



DEPARTMENT OF THE ARMY  
CAMP STANLEY STORAGE ACTIVITY, MCAAP  
25800 RALPH FAIR ROAD, BOERNE, TX 78015-4800

January 3, 2018

U-017-18

Subject: Period 51 Progress Report, Camp Stanley Storage Activity, Boerne, Texas  
EPA Identification Number: TXD2210020739, US EPA Docket Number: RCRA-VI  
002(h)99-H FY99

Mr. Greg J. Lyssy  
U.S. EPA, Region 6  
1445 Ross Avenue (6SF-LT)  
Dallas, TX 75202-2733

Dear Mr. Lyssy:

In accordance with the RCRA §3008(h), Administrative Order on Consent, signed 5 May 1999, Camp Stanley Storage Activity (CSSA) is submitting its 51<sup>st</sup> Progress Report, for the period from 1 July 2017 through 31 December 2017. As requested, this report is being submitted in electronic format only.

I certify that the information contained in and accompanying this submission is true, accurate, and complete to the best of my knowledge and information. As to those portions of this submission for which I cannot personally verify the truth and accuracy, I certify as the Facility Official having supervisory responsibility for the person(s) who, acting upon my direct instructions, made the verification, that this information is true, accurate, and complete.

If you have any questions or comments, please call me at (210) 295-7416 or Julie Burdey of Parsons at (512) 719-6062.

Sincerely,

  
Jason D. Shirley  
Installation Manager

Enclosure

cc: Mr. Paul Gregorio, TCEQ (electronic copy)  
Mr. Jorge Salazar, TCEQ (ltr only)  
Ms. Julie Burdey, Parsons (ltr only)

# **PROGRESS REPORT**

**July 1, 2017 – December 31, 2017**

**(51<sup>st</sup> REPORT)**



Camp Stanley Storage Activity

Boerne, Texas

USEPA ID No. TX2210020739

**January 2018**

## TABLE OF CONTENTS

<b>ACRONYMS AND ABBREVIATIONS.....</b>	<b>ii</b>
<b>INTRODUCTION.....</b>	<b>1</b>
Summary of Activities this Period.....	1
Report Organization.....	1
<b>RCRA FACILITY INVESTIGATION.....</b>	<b>3</b>
<b>CORRECTIVE MEASURES STUDY.....</b>	<b>3</b>
<b>CORRECTIVE MEASURES IMPLEMENTATION.....</b>	<b>4</b>
SWMU B-3 Bioreactor .....	4
AOC-65 In-Situ Chemical Oxidation .....	5
Groundwater Monitoring .....	6
June 2017 Sampling.....	6
September 2017 Sampling .....	7
December 2017 Sampling.....	7
Off-Post GAC Systems .....	7
Data Validation and Verification .....	8
Meetings.....	8
Environmental Encyclopedia Updates .....	8
Summary of Contacts.....	8
<b>PROJECTED WORK FOR THE NEXT PERIOD.....</b>	<b>9</b>
Groundwater Monitoring .....	9
SWMU B-3 Bioreactor .....	9
AOC-65 ISCO.....	9
Meetings.....	9

## LIST OF TABLES

Table 1	§3008(h) Administrative Order on Consent Project Phases .....	2
Table 2	Environmental Project Task Completion to Date (Values updated through November 30, 2017) .....	10
Table 3	Project Team Contact Information.....	12

## ATTACHMENTS

<b>Attachment 1</b>	On-Post and Off-Post Sampled Wells Figure
<b>Attachment 2</b>	Summary of Status of Each SWMU/AOC/RMU Site
<b>Attachment 3</b>	Overall Order Percent Complete
<b>Attachment 4</b>	Groundwater Results Summary

## ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
AL	action level
APPL	Agriculture & Priority Pollutants Laboratories, Inc.
BTOC	Below top of casing
<i>cis</i> -1,2-DCE	<i>cis</i> -1,2-dichloroethene
CQAP	Construction Quality Assurance Plan
CSSA	Camp Stanley Storage Activity
DD	Decision Document
DO	dissolved oxygen
DQO	data quality objective
EVO	emulsified vegetable oil
GAC	granular activated carbon
I/SM	interim/stabilization measures
ISCO	in-situ chemical oxidation
LTMO	long-term monitoring optimization
MCL	maximum contaminant level
MSL	mean sea level
O&M	operations and maintenance
ORP	oxidation reduction potential
PCE	tetrachloroethene
QAPP	Quality Assurance Program Plan
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RL	reporting limit
RMU	Range Management Unit
SAWS	San Antoni Water System
SS	secondary standard
SWMU	Solid Waste Management Unit
TCE	trichloroethene
TCEQ	Texas Commission on Environmental Quality
UIC	underground injection control
USEPA	United States Environmental Protection Agency
VC	vinyl chloride
VOC	volatile organic compound

## PROGRESS REPORT JULY 1, 2017 – DECEMBER 31, 2017 (51<sup>ST</sup> PERIOD)

### INTRODUCTION

This 51<sup>st</sup> Progress Report for Camp Stanley Storage Activity (CSSA), Boerne, Texas, U.S. Environmental Protection Agency (USEPA) Identification Number TX2210020739, is submitted in accordance with the Administrative Order on Consent (Order) issued to CSSA on May 5, 1999, pursuant to §3008(h) of the Safe Drinking Water Act, as amended by the Resource Conservation and Recovery Act (RCRA), and further amended by the Hazardous and Solid Waste Act of 1984, 42 United States Code §6928(h). This report addresses the project progress from July 1 through December 31, 2017. In June 2006, CSSA switched from quarterly to semi-annual progress reporting, as approved by USEPA. In September 2017, the reporting frequency was changed from semi-annual to annual with USEPA approval. This 51<sup>st</sup> report will be the final semi-annual progress report, with subsequent reports submitted on an annual basis at the end of each year until the Order is closed.

### Summary of Activities this Period

Between July 1 and December 31, 2017, significant activities related to the Order included:

- Received USEPA and Texas Commission on Environmental Quality (TCEQ) approval of the Construction Quality Assurance Plan;
- Continued Solid Waste Management Unit (SWMU) B-3 bioreactor corrective measures;
- Continued AOC-65 *in-situ* chemical oxidation (ISCO) corrective measures;
- Continued groundwater monitoring program under the regulator-approved data quality objectives (DQO);
- Continued maintenance of off-post granular activated carbon (GAC) systems; and
- Continued administrative record maintenance.

### Report Organization

This report details work completed on tasks associated with the Order. The Order outlined work to be conducted under four phases: Interim Measures, RCRA Facility Investigation, Corrective Measures Study, and Corrective Measures Implementation. With completion of the Decision Document (DD) in July 2015, work at CSSA is focused on corrective measures implementation.

