD 680-547166/17	Lab Control Sample Dup	Total/NA	Water	8260B	

HPLC/IC

Analysis Batch: 546901

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-2	PPMP-66-MW11	Total/NA	Water	9056A	

HPLC/IC (Continued)

Analysis Batch: 546901 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-8	PPMP-66-MW18R	Total/NA	Water	9056A	
680-160066-10	DUP301	Total/NA	Water	9056A	
680-160066-11	EB121	Total/NA	Water	9056A	
680-160066-12	MATERIAL092	Total/NA	Water	9056A	
680-160066-14	PPMP-66-MW22	Total/NA	Water	9056A	
MB 680-546901/21	Method Blank	Total/NA	Water	9056A	
LCS 680-546901/22	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-546901/23	Lab Control Sample Dup	Total/NA	Water	9056A	
680-160066-14 MS	PPMP-66-MW22	Total/NA	Water	9056A	
680-160066-14 MSD	PPMP-66-MW22	Total/NA	Water	9056A	
680-160066-3 DU	PPMP-66-MW07	Total/NA	Water	9056A	
680-160066-12 DU	MATERIAL092	Total/NA	Water	9056A	

Analysis Batch: 546949

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-16	PPMP-66-MW21	Total/NA	Water	9056A	
680-160066-18	PPMP-66-MW23R	Total/NA	Water	9056A	
680-160066-19	PPMP-66-MW02RR	Total/NA	Water	9056A	
680-160066-20	PPMP-66-MW24R	Total/NA	Water	9056A	
680-160066-21	PPMP-66-MW06R	Total/NA	Water	9056A	
MB 680-546949/53	Method Blank	Total/NA	Water	9056A	
LCS 680-546949/54	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-546949/55	Lab Control Sample Dup	Total/NA	Water	9056A	
680-160066-19 MS	PPMP-66-MW02RR	Total/NA	Water	9056A	
680-160066-19 MSD	PPMP-66-MW02RR	Total/NA	Water	9056A	
680-160066-22 DU	DUP300	Total/NA	Water	9056A	

Analysis Batch: 547192

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-1	PPMP-66-MW04	Total/NA	Water	9056A	
680-160066-3	PPMP-66-MW07	Total/NA	Water	9056A	
680-160066-4	PPMP-66-MW13	Total/NA	Water	9056A	
680-160066-5	PPMP-66-MW03	Total/NA	Water	9056A	
680-160066-6	PPMP-66-MW14	Total/NA	Water	9056A	
680-160066-7	PPMP-66-MW17	Total/NA	Water	9056A	
680-160066-15	PPMP-66-MW16	Total/NA	Water	9056A	
680-160066-17	PPMP-66-MW08	Total/NA	Water	9056A	
680-160066-22	DUP300	Total/NA	Water	9056A	
MB 680-547192/2	Method Blank	Total/NA	Water	9056A	
LCS 680-547192/3	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-547192/4	Lab Control Sample Dup	Total/NA	Water	9056A	
680-160066-22 MS	DUP300	Total/NA	Water	9056A	
680-160066-22 MSD	DUP300	Total/NA	Water	9056A	

Analysis Batch: 547228

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-9	PPMP-66-MW01	Total/NA	Water	9056A	
MB 680-547228/33	Method Blank	Total/NA	Water	9056A	
LCS 680-547228/34	Lab Control Sample	Total/NA	Water	9056A	
LCSD 680-547228/35	Lab Control Sample Dup	Total/NA	Water	9056A	

Metals

Prep Batch: 546288

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-5	PPMP-66-MW03	Total Recoverable	Water	3005A	
680-160066-6	PPMP-66-MW14	Total Recoverable	Water	3005A	
680-160066-7	PPMP-66-MW17	Total Recoverable	Water	3005A	
680-160066-8	PPMP-66-MW18R	Total Recoverable	Water	3005A	
680-160066-9	PPMP-66-MW01	Total Recoverable	Water	3005A	
680-160066-11	EB121	Total Recoverable	Water	3005A	
680-160066-15	PPMP-66-MW16	Total Recoverable	Water	3005A	
680-160066-18	PPMP-66-MW23R	Total Recoverable	Water	3005A	
680-160066-20	PPMP-66-MW24R	Total Recoverable	Water	3005A	
680-160066-21	PPMP-66-MW06R	Total Recoverable	Water	3005A	
680-160066-22	DUP300	Total Recoverable	Water	3005A	
MB 680-546288/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-546288/2-A	Lab Control Sample	Total Recoverable	Water	3005A	

Analysis Batch: 546572

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-5	PPMP-66-MW03	Total Recoverable	Water	6020A	546288
680-160066-6	PPMP-66-MW14	Total Recoverable	Water	6020A	546288
680-160066-7	PPMP-66-MW17	Total Recoverable	Water	6020A	546288
680-160066-8	PPMP-66-MW18R	Total Recoverable	Water	6020A	546288
680-160066-9	PPMP-66-MW01	Total Recoverable	Water	6020A	546288
680-160066-11	EB121	Total Recoverable	Water	6020A	546288
680-160066-15	PPMP-66-MW16	Total Recoverable	Water	6020A	546288
680-160066-18	PPMP-66-MW23R	Total Recoverable	Water	6020A	546288
680-160066-20	PPMP-66-MW24R	Total Recoverable	Water	6020A	546288
680-160066-21	PPMP-66-MW06R	Total Recoverable	Water	6020A	546288
680-160066-22	DUP300	Total Recoverable	Water	6020A	546288
MB 680-546288/1-A	Method Blank	Total Recoverable	Water	6020A	546288
LCS 680-546288/2-A	Lab Control Sample	Total Recoverable	Water	6020A	546288

Prep Batch: 546596

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-3	PPMP-66-MW07	Total Recoverable	Water	3005A	
680-160066-10	DUP301	Total Recoverable	Water	3005A	
680-160066-12	MATERIAL092	Total Recoverable	Water	3005A	
680-160066-16	PPMP-66-MW21	Total Recoverable	Water	3005A	
680-160066-19	PPMP-66-MW02RR	Total Recoverable	Water	3005A	
MB 680-546596/1-A	Method Blank	Total Recoverable	Water	3005A	
LCS 680-546596/2-A	Lab Control Sample	Total Recoverable	Water	3005A	
680-160066-19 MS	PPMP-66-MW02RR	Total Recoverable	Water	3005A	
680-160066-19 MSD	PPMP-66-MW02RR	Total Recoverable	Water	3005A	

Filtration Batch: 546937

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-3	PPMP-66-MW07	Dissolved	Water	FILTRATION	
680-160066-5	PPMP-66-MW03	Dissolved	Water	FILTRATION	
680-160066-6	PPMP-66-MW14	Dissolved	Water	FILTRATION	
680-160066-7	PPMP-66-MW17	Dissolved	Water	FILTRATION	
680-160066-8	PPMP-66-MW18R	Dissolved	Water	FILTRATION	
680-160066-9	PPMP-66-MW01	Dissolved	Water	FILTRATION	
680-160066-10	DUP301	Dissolved	Water	FILTRATION	

Metals (Continued)

Filtration Batch: 546937 (Continued)

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-11	EB121	Dissolved	Water	FILTRATION	
680-160066-12	MATERIAL092	Dissolved	Water	FILTRATION	
680-160066-15	PPMP-66-MW16	Dissolved	Water	FILTRATION	
680-160066-16	PPMP-66-MW21	Dissolved	Water	FILTRATION	
680-160066-18	PPMP-66-MW23R	Dissolved	Water	FILTRATION	
680-160066-19	PPMP-66-MW02RR	Dissolved	Water	FILTRATION	
680-160066-20	PPMP-66-MW24R	Dissolved	Water	FILTRATION	
680-160066-21	PPMP-66-MW06R	Dissolved	Water	FILTRATION	
680-160066-22	DUP300	Dissolved	Water	FILTRATION	
MB 680-546937/1-B	Method Blank	Dissolved	Water	FILTRATION	
LCS 680-546937/2-B	Lab Control Sample	Dissolved	Water	FILTRATION	
680-160066-19 MS	PPMP-66-MW02RR	Dissolved	Water	FILTRATION	
680-160066-19 MSD	PPMP-66-MW02RR	Dissolved	Water	FILTRATION	