Phase names and task names listed in **Table 1** are taken directly from the Order. Information for tasks active from July 1 through December 31, 2017 is provided in this report. No current information is provided for tasks that are not active; however, a summary of all tasks, subtasks, and their status has been presented in previous reports. Details of the evaluation of the percent complete by awarded projects are included in **Table 2**. An updated project team contact information chart with telephone numbers and addresses is included in **Table 3**. **Attachment 1** shows the locations of groundwater wells referenced in this report. A summary of the status of all identified SWMUs, Areas of Concern (AOCs), and Range Management Units (RMUs) at

**Table 1 §3008(h) Administrative Order on Consent Project Phases**

3008(h) Order Phase and Subtasks	Phase Purpose	Phase's % of Overall Order	Subtask's % of Phase	Physical % Complete of Subtask	Subtask portion of Phase % Complete	Physical % Complete of Phase	Active During P51
<b>Interim Measures</b>		30%				100%	
Interim Measures Work Plan	Mitigate a current or potential threat to human health and/or the environment.		7%	100%	7%		No
Interim Measures Implementation			70%	100%	70%		No
Reports			23%	100%	23%		No
<b>RCRA Facility Investigation</b>		30%				100%	
Preliminary Report	Characterize the environmental setting of CSSA; define the sources of contamination;		5%	100%	5%		No
RFI Work Plan	define the degree and extent of contamination;		5%	100%	5%		No
Facility Investigation	and extent of contamination;		40%	100%	40%		No
Risk Assessment	identify actual or potential receptors;		10%	100%	10%		No
Investigation Analysis	and assess whether any additional interim/stabilization measures may be warranted.		10%	100%	10%		No
Groundwater Investigation			15%	99%	15%		No
Treatability Studies			10%	95%	10%		No
Progress Reports			5%	99%	5%		No
<b>Corrective Measures Study</b>		10%				100%	
Identify and Develop Alternatives	Identification, screening, and development of alternatives for removal, containment, treatment, and/or		15%	100%	15%		No
Evaluate Alternatives			60%	100%	60%		No
Reports			25%	100%	25%		No
<b>Corrective Measures Implementation</b>		30%				90%	
Implementation Program Plan	Design, construct, operate, maintain, and monitor the performance of corrective measure(s) selected to protect human health and the environment.		5%	100%	5%		No
Corrective Measure Design			15%	100%	15%		No
Corrective Measure Construction			60%	100%	60%		No
Corrective Measures Report			10%	66%	9%		No
Progress Reports			10%	16%	10%		Yes
% of All Phases Complete						97%	

CSSA is provided in **Attachment 2**. **Attachment 3** is a summary of the physical percent complete of each order related task being conducted at CSSA. **Attachment 4** is a summary of groundwater results for sampling events conducted this period.

## RCRA FACILITY INVESTIGATION

The RCRA Facility Investigation (RFI) was conducted to characterize the environmental setting of CSSA, define the sources of contamination, define the degree and extent of contamination, identify actual or potential receptors, and assess whether any additional interim/stabilization measures (I/SM) may be warranted.

A total of 85 SWMUs, AOCs, and RMUs have been identified at CSSA, and investigations have been conducted at most of those sites. A summary of the status of each site, including whether the site is recommended for closure or if closure is approved, is provided in Attachment 2. To date, closure of 77 CSSA sites has been approved by TCEQ, and four sites (SWMUs B-2, B-8, B-20/21, and B-24) were combined into RMU-1, CSSA's active firing range.

A new AOC, AOC-76, was discovered in August 2017 by CSSA public works employees who observed small arms projectiles on the surface near CSSA's residential area. The lead-projectile-impacted sand was not present along the existing or former communication line, neither as a marker sand nor as a bedding sand. Further investigations were initiated in September 2017 to delineate the presence and extent of lead-contaminated subsurface soils at AOC-76. Delineation samples were collected for laboratory analysis on October 10, 2017, November 16, 2017, and November 28, 2017. Interim removal actions (IRM) were initiated on December 11, 2017 with confirmation samples collected on December 12, 2017. Lead impacted soils, approximately 40 cubic yards, were treated with Enviroblend® 90/10 stabilizing reagent to render non-hazardous and soil transferred to Range Management Unit 1 for use as berm maintenance soil. All IRM efforts were completed in December 2017. A final Release Investigation Report to the TCEQ, documenting closure activities of AOC-76, is anticipated to be completed in January 2018.

The four open sites include SWMU B-3, AOC-65, AOC-76, and RMU-1, as summarized below.

### Remaining Sites at CSSA

Site Name	Status
○ SWMU B-3 ○ AOC-65	Ongoing remediation for groundwater.
○ AOC-76	IRM completed December 2017
○ SWMU B-2 ○ SWMU B-8 ○ SWMU B-20/21 ○ SWMU B-24	} RMU-1 Sites located in current active range fan. Closure to be deferred to when range (RMU-1) closes, per USEPA Memo re: CSSA North Pasture Fencing (February 29, 2012).

## CORRECTIVE MEASURES STUDY

Investigation results were used to develop and evaluate alternatives during the Corrective Measures Study (CMS). The CMS consisted of the identification, screening, and development of

alternatives for removal, containment, treatment, and/or other remediation of the contamination identified at CSSA. The CMS is based on results of the RFI, identified corrective measure technologies, and results of any treatability studies. The CMS Report, approved by USEPA on January 22, 2015, recommended the following corrective measures:

- Implement institutional and engineering land use controls to prevent contact with contaminated media;
- Current off-post GAC units would continue to be operated and monitored, and new GAC units would be installed at additional off-post drinking water wells if necessary;
- Continued use of bioremediation (bioreactor) to treat the source area at SWMU B-3; and
- Continued use of ISCO to treat source area contamination at AOC-65.

The most recent public meeting was held in January 2015. Following the public comment period, during which USEPA received no comments, USEPA prepared the DD which was published in July 2015.

## **CORRECTIVE MEASURES IMPLEMENTATION**

The Corrective Measures Implementation (CMI) Program Plan and the Corrective Measures Design Report were approved by USEPA on March 11, 2016. The Construction Quality Assurance Plan (CQAP) was approved by USEPA on September 28, 2016. The CMI Report was submitted to USEPA on September 7, 2017, and it will be finalized pending review by USEPA. A summary of corrective measures conducted this period is provided in the following paragraphs.

### **SWMU B-3 Bioreactor**

O&M of the bioreactor continued in Period 51. Approximately 199 million gallons of groundwater extracted (11/20/17) from CS-MW16-LGR, CS-MW16-CC, CS-B3-EXW01, CS-B3-EXW02, CS-B3-EXW03, CS-B3-EXW04 and CS-B3-EXW05 have been injected into the bioreactor trenches since the start of injection in 2007. An annual underground injection control (UIC) report was submitted to the TCEQ late in Period 50 (June 2017) in accordance with CSSA's Class V Aquifer Remediation Injection Well Permit, TCEQ Authorization No. 5X2600431; WWC12002216. SWMU B-3 Bioreactor Performance Status Reports will be submitted to CSSA during the next period. The reporting frequency is on an annual basis and the next performance status report is scheduled for submission early in Period 53.

Groundwater samples were collected from sumps, monitoring wells, Westbay-equipped wells, and the injection discharge. Sampling frequency was based on permit requirements and water availability. In general, injected groundwater samples are collected quarterly and monitoring samples from injection trench sumps and the upper most saturated zone within Westbay-equipped monitoring wells (LGR-03B) are collected semi-annually. Additional Westbay-equipped monitoring well zones, extraction well, and monitoring well performance samples are collected every nine months. All samples were analyzed for permit parameters – volatile organic compounds (VOCs), total dissolved solids, and other selected performance parameters. Analyses were performed by Agriculture & Priority Pollutants Lab Inc. (APPL), DHL Laboratory, Microbial Insights, and Microseeps Laboratory. Collected field data included injection volumes, injection pressures, and the pH of recovered groundwater for TCEQ permit



compliance. Results are reported on an annual basis with the next report due for submission in Period 53. Analytical data collected for performance parameters include:

- Methane, Ethane, and Ethene;
- Hydrogen;
- Temperature, pH, and specific conductivity;
- Oxidation Reduction Potential (ORP);
- Dissolved Oxygen (DO);
- Total Organic Carbon;
- Carbon Dioxide;
- Hydrogen;
- Sulfide;
- Additional ions including Sulfate, Chloride, Ferrous Iron, Arsenic, and Manganese; and
- *Dehalococcoides* populations.

During Period 51, the bioreactor remained at saturated conditions due to the continued supply of water from wells CS-MW16-CC, CS-MW16-LGR, B3-EXW01, B3-EXW02, B3-EXW03, B3-EXW04 and B3-EXW05 as well as occasional rainfall events during the period. Approximately 5 million gallons of water were injected into all 6 bioreactor trenches during Period 51.

Monitoring results continue to indicate that effective treatment of injected groundwater in the bioreactor is occurring. Breakdown products of highly chlorinated species, such as tetrachloroethene (PCE) and trichloroethene (TCE), are present in groundwater samples from locations surrounding the bioreactor; however, VOC components remain in strata adjacent to and beneath the trenches.

### **AOC-65 In-Situ Chemical Oxidation**

Groundwater samples were collected from existing monitoring wells and infiltration galleries for VOCs, metals, anions (chloride and sulfate) analysis to track the progress of ISCO applications. Groundwater samples were collected from existing monitoring wells and infiltration galleries for VOCs, metals, anions (chloride and sulfate) analysis to track the progress of ISCO applications. Water quality parameters (pH, DO, ORP, and conductivity) were also collected. Permanganate/persulfate infused paraffin wax cylinders were installed in six wells in December 2016 and monitoring has continued on a quarterly basis. Monitoring is expected to continue on a quarterly basis through the next period. An annual underground injection control (UIC) report was submitted to the TCEQ late in Period 50 (June 2017) in accordance with CSSA's Class V Aquifer Remediation Injection Well Permit, TCEQ Authorization No. 5X2600465, with the next UIC permit report scheduled for submission in Period 52.

Two sampling events were conducted during the period:

- September 2017: Sampling event for all AOC-65 wells, and additional sampling including vertical profiling of VOCs in two cylinder installed wells and permanganate sampling; and
- December 2017: Sampling event for all AOC-65 wells, and additional vertical profiling of VOCs and permanganate following cylinder redistribution.

In September 2017, a series of vertical profiling samples were collected for VOC analysis at two of the wells in which cylinders were installed. Profiling data showed that there is some stratification of contaminants within the water column, and that the sample collected via bailer is

a mixture of these stratified zones. Additionally, complete oxidation of contaminants within the well may not occur due to the vertical stratification of contaminants. An additional cylinder was installed in all six wells and the cylinders were redistributed following analysis of vertical profiling results to provide more complete oxidant coverage within saturated well screen intervals in November 2017.

## Groundwater Monitoring

On- and off-post groundwater monitoring was conducted in accordance with regulator-approved DQOs during Period 51. Sampling frequencies for on-post and off-post wells for this period were determined by the long-term monitoring optimization (LTMO) study updated in January 2016, as approved by TCEQ and USEPA in April 2016. A map of the well locations is provided in **Attachment 1** of this report.

The analyte list for each monitoring event was in accordance with the applicable work plans and DQOs. On- and off-post monitoring wells and Westbay-equipped wells were sampled for the SW-846 Method 8260B VOCs *cis*-1,2-dichloroethene (*cis*-1,2-DCE), PCE, TCE, and vinyl chloride (VC). On-post drinking water wells were also sampled for metals: barium, arsenic, chromium, cadmium, copper, mercury, lead and zinc. Additional samples were collected off-post and from wells with GAC filtration systems. Samples were analyzed by APPL in Clovis, California. Chemists validated and verified the data in accordance with the CSSA Quality Assurance Program Plan (QAPP). All detected concentrations of VOCs and metals are presented in **Attachment 4**.

## June 2017 Sampling

The June 2017 groundwater monitoring included 44 on-post wells, and 17 off-post wells. In addition, the Westbay wells 01-04 were sampled and profiled to collect water level data in the area. Sampling was conducted June 5-30, 2017, and results are included in Attachment 4. Results were not available in Period 50 and are therefore presented here.

One drinking water well (CS-1 and the field duplicate) showed trace detections, below the reporting limit (RL), of TCE in June 2017. The maximum contaminant level (MCL) was exceeded in monitoring wells CS-D, CS-MW1-LGR, CS-MW5-LGR, and CS-MW36-LGR for TCE and/or PCE during the June 2017 event. No on-post wells sampled for metals had detections above their corresponding MCL, action level (AL), or secondary standard (SS) in June 2017. All zones with water were sampled in Westbay wells CS-WB01 through CS-WB04. They were also profiled to capture water level data in the area. Six of the 46 zones scheduled for sampling were dry, and one (WB02-UGR-01) was nearly dry or potentially clogged. An effort will be made in Period 52 to discuss potential un-clogging methods and/or preventative maintenance options for this zone with Westbay. Eleven zones had levels of PCE and/or TCE above the MCL. Four of the zones sampled were non-detect.

Analyses indicated off-post wells OFR-3 and RFR-10 exceeded the MCL for PCE and/or TCE. These wells are equipped with GAC filtration systems. All other wells were below the MCLs. Well I10-2 was not sampled due to a pump outage.

The Middle Trinity aquifers' average groundwater elevation in June 2017 decreased 62.97 feet from the elevations measured in March 2017. The average depth to water in the wells was 212.48 feet below top of casing (BTOC) or 1029.06 feet above mean sea level (msl).

## **September 2017 Sampling**

Five on-post wells, 8 off-post wells, and 7 post-GAC samples were scheduled for sampling in September 2017 in accordance with the LTMO schedule. Analytical results from the September 2017 sampling event are included in Attachment 4.

Sampling was conducted September 20 through 28, 2017. Average groundwater elevation in September 2017 decreased 48.18 feet from the elevations measured in June 2017. The average depth to water in the wells was 262.58 feet BTOC or 979.75 feet above msl.

On-post wells scheduled for sampling were analyzed for selected VOCs (CSSA short list) and public water supply wells were also sampled for metals (arsenic, barium, chromium, copper cadmium, mercury, lead, and zinc). There were no metals or VOCs detected above the MCL/AL/SS in wells sampled in September 2017.