Prep Batch: 546938

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-3	PPMP-66-MW07	Dissolved	Water	3005A	546937
680-160066-5	PPMP-66-MW03	Dissolved	Water	3005A	546937
680-160066-6	PPMP-66-MW14	Dissolved	Water	3005A	546937
680-160066-7	PPMP-66-MW17	Dissolved	Water	3005A	546937
680-160066-8	PPMP-66-MW18R	Dissolved	Water	3005A	546937
680-160066-9	PPMP-66-MW01	Dissolved	Water	3005A	546937
680-160066-10	DUP301	Dissolved	Water	3005A	546937
680-160066-11	EB121	Dissolved	Water	3005A	546937
680-160066-12	MATERIAL092	Dissolved	Water	3005A	546937
680-160066-15	PPMP-66-MW16	Dissolved	Water	3005A	546937
680-160066-16	PPMP-66-MW21	Dissolved	Water	3005A	546937
680-160066-18	PPMP-66-MW23R	Dissolved	Water	3005A	546937
680-160066-19	PPMP-66-MW02RR	Dissolved	Water	3005A	546937
680-160066-20	PPMP-66-MW24R	Dissolved	Water	3005A	546937
680-160066-21	PPMP-66-MW06R	Dissolved	Water	3005A	546937
680-160066-22	DUP300	Dissolved	Water	3005A	546937
MB 680-546937/1-B	Method Blank	Dissolved	Water	3005A	546937
LCS 680-546937/2-B	Lab Control Sample	Dissolved	Water	3005A	546937
680-160066-19 MS	PPMP-66-MW02RR	Dissolved	Water	3005A	546937
680-160066-19 MSD	PPMP-66-MW02RR	Dissolved	Water	3005A	546937

Analysis Batch: 546948

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-3	PPMP-66-MW07	Total Recoverable	Water	6020A	546596
680-160066-10	DUP301	Total Recoverable	Water	6020A	546596
680-160066-12	MATERIAL092	Total Recoverable	Water	6020A	546596
680-160066-16	PPMP-66-MW21	Total Recoverable	Water	6020A	546596
680-160066-19	PPMP-66-MW02RR	Total Recoverable	Water	6020A	546596
MB 680-546596/1-A	Method Blank	Total Recoverable	Water	6020A	546596
LCS 680-546596/2-A	Lab Control Sample	Total Recoverable	Water	6020A	546596
680-160066-19 MS	PPMP-66-MW02RR	Total Recoverable	Water	6020A	546596
680-160066-19 MSD	PPMP-66-MW02RR	Total Recoverable	Water	6020A	546596

Metals (Continued)

Analysis Batch: 547058

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
680-160066-3	PPMP-66-MW07	Dissolved	Water	6020A	546938
680-160066-5	PPMP-66-MW03	Dissolved	Water	6020A	546938
680-160066-6	PPMP-66-MW14	Dissolved	Water	6020A	546938
680-160066-7	PPMP-66-MW17	Dissolved	Water	6020A	546938
680-160066-8	PPMP-66-MW18R	Dissolved	Water	6020A	546938
680-160066-9	PPMP-66-MW01	Dissolved	Water	6020A	546938
680-160066-10	DUP301	Dissolved	Water	6020A	546938
680-160066-11	EB121	Dissolved	Water	6020A	546938
680-160066-12	MATERIAL092	Dissolved	Water	6020A	546938
680-160066-15	PPMP-66-MW16	Dissolved	Water	6020A	546938
680-160066-16	PPMP-66-MW21	Dissolved	Water	6020A	546938
680-160066-18	PPMP-66-MW23R	Dissolved	Water	6020A	546938
680-160066-19	PPMP-66-MW02RR	Dissolved	Water	6020A	546938
680-160066-20	PPMP-66-MW24R	Dissolved	Water	6020A	546938
680-160066-21	PPMP-66-MW06R	Dissolved	Water	6020A	546938
680-160066-22	DUP300	Dissolved	Water	6020A	546938
MB 680-546937/1-B	Method Blank	Dissolved	Water	6020A	546938
LCS 680-546937/2-B	Lab Control Sample	Dissolved	Water	6020A	546938
680-160066-19 MS	PPMP-66-MW02RR	Dissolved	Water	6020A	546938
680-160066-19 MSD	PPMP-66-MW02RR	Dissolved	Water	6020A	546938

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: PPMP-66-MW04
Date Collected: 10/29/18 12:01
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 15:24	Y1S	TAL SAV
	Instrument ID: CMSB									
Total/NA	Analysis	9056A		100	5 mL	5 mL	547192	11/12/18 12:05	UI	TAL SAV
	Instrument ID: CICK									