Eight off-post wells and 7 post-GAC samples were also collected in September 2017. One off-post well (RFR-10) exceeded the MCL for PCE and TCE. This well is equipped with GAC filtration system. All other wells were below the MCLs. Wells BSR-04 and HS-1 have met the requirements of the LTMO exclusion program (wells that are greater than 1.5 miles from the CSSA boundary or have consecutive non-detects over the last 5-year period) and will be removed from the program.

## **December 2017 Sampling**

The December 2017 groundwater monitoring included 5 on-post wells, and six off-post wells. In addition, the Westbay wells 01-04 were profiled to collect water level data in the area. Sampling was conducted December 4-15, 2017. Laboratory results will be received in January 2018 and summarized in the Period 52 progress report.

## **Off-Post GAC Systems**

Based on sampling results received in 2001, 2002, and 2011 indicating VOC levels above or approaching the MCL, GAC filtration systems were installed at six off-post wells. In accordance with the *CSSA Off-Post Monitoring Program Response Plan* dated June 2002 and addended July 2016, and the Groundwater Monitoring DQOs, the off-post GAC filtration systems are maintained by CSSA and sampled every six months.

Monthly operations and maintenance (O&M) activities for the off-post residential GAC filtration systems were performed this period. Work included inspection and replacement, as needed, of the pre- and post-GAC filters at wells LS-5, LS-6, LS-7, OFR-3, RFR-10, and RFR-11.

Semi-annual GAC maintenance was performed September 20, 2017. This included moving the second carbon canister into the first position and replacing the second carbon canister as well as ultraviolet (UV) bulb replacement if necessary.

Post-GAC confirmation samples from all of the off-post GAC systems were collected after the semi-annual maintenance was performed in September. All VOC sample results were non-detect indicating that the GAC filtration systems are functioning properly.

## **Data Validation and Verification**

Laboratory results from sampling efforts and investigations are validated and verified by chemists to ensure results are in compliance with CSSA QAPP requirements. Data validation and verification continued during Period 51.

## **Meetings**

A regulatory meeting was held during Period 51 on September 19, 2017. Topics discussed included the status of Administrative Order documents, groundwater monitoring updates, SWMU B-3 remediation updates, the new AOC-76, and the operational range assessment program.

## **Environmental Encyclopedia Updates**

The CSSA website ([www.stanley.army.mil](http://www.stanley.army.mil)) was updated with documents added to the Environmental Encyclopedia through the end of December 2017. The website serves as CSSA's Administrative Record as required under the Order. Updates made in Period 51 included the following:

- Annual Status Report of the Pilot Study Class V Aquifer Remediation Injection Wells
- Annual Status Report of the AOC-65 Class V Remediation Infiltration Galleries and Injection Wells
- Corrective Measures Implementation (CMI) Report
- June 2017 Well Owner Letters
- September 2017 Well Owner Letters
- Period 50 Semi-Annual Progress Report (July 10, 2017)
- 2015 and 2016 Annual Fact Sheets
- Technical NOD Information Request to TCEQ (November 17, 2017)
- September 2017 Off-Post Quarterly Groundwater Monitoring Report
- September 2017 On-Post Quarterly Groundwater Monitoring Report
- Correspondence from TCEQ: Decision Regarding Amendment of Class V Injection Well Authorization and Closure of Class V Injection Well Authorization
- Regulatory Meeting Minutes (September 19, 2017)
- June 2017 On-Post Quarterly Groundwater Monitoring Report
- June 2017 Off-Post Quarterly Groundwater Monitoring Report
- Letter to Owner of Well LS-5 Regarding Phone Inquiry; and
- Various correspondence to and from CSSA.

## **Summary of Contacts**

Letters summarizing the results of the June 2017 and September 2017 off-post groundwater monitoring events were mailed to owners of the off-post wells in Period 51. Groundwater sampling notification letters were sent to the USEPA and TCEQ one month prior to the start of the sampling events. Other Order-related correspondence during Period 51 included submittal of the Period 50 Semi-Annual EPA Progress Report (January 5, 2017).

## **PROJECTED WORK FOR THE NEXT PERIOD**

### **Groundwater Monitoring**

As outlined in the CMS and approved by the DD, routine off-post groundwater sampling which began in 2001 will continue into the foreseeable future. Quarterly groundwater monitoring on- and off-post will continue in accordance with the approved LTMO and DQOs. During Period 51, these events will be conducted in September and December 2017. Quarterly and annual groundwater monitoring reports will be submitted next period. O&M at the residential GAC filtration systems (LS-5, LS-6, LS-7, OFR-3, RFR-10, and RFR-11) will be conducted every three weeks during Period 51. The semi-annual carbon exchange was performed in September 2017.

### **SWMU B-3 Bioreactor**

Monitoring of the bioreactor at SWMU B-3 will continue during Period 52 as described in the CMS and approved by the DD. Monitoring requirements will be performed to meet TCEQ's UIC authorization requirements. Performance monitoring data will be collected in accordance with the Bioreactor O&M Manual.

### **AOC-65 ISCO**

CSSA will continue quarterly monitoring of the designated ISCO wells as identified in the AOC-65 Operation and Monitoring Plan as part of the performance determination of the ISCO corrective measures as described in the CMS and approved by the DD. Scheduled quarterly groundwater monitoring will continue during Period 52 for permit-required and performance-based parameters.

### **Meetings**

Quarterly groundwater meetings will be held prior to quarterly events scheduled in March, June, September, and December 2018 to discuss the progress and continued implementation of the remedies outlined in the CMS and approved by the DD.

**Table 2, Environmental Project Task Completion to Date  
(Values updated through November 30, 2017)**

<b>Project Number</b>	<b>Description of Task</b>	<b>Relation to Order</b>	<b>Percent Complete</b>	<b>Start/End Dates</b>
Order 37	UST Investigations	NA	100%	1991-1995
Order 52	Investigation of F-14	I/SM/RFI	100%	1992-1993
Order 67	Groundwater sampling, Water Well Inventory, Hydrogeologic Report	I/SM/RFI	100%	1992-1996
Order 71	Environmental Assessment	I/M	100%	1992-1993
Order 126	B-20, F-14 Investigations, Background Soils Study	RFI	100%	1994-1996
RL17	Geophysical surveys, Well Installations Soil Sampling and Groundwater sampling	I/SM/RFI	100%	1995-2003
RL33	Site investigations, B-20 treatability studies and unexploded ordnance investigation	RFI	100%	1996-2002
Order 23	Groundwater Sampling	RFI	100%	1996-1998
RL53	SWMU and AOC Investigations	RFI	100%	1997-2003
RL83	Geophysical Surveys	RFI	100%	1999-2003
RL74	Current Conditions Report, Community Relations, Groundwater Monitoring	RFI	100%	1999-2001
DO5068	Soil Gas Surveys	RFI	100%	1999-2002
DO23	Groundwater Monitoring	RFI	100%	1998-2001
DO5084	Building 90 Investigation, Groundwater Monitoring	RFI	100%	2000-2003
TO0058	Treatability Study for AOC-65	RFI	100%	2001-2005
TO0042	Well Installations and Groundwater Monitoring	I/SM/RFI	100%	2001-2006
TO0017	East Pasture Removal Action	Other	100%	2005-2006
TO0019	SWMU Closures	RFI	100%	2003-2006
TO0005	Environmental Program Technical Support	I/SM/RFI	100%	2003-2007
TO0098	Miscellaneous Studies	Other	100%	2004-2007
TO0008	Groundwater Monitoring	I/SM/RFI	100%	2003-2008
TO0006	SWMU B-3 and AOC-65 Remediation	I/SM/RFI	100%	2004-2008
TO0207	Environmental Support, Groundwater Monitoring	I/SM/RFI	100%	2006-2008
DY01 (Weston)	Affected Property Assessment Investigations	RFI	100%	2006-2007
DY01 (Parsons)	Environmental Compliance, SWMU, and AOC Closure Investigations	RFI	100%	2006-2010
DY02 (Parsons)	Environmental Compliance, SWMU and AOC closure Investigations	I/SM/RFI	100%	2007-2009
DO11 (Parsons)	Environmental and Groundwater Investigations	RFI	100%	2008-2010

**Table 2 Continued, Environmental Project Task Completion to Date  
(Values updated through November 30, 2017)**

<b>Project Number</b>	<b>Description of Task</b>	<b>Relation to Order</b>	<b>Percent Complete</b>
DY02 (Weston)	Removal Action at AOC-64, B-71	RFI	100%
H&A (Parsons)	Administrative Support and Environmental Services	Other/RFI	100%
DO50 (Parsons)	Environmental and Groundwater Investigations	RFI	100%
Army Contract (Parsons)	Environmental and Groundwater Investigations	RFI	100%
DO07(Parsons)	Environmental Program Support	RFI	100%
Army Contract TO1 (Parsons)	Program Management	RFI	100%
Army Contract TO2 (Parsons)	O&M, Compliance, & Monitoring	RFI	100%
Army Contract TO3 (Parsons)	Site Investigations and Closures	RFI	100%
Army Contract TO4 (Parsons)	Environmental Studies	RFI/Other	100%
Army Contract TO7 (Parsons)	Environmental Program Support	RFI/CMS	100%
Army Contract TO8 (Parsons)	Environmental Program Support	RFI/CMS	100%
Army Contract TO9 (Parsons)	Environmental Program Support	CMI	70%

**Table 3, Project Team Contact Information**

<b>Name</b>	<b>Organization/Role</b>	<b>Street Address</b>	<b>City, State, Zip</b>	<b>Phone No.</b>	<b>Fax No.</b>	<b>E-mail</b>
Arciniaga, Laura	Parsons, Task Mgr	8000 Centre Park Dr., Suite 200	Austin, TX 78754	(512) 719-6855	(512) 719-6099	laura.arciniaga@parsons.com
Burdey, Julie	Parsons, Project Mgr	8000 Centre Park Dr., Suite 200	Austin, TX 78754	(512) 719-6062	(512) 719-6099	julie.burdey@parsons.com
Chang, Tammy	Parsons, Senior Scientist	8000 Centre Park Dr., Suite 200	Austin, TX 78754	(512) 719-6092	(512) 719-6099	tammy.chang@parsons.com
Elliott, Samantha	Parsons, Task Mgr	c/o Environmental Office, 25800 Ralph Fair Road	Boerne, TX 78015-4800	(210) 347-6012	(210) 295-7386	Samantha.elliott@parsons.com
Kraintz, Felicia	CSSA Environmental Program Manager	25800 Ralph Fair Road	Boerne, TX 78015-4800	(210) 295-7067	(210) 295-7386	kraintzf@cssamma.com
Lyssy, Greg	USEPA, Project Manager	1445 Ross Avenue (6PD-N)	Dallas, TX 75202-2733	(214) 665-8317	(214) 665-6660	lyssy.gregory@epa.gov
Pearson, Scott	Parsons, Task Mgr	8000 Centre Park Dr., Suite 200	Austin, TX 78754	(512) 719-6087	(512) 719-6099	scott.pearson@parsons.com
Gregorio, Paul	TCEQ, Project Manager	P.O. Box 13087, MC-127	Austin, TX 78711-3087	(512) 239-1425		Paul.Gregorio@tceq.texas.gov
Rice, Ken	Parsons, Task Mgr	8000 Centre Park Dr., Suite 200	Austin, TX 78754	(512) 719-6050	(512) 719-6099	ken.r.rice@parsons.com
Salazar, Jorge	TCEQ	14250 Judson Road	San Antonio, TX 78233	(210) 403-4059		jsalazar@tceq.state.tx.us
Shirley, Jason (LTC, retired)	CSSA Installation Manager	25800 Ralph Fair Road	Boerne, TX 78015-4800	(210) 295-7416	(210) 295-7386	jason.d.shirley.civ@mail.mil



# **ATTACHMENT 1**

## **ON-POST AND OFF-POST SAMPLED WELLS FIGURE**



## **ATTACHMENT 2**

### **SUMMARY OF STATUS OF EACH SWMU/AOC/RMU SITE**

**ATTACHMENT 2**  
**STATUS OF SWMUs, AOCs, AND RMUs at CSSA**

Unit No.	Description	Investigation Report(s)	Recommendations	Requested Action				Closure Approved	Closure Type
				RRS1	NFA	Delisting	TRRP		
B-1	Powder and ammo burn area (1954).	RFI/Closure Report July 2002	NA	X				November-02	RRS1
B-2	Small arms ammunition burning area (1954) - North Pasture	RFI/Closure Report June 2002 Closure Report March 2005	Closure once range is inactive						
B-3	Landfill area (garbage disposal and burning trash); filled in 1990-91.	RFI Report March 2005	Bioreactor remediation ongoing						
B-4	Classified burn area (documents and trash).	APAR October 2012	Closure				X	February-13	TRRP
B-5	Possible fired small arms ammo brass area. Not located.	RFI/Closure Report July 2002	NA	X				October-02	RRS1
B-6	Possible solid waste disposal area.	RFI/Closure Report July 2002	NA	X				October-02	RRS1
B-7	Possible fired small arms ammunition brass disposal area	RFI/Closure Report July 2002	NA	X				October-02	RRS1
B-8	Fired small arms ammo brass disposal area (piles of fire bricks, ammo shells) - North Pasture	RFI Report December 2003	Excavate as necessary once range is inactive						
B-9	Miscellaneous solid waste (metal and weapons) disposal area.	RFI/Closure Report September 2002	NA	X				March-03	RRS1
B-10	Ammunition disposal area.	RFI/Closure Report May 2003	NA	X				January-04	RRS1
B-11	Miscellaneous solid waste disposal (ammo, scrap metal, const. debris).	RFI Closure Report June 04	NA	X				September-04	RRS1
B-12	Landfill, WPA trash when igloos were being built	RFI Report April 2005	NA	X				July-05	RRS1
B-13	Trash dump area.	RIR April 2013	Closure		X			July-13	NFA
B-14	Possible fired brass area - not located.	Delisting Request November 2007	NA			X		February-08	Delisting
B-15/16	Landfill (target vehicles, weapons mounts)	RIR June 2011	NA		X			September-11	NFA
B-19	Solid waste disposal area (metals and weapons).	RFI/Closure Report June 2002	NA	X				September-02	RRS1
B-20/21	Former OB/OD area & ammunition disposal areas - North Pasture	RFI Report July 2002	Closure once range is inactive						
		Combined with B-20							
B-22	Burn area (artillery shells).	RFI/Closure Report August 2002	NA	X				December-02	RRS1