Client Sample ID: PPMP-66-MW11
Date Collected: 10/29/18 13:31
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 15:01	Y1S	TAL SAV
	Instrument ID: CMSB									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546901	11/09/18 16:29	SMP	TAL SAV
	Instrument ID: CICH									

Client Sample ID: PPMP-66-MW07
Date Collected: 10/29/18 11:51
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 01:22	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		100	5 mL	5 mL	547192	11/12/18 12:17	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:20	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546596	11/07/18 11:33	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546948	11/08/18 12:57	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW13
Date Collected: 10/29/18 14:01
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 01:47	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		25	5 mL	5 mL	547192	11/12/18 12:30	UI	TAL SAV
	Instrument ID: CICK									

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: PPMP-66-MW03

Date Collected: 10/29/18 15:06
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-5

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		100	5 mL	5 mL	547192	11/12/18 12:43	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:28	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 21:12	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW14

Date Collected: 10/29/18 15:56
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-6

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 02:11	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		10	5 mL	5 mL	547192	11/12/18 12:56	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:43	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 21:20	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW17

Date Collected: 10/30/18 09:50
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-7

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547166	11/12/18 19:29	JLK	TAL SAV
	Instrument ID: CMSO2									
Total/NA	Analysis	9056A		10	5 mL	5 mL	547192	11/12/18 13:09	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 23:02	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 21:01	BWR	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: PPMP-66-MW18R

Lab Sample ID: 680-160066-8
Date Collected: 10/30/18 11:01
Matrix: Water
Date Received: 11/01/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 15:47	Y1S	TAL SAV
	Instrument ID: CMSB									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546901	11/09/18 18:25	SMP	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:39	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 21:16	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW01

Lab Sample ID: 680-160066-9
Date Collected: 10/30/18 10:36
Matrix: Water
Date Received: 11/01/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 02:36	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		100	5 mL	5 mL	547228	11/12/18 18:32	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:47	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 21:08	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: DUP301

Lab Sample ID: 680-160066-10
Date Collected: 10/31/18 00:00
Matrix: Water
Date Received: 11/01/18 09:50

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 03:00	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546901	11/09/18 18:51	SMP	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 23:29	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546596	11/07/18 11:33	AJR	TAL SAV

Client Sample ID: DUP301

Date Collected: 10/31/18 00:00
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-10

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6020A		1			546948	11/08/18 13:19	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: EB121

Date Collected: 10/31/18 13:30
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-11

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547166	11/12/18 19:52	JLK	TAL SAV
	Instrument ID: CMSO2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546901	11/09/18 19:04	SMP	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:51	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 20:41	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: MATERIAL092

Date Collected: 10/31/18 13:00
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-12

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	546892	11/09/18 17:35	JLK	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546901	11/09/18 19:17	SMP	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 23:25	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546596	11/07/18 11:33	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546948	11/08/18 13:16	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: TB489

Date Collected: 10/31/18 14:00
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 13:28	Y1S	TAL SAV

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: TB489

Date Collected: 10/31/18 14:00
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-13

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 13:28	Y1S	TAL SAV
	Instrument ID: CMSB									

Client Sample ID: PPMP-66-MW22

Date Collected: 10/30/18 12:36
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-14

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	546892	11/09/18 16:46	JLK	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546901	11/09/18 19:42	SMP	TAL SAV
	Instrument ID: CICH									

Client Sample ID: PPMP-66-MW16

Date Collected: 10/30/18 14:36
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-15

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 17:43	Y1S	TAL SAV
	Instrument ID: CMSB									
Total/NA	Analysis	9056A		10	5 mL	5 mL	547192	11/12/18 13:35	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:24	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 21:04	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW21

Date Collected: 10/31/18 09:51
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	9056A		1	5 mL	5 mL	546949	11/09/18 21:26	UI	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 23:14	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546596	11/07/18 11:33	AJR	TAL SAV

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: PPMP-66-MW21

Date Collected: 10/31/18 09:51
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-16

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Analysis	6020A		1			546948	11/08/18 13:00	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW08

Date Collected: 10/30/18 12:31
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-17

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 04:14	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		25	5 mL	5 mL	547192	11/12/18 13:48	UI	TAL SAV
	Instrument ID: CICK									

Client Sample ID: PPMP-66-MW23R

Date Collected: 10/30/18 14:01
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-18