**ATTACHMENT 2**  
**STATUS OF SWMUs, AOCs, AND RMUs at CSSA**

Unit No.	Description	Investigation Report(s)	Recommendations	Requested Action				Closure Approved	Closure Type
				RRS1	NFA	Delisting	TRRP		
<b>B-23</b>	Disposal trenches (two green canisters)	RFI Report April 2005	NA	X				July-05	RRS1
<b>B-23A</b>	Disposal Trench (glass ampoules of liquid)	RFI Closure Report September 2004	NA	X				March-05	RRS1
<b>B-24</b>	Spent ammo/rockets area - North Pasture	RFI Report May 2002	MC removal once range is inactive						
<b>B-25</b>	Possible disposal trench	RFI Report April 2005	NA	X				July-05	RRS1
<b>B-26</b>	Possible disposal trench	Delisting Report August 2004	NA			X		November-04	Delisting
<b>B-27</b>	Sanitary landfill, consisting of 5-6 trenches (6 ft deep, 3 ft wide).	RFI Report July 2002 RIR September 2011	NA		X			December-11	NFA
<b>B-28</b>	Disposal trenches (molten metal, ammo, ammo parts)	RFI Report April 2002 RIR July 2011	NA		X			November-11	NFA
<b>B-29</b>	Solid waste disposal area (in old quarry)	RFI Report April 2005	NA	X				February-08	RRS1
<b>B-30</b>	Solid waste disposal area	RFI Report September 2004	NA	X				February-05	RRS1
<b>B-31</b>	Lead shot/sand pipe bedding	RFI/Closure Report July 2002	NA	X				November-02	RRS1
<b>B-32</b>	Lead shot/sand pipe bedding	RFI/Closure Report January 2003	NA	X				November-03	RRS1
<b>B-33</b>	Lead shot/sand pipe bedding	RFI Report September 2004	NA	X				November-04	RRS1
<b>B-34</b>	Maintenance pit floor drain and discharge point	RFI Report August 2002	Closure		X			April-14	NFA
<b>B-71</b>	Livestock area. Inner cantonment, SW of Well 16.	APAR	NA				X	October 2011	TRRP
<b>AOC-64</b>	Area east of SWMU B-4; flares observed in the area	APAR	NA				X	October 2011	TRRP
<b>Bldg 40</b>	less-than 90-day accumulation container storage area	RFI/Closure Report September 2003	NA	X				January-04 and January-06	RRS1
<b>Bldg 43</b>	Inactive makeshift ammo demolition facility	RFI Report April 2005	NA	X				August-05	RRS1
<b>DD</b>	Dud ammunition disposal area	RFI Report January 2005	NA	X				April-05	RRS1
<b>F-14</b>	Hazardous waste storage area (<90-day)	RFI/Closure Report, 1995	NA	X				November-95	RRS1

**ATTACHMENT 2**  
**STATUS OF SWMUs, AOCs, AND RMUs at CSSA**

Unit No.	Description	Investigation Report(s)	Recommendations	Requested Action				Closure Approved	Closure Type
				RRS1	NFA	Delisting	TRRP		
I-1	Inactive incinerator (built in 1943), currently used for transformer storage	RFI Report February 2003	NA				X	November-08	NFA
O-1	Waste liquid/sludge oxidation pond (1975)	RFI/Closure Report October 2000	NA	X				April-02	RRS1
Coal Bins	Coal bins (no longer in use)	Delisting Requested January 2003	NA			X		February-08	Delisting
AOC-35	Area immediately around Well 16. Northeast area of inner cantonment.	RFI/Closure Report October 2002	NA	X				February-03	RRS1
AOC-36	Area between Well 16 and B-3. Possible waste verified not present by magnetometer survey.	RFI/Closure Report April 2002	NA	X				August-02	RRS1
AOC-37	Livestock area. NW of Well 16 and N of Well D.	RFI/Closure Report June 2004	NA	X				January-05	NFA
AOC-38	Livestock area. Inner cantonment, SW of Well 16.	RFI Report September 2004	NA	X				February-05	RRS1
AOC-39	None. Area west of Well 16 between North Outer Rd and cantonment fence.	RFI/Closure Report April 2002	NA	X				September-02	RRS1
AOC-40	None. Area east of Well 16 between North Outer Rd and cantonment fence.	RFI/Closure Report May 2002	NA	X				August-02	RRS1
AOC-41	Gate area east of well 16. North Pasture, north of gate 6.	NFA Report April 2005	NA		X			July-05	NFA
AOC-42	None. South of SWMUs B-28 and B-19, west of B-4.	RFI Report October 2002 RIR August 2011	NA		X			December-11	NFA
AOC-43	Shallow trench without mounds. Metal, UXO. Located 50 ft south of B-7.	RFI/Closure Report October 2002	NA	X				February-03	RRS1
AOC-44	Fox holes and trenches south of B-9 along west slope of hill. UXO includes Stokes mortars and 20-lb bombs.	Delisting Report April 2005	NA			X		July-05	Delisting
AOC-45	Flat area with spent and undamaged bullets. Located east of B-31, near bend in road.	RIR July 2011	NA		X			October-11	NFA
AOC-46	Bermed area with stockpile of lead shot and sand. Located south of Engineering on east side of Thompkins Road.	RFI/Closure Report April 2005	NA	X				July-05	RRS1
AOC-47	Area of trenches and mounds (similar to B-15/16). South of B-15/16, in SW area of East Pasture.	RFI/Closure Report June 2002	NA	X				September-02	RRS1
AOC-48	Three N-S trending mounds and a construction debris pile. Located north of B-15/16.	Delisting Report August 2004	NA			X		November-04	Delisting

**ATTACHMENT 2**  
**STATUS OF SWMUs, AOCs, AND RMUs at CSSA**

Unit No.	Description	Investigation Report(s)	Recommendations	Requested Action				Closure Approved	Closure Type
				RRS1	NFA	Delisting	TRRP		
<b>AOC-49</b>	Trench (4 x 7 ft) without surficial debris. Located SW of deer stand 41 in central East Pasture.	Delisting Report April 2005	NA			X		July-05	Delisting
<b>AOC-50</b>	Area with orange discolored material (most likely nickel penetrate) at ground surface. South of B-30 along gravel road.	RFI/Closure Report January 2005	NA	X				April-05	RRS1
<b>AOC-51</b>	East pasture, east of active range, approximately 25 acres, area around B-9	RIR July 2012	Closure		X			October-12	NFA
<b>AOC-52</b>	Area west of B-4 towards Salado Creek near trees, two trenches	RIR August 2011	NA		X			December-11	NFA
<b>AOC-53</b>	Building foundation near B-27 at Central Road and road to "D" Tank, batteries at rear of slab	RFI/Closure Report April 2005	NA	X				July-05	RRS1
<b>AOC-54</b>	Area near gutting pit, east of Welding Shop Building, right side of road batteries were stored in the area	Closure Report July 2004	NA	X				November-04	RRS1
<b>AOC-55</b>	Landfill, south of Tenberg Drive, east of Salado Creek	RFI/Closure Report Feb 04	NA	X				June-08	RRS1
<b>AOC-56</b>	Landfill, at intersection of Bernard Road and East Outer Road, surface depression on south side of intersection	Closure Report June 04	NA	X				September-04	RRS1
<b>AOC-57</b>	East of Building 98 and KOA Area, cleaning/maintenance activities performed at temporary structures	RIR May 2011	NA		X			September-11	NFA
<b>AOC-58</b>	Suspected disposal trench within Inner Cantonment	RFI Report October 2002 RIR August 2011	NA		X			December-11	NFA
<b>AOC-59</b>	Trench-type anomaly located west Test Pad in the East Pasture	RIR July 2011	NA		X			October-11	NFA
<b>AOC-60</b>	Trench located west of tunnel and entrance roadway in the East Pasture.	Delisting Report April 2005	NA			X		July-05	Delisting
<b>AOC-61</b>	Suspected landfill	RFI/Closure Report October 2002	NA	X				February-03	RRS1
<b>AOC-62</b>	Located west of monitoring well MW-2 and east of Salado Creek.	RIR August 2011	NA		X			December-11	NFA
<b>AOC-63</b>	Area consisting of 3 barrels containing rocks, south of deer stand 41 in the East Pasture.	APAR October 2008	NA				X	July-09	TRRP

**ATTACHMENT 2**  
**STATUS OF SWMUs, AOCs, AND RMUs at CSSA**

Unit No.	Description	Investigation Report(s)	Recommendations	Requested Action				Closure Approved	Closure Type
				RRS1	NFA	Delisting	TRRP		
<b>AOC-65</b>	A concrete pit area that housed a metal vat that contained TCE and PCE.	RFI Report August 2003	Additional investigation, ISCO remediation ongoing						
<b>AOC-66</b>	Area north of Well 16 in the outer cantonment.	Closure Report June 04	NA	X				February-05	NFA
<b>AOC-67</b>	Concrete pad near Building 90 housed a vat containing cleaning solvents.	RIR July 2010	NA		X			September-10	NFA
<b>AOC-68</b>	Area includes metal slag/debris storage area from Wheelabrator operations next to Building 90-2.	RIR July 2010	NA		X			September-10	NFA
<b>AOC-69</b>	Located on west side of CSSA.	RIR June 2009	NA		X			October-09	NFA
<b>AOC-70</b>	Building used to mix pesticides. Near Building 1.	RIR June 2011	NA		X			September-11	NFA
<b>AOC-72</b>	Area containing concrete, possible asbestos. Located east of Building 94, in SW CSSA.	RIR March 2012	Closure		X			May-12	NFA
<b>AOC-73</b>	Ranch landfill with overgrown trenches. Near Well I1, in northwest corner of CSSA.	RIR September 2008	NA		X			January-09	NFA
<b>AOC-74</b>	Area with scattered building debris near Building 605 in the inner cantonment.	RIR February 2012	Closure		X			May-12	NFA
<b>AOC-75</b>	Area with high levels of mercury and barium.	RIR July 2013	Closure		X			November-13	NFA
<b>AOC-76</b>	Parking area and roadway located to the west of the swimming pool in the residential area of CSSA with lead-contaminated subsurface soils	<i>Investigation in progress</i>	<i>Delineate contamination, excavation and disposal of soil</i>						
<b>RMU-1</b>	Active firing range in the East Pasture	--	Investigation once range is inactive.						
<b>RMU-2</b>	Rifle range located in the inner cantonment.	RIR November 2011	NA		X			February-12	NFA
<b>RMU-3</b>	Firing range berm.	RIR May 2013	Closure		X			May-13	NFA
<b>RMU-4</b>	Former rifle range in East Pasture.	RIR October 2013	Closure		X			February-14	NFA
<b>RMU-5</b>	Former rocket range in North Pasture.	RIR June 2012	Closure		X			September-12	NFA



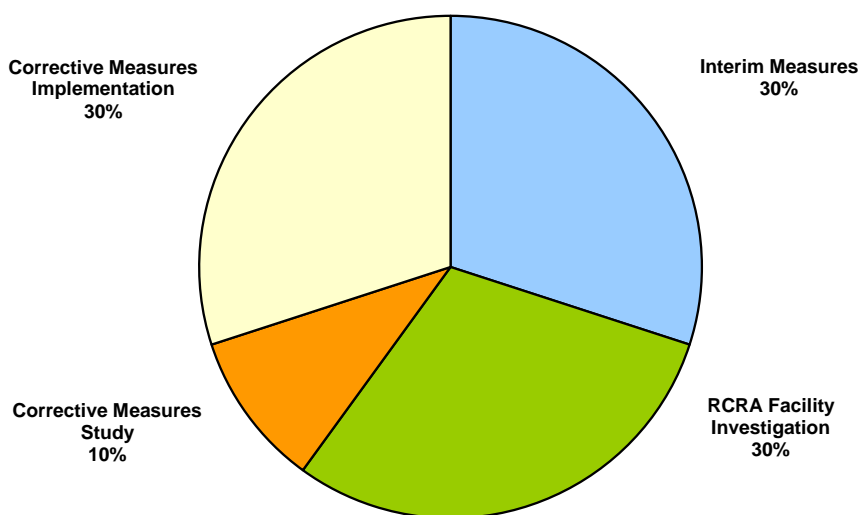
## **ATTACHMENT 3**

### **OVERALL H ORDER PERCENT COMPLETE**

**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Project	% of Phase	% Complete	% of Activity Complete	% of Task Complete
<b>Interim Measures</b>	30%				100%
Interim Measures Work Plan		7%	100.0%	7.0%	
Interim Measures Implementation Reports		70%	99.8%	69.8%	
		23%	100.0%	23.0%	
<b>RCRA Facility Investigation</b>	30%				100%
Preliminary Report		5%	100%	5%	
RFI Workplan		5%	100%	5%	
Facility Investigation		40%	100%	40%	
Risk Assessment		10%	100%	10%	
Investigation Analysis		10%	100%	10%	
Groundwater Investigation		15%	100%	15%	
Treatability Studies		10%	100%	10%	
Progress Reports		5%	100%	5%	
<b>Corrective Measures Study</b>	10%				100%
Identify and Develop Alternatives		15%	100%	15%	
Evaluate Alternatives		60%	100%	60%	
Reports		25%	100%	25%	
<b>Corrective Measures Implementation</b>	30%				90%
Implementation Program Plan		5%	100%	5%	
Corrective Measure Design		15%	100%	15%	
Corrective Measure Construction		60%	100%	60%	
Corrective Measures Report		10%	85%	9%	
Progress Reports		10%	10%	1%	
% of Phase Complete					97%