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547031	11/10/18 03:49	Y1S	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546949	11/09/18 21:52	UI	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:59	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 20:34	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW02RR

Date Collected: 10/31/18 11:51
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-19

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 17:20	Y1S	TAL SAV
	Instrument ID: CMSB									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546949	11/09/18 22:05	UI	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:01	BWR	TAL SAV
	Instrument ID: ICPMSD									

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: PPMP-66-MW02RR
Date Collected: 10/31/18 11:51
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-19
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total Recoverable	Prep	3005A			50 mL	250 mL	546596	11/07/18 11:33	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546948	11/08/18 12:37	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW24R
Date Collected: 10/31/18 10:01
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-20
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	546892	11/09/18 18:00	JLK	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546949	11/09/18 22:44	UI	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 23:06	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 20:57	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: PPMP-66-MW06R
Date Collected: 10/31/18 11:46
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-21
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547166	11/12/18 19:05	JLK	TAL SAV
	Instrument ID: CMSO2									
Total/NA	Analysis	9056A		1	5 mL	5 mL	546949	11/09/18 22:57	UI	TAL SAV
	Instrument ID: CICH									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 23:10	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 20:53	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: DUP300
Date Collected: 10/31/18 00:00
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-22
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	546892	11/09/18 17:10	JLK	TAL SAV

Lab Chronicle

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Client Sample ID: DUP300

Date Collected: 10/31/18 00:00
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-22

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	546892	11/09/18 17:10	JLK	TAL SAV
	Instrument ID: CMSP2									
Total/NA	Analysis	9056A		100	5 mL	5 mL	547192	11/12/18 14:01	UI	TAL SAV
	Instrument ID: CICK									
Dissolved	Filtration	FILTRATION			1.0 mL	1.0 mL	546937	11/09/18 09:38	AJR	TAL SAV
Dissolved	Prep	3005A			50 mL	250 mL	546938	11/09/18 09:40	AJR	TAL SAV
Dissolved	Analysis	6020A		1			547058	11/09/18 22:55	BWR	TAL SAV
	Instrument ID: ICPMSD									
Total Recoverable	Prep	3005A			50 mL	250 mL	546288	11/05/18 14:30	AJR	TAL SAV
Total Recoverable	Analysis	6020A		1			546572	11/06/18 20:38	BWR	TAL SAV
	Instrument ID: ICPMSD									

Client Sample ID: TB490

Date Collected: 10/31/18 14:09
Date Received: 11/01/18 09:50

Lab Sample ID: 680-160066-23

Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dil Factor	Initial Amount	Final Amount	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	5 mL	5 mL	547152	11/12/18 13:51	Y1S	TAL SAV
	Instrument ID: CMSB									

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

Accreditation/Certification Summary

Client: Matrix Environmental Services, LLC
TestAmerica Job ID: 680-160066-1
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

Laboratory: TestAmerica Savannah

The accreditations/certifications listed below are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
Florida	NELAP	4	E87052	06-30-19

Method Summary

Client: Matrix Environmental Services, LLC
Project/Site: Parcel 66(7),Fmr Small Weapons Shop

TestAmerica Job ID: 680-160066-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL SAV
9056A	Anions, Ion Chromatography	SW846	TAL SAV
6020A	Metals (ICP/MS)	SW846	TAL SAV
3005A	Preparation, Total Recoverable or Dissolved Metals	SW846	TAL SAV
5030B	Purge and Trap	SW846	TAL SAV
FILTRATION	Sample Filtration	None	TAL SAV

Protocol References:

None = None

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL SAV = TestAmerica Savannah, 5102 LaRoche Avenue, Savannah, GA 31404, TEL (912)354-7858

MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

Laboratory TestAmerica
Lab Contact Jon Lawhon
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Parcel 66(7), Fmr Small Weapons Repair Shop
Task # 18.094.19-22.2