**Section 3008(h) Order Tasks**



**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Phase	% of Task	% Complete	% of Activity Complete	% of Activity Remaining	% of Task Complete	Comments/Status
<b>1 Interim Measures Work Plan</b>	7%					100.0%	
Draft IM Workplan		80%	100%	80%	0%		
Draft Final IM Workplan		15%	100%	15%	0%		
Final IM Workplan		5%	100%	5%	0%		
<b>2 Interim Measures Implementation</b>	70%					100%	
Sample 3 Off-Site Wells		1%	100%	1%	0%		
Sample 20 Off-Site Wells (6 events)		6%	100%	6%	0%		
2000 Groundwater Monitoring (4 events)		2%	100%	2%	0%		(remaining off-post sampling conducted under the RFI task)
2001 Groundwater Monitoring (4 events)		2%	100%	2%	0%		
2002 Groundwater Monitoring (4 events)		2%	100%	2%	0%		
2003 Groundwater Monitoring (4 events)		2%	100%	2%	0%		
2004 Groundwater Monitoring (4 events)		2%	100%	2%	0%		
2005 Groundwater Monitoring (4 events)		2%	100%	2%	0%		
2006 Groundwater Monitoring		2%	100%	2%	0%		
2007 Groundwater Monitoring		2%	100%	2%	0%		
2008 Groundwater Monitoring		2%	100%	2%	0%		
2009 Groundwater Monitoring		2%	100%	2%	0%		
2010 Groundwater Monitoring		2%	100%	2%	0%		
2011 Groundwater Monitoring		2%	100%	2%	0%		
2012 Groundwater Monitoring		2%	100%	2%	0%		
2013 Groundwater Monitoring		2%	100%	2%	0%		
2013 Groundwater Monitoring		2%	100%	2%	0%		
2014 Groundwater Monitoring		2%	100%	2%	0%		
2015 Groundwater Monitoring		2%	100%	2%	0%		
2016 Groundwater Monitoring		2%	50%	1%	50%		
Locate and map off-site wells		1%	100%	1%	0%		
O-1 Soil Borings		3%	100%	3%	0%		
O-1 Excavation, Stabilization, Diposal		12%	100%	12%	0%		
Establish Treatment Unit		1%	50%	1%	50%		may or may not be necessary.
Determine appropriate disposition of soil piles		5%	100%	5%	0%		After treatability studies.
Treat/dispose of soil piles		20%	100%	20%	0%		Unfunded CSSA future work.
AOC 50 Excavation and Disposal		3%	100%	3%	0%		Not included as IM in the Order.
AOC 65 Excavation and Disposal		8%	100%	8%	0%		
<b>3 Reports</b>	23%					100%	
Progress Reports		27.0%	100%	27%	0%		
Draft O-1 IM Report		19%	100%	19%	0%		
Draft final O-1 IM Report		12%	100%	12%	0%		
Final O-1 IM Report		5%	100%	5%	0%		
Draft Soil Pile IM Report		20%	100%	20%	0%		
Draft Final Soil Pile IM Report		12%	100%	12%	0%		
Final Soil Pile IM Report		5%	100%	5%	0%		
% of Phase Complete						100%	

**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Phase	% of Task	% Complete	% of Activity Complete	% of Activity Remaining	% of Task Complete	Comments/Status
<b>Preliminary Report</b>	5%					100%	
Draft DCC Report		80%	100%	80%	0%		
Draft Final DCC Report		15%	100%	15%	0%		
Final DCC Report		5%	100%	5%	0%		
<b>RFI Workplan</b>	5%					100%	
Draft Community Relations Plan		25%	100%	25%	0%		
Draft Final CRP		5%	100%	5%	0%		
Final CRP (2006)		10%	100%	10%	0%		
Draft RFI Workplans		20%	100%	20%	0%		
Draft Final RFI Workplan		5%	100%	5%	0%		
Final RFI Workplans		5%	100%	5%	0%		
Final Work Plans (DY01)		10%	100%	10%	0%		
Draft Work Plans (DY02)		10%	100%	10%	0%		
Final Work Plans (DY02)		10%	100%	10%	0%		
<b>Facility Investigation<sup>1</sup></b>	40%					100%	
<b>Small Areas (0-2 acres in size)</b>	74%						
B-3 Investigation/Report		1.24%	100%	1.240%	0%		Final report submitted, additional work required.
B-4 Investigation/Report		1.24%	100%	1.240%	0%		TRRP closure approved Feb 13
B-5 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Oct 02
B-6 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Oct 02
B-7 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Oct 02
B-8 Investigation/Report		1.24%	100%	1.240%	0%		Active range
B-9 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Mar 03
B-10 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Jan 04
B-11 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Sept 04
B-12 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved July 05
B-13 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved July 13
B-15/16 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Sept 11
B-19 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Sept 02
B-23 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved July 05
B-23A Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Mar 05
B-25 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved July 05
B-26 Investigation/Report		1.24%	100%	1.240%	0%		Delisting approved November 04
B-27 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Dec 11
B-28 Investigation/Report		1.24%	100%	1.240%	0%		NFA Closure approved Nov 11
B-30 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Feb 05
B-31 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Nov 02
B-32 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Nov 03
B-33 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Nov 04
B-34 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Apr 14
B-71 Investigation/Report		1.24%	100%	1.240%	0%		TRRP closure approved Oct 11
BLDG-43 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Sept 05
Demo Dud Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Apr 05
F-14 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Nov 95
I-1 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Nov 08
AOC 35 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Feb 03
AOC 37 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Jan 05
AOC 39 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Sept 02
AOC 40 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Aug 02
AOC 43 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved Feb 03
AOC 44 Investigation/Report		1.24%	100%	1.240%	0%		Delisting approved July 2005
AOC 45 Investigation/Report		1.24%	100%	1.240%	0%		NFA Closure Approved Oct 11
AOC 46 Investigation/Report		1.24%	100%	1.240%	0%		RRS1 closure approved July 05
AOC 47 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Sep 02

**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Phase	% of Task	% Complete	% of Activity Complete	% of Activity Remaining	% of Task Complete	Comments/Status
AOC 49 Investigation/Report		1.24%	100%	1.240%	0%		Delisting approved July 05
AOC 50 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Apr 05
AOC 52 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Dec 11
AOC 53 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved July 05
AOC 54 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Nov 04
AOC 55 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved June 08
AOC 56 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Sept 04
AOC 58 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Dec 11
AOC 59 Investigation/Report		1.24%	100%	1.240%	0%		NFA Closure Approved Oct 11
AOC 60 Investigation/Report		1.24%	100%	1.240%	0%		Delisting approved July 05
AOC 61 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Feb 03
AOC 62 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Dec 11
AOC 63 Investigation/Report		1.24%	100%	1.240%	0%		Closure approved Aug 09
AOC 64 Investigation/Report		1.24%	100%	1.240%	0%		TRRP closure approved Oct 11
AOC 67 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Sept 10
AOC 68 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Sept 10
AOC 69 Investigation/Report		1.24%	100%	1.240%	0%		TRRP closure approved Oct 09
AOC 70 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Sept 11
AOC 72 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved May 12
AOC 73 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved July 09
AOC