COC Number
Cooler ID 1 of 2
Page 1 of 2

Samplers Signature

SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260B - VOC* 3- 40 mL vials, HCl	SW6020A Iron (total) 1-250 mL poly, HNO3	SW6020A Iron (dissolved) 1-250 mL poly, none	SW9056A Sulfate 1 - 125mL poly, none	SW8260B - VOC* TB 2- 40 mL vials, HCl
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW04	NS	MW	WQ	G	10/29/18	1201	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW11	NS	MW	WQ	G	10/29/18	1331	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW07	NS	MW	WQ	G	10/29/18	1151	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW13	NS	MW	WQ	G	10/29/18	1401	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW03	NS	MW	WQ	G	10/29/18	1506		1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW14	NS	MW	WQ	G	10/29/18	1556	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW17	NS	MW	WQ	G	10/30/18	950	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW18R	NS	MW	WQ	G	10/30/18	1101	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW01	NS	MW	WQ	G	10/30/18	1036	1	1	1	1	
McClellan Field QC	DUP301	FD	WQ	W	G	10/31/18	N/A	1	1	1	1	
McClellan Field QC	EB121	EB	WQ	W	G	10/31/18	1330	1	1	1	1	
McClellan Field QC	MATERIAL092	Material Blank	WQ	W	G	10/31/18	1300	1	1	1	1	
McClellan Field QC	TB489	TB	WQ	W	G	10/31/18	1400					1

NOTES:

***VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC**

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality

Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water

White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt

680-160066 Chain of Custody

Relinquished by (Signature): Date/Time: 10/31/18 1600 Received by (Signature): Fedex

Relinquished by (Signature): Date/Time: 11/1/18 750 Received by (Signature): 3.4/4.0 1.0/1.6

11/13/2018

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MATRIX ENVIRONMENTAL SERVICES CHAIN OF CUSTODY RECORD

COC Number 5471
Cooler ID 2 of 2
Page ~~1 of 2~~ 10/31/18

Laboratory TestAmerica
Lab Contact Jon Lawhon
MES Contact Betty Van Pelt
MES Phone 801-699-1246
Project Parcel 66(7), Fmr Small Weapons Repair Shop
Task # 18.094.19-22.2

Samplers Signature

SWMU	Station ID	QC Code	Station Code	Matrix	Sample Method	Date Collected	Sample Time	Analysis: SW8260B - VOC* 3 - 40 mL vials, HCl	SW6020A Iron (total) 1-250 mL poly, HNO3	SW6020A Iron (dissolved) 1-250 mL poly, none	SW9056A Sulfate 1 - 125mL poly, none	SW8260B - VOC* TB 2 - 40 mL vials, HCl
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW22	NS	MW	WQ	G	10/30/18	1236	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW16	NS	MW	WQ	G	10/30/18	1436	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW21	NS	MW	WQ	G	10/31/18	0951		1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW08	NS	MW	WQ	G	10/30/18	1231	1			1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW23R	NS	MW	WQ	G	10/30/18	1401	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	NS	MW	WQ	G	10/31/18	11:51	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW02RR	MS/MSD	MW	WQ	G	10/31/18	11:51	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW24R	NS	MW	WQ	G	10/31/18	1001	1	1	1	1	
Parcel 66(7), Fmr Small Weapons Repair Shop	PPMP-66-MW06R	NS	MW	WQ	G	10/31/18	1146	1	1	1	1	
McClellan Field QC	DUP300	FD	WQ	W	G	N/A	N/A	1	1	1		
McClellan Field QC	TB490	TB	WQ	W	G	10/31/18	1409					1

NOTES:

***VOC Analytes List: 1,1-DCE, cis-1,2-DCE, trans-1,2-DCE, TCE, VC**

QC Code: NS = Investigative Sample, FD = Field Duplicate, MS/MSD = Matrix Spike/Matrix Spike Duplicate, EB = Equipment Blank, TB = Trip Blank, WQ = Water Quality, WS = Source Water

Station Type = MW = Monitoring Well, BH = Bore Hole, SD = Sediment, SW = Surface Water, SS = Surface Soil, SU = Sump, WS = Waste Solid/Soil, WW = Waste Water

White Copy = Lab COC, Yellow COC = Field Copy, Pink COC = Data Mgmt

Relinquished by (Signature): Date/Time: 10/31/18 1600 Received by (Signature): Fedex

Relinquished by (Signature): Date/Time: 11/1/18 950 Received by (Signature): 3.4/4.0 1.0/1.6

11/13/2018

Login Sample Receipt Checklist

Client: Matrix Environmental Services, LLC

Job Number: 680-160066-1

Login Number: 160066
List Number: 1
Creator: Weston, Pamela

List Source: TestAmerica Savannah

Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	True	
Sample custody seals, if present, are intact.	True	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	N/A	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	True	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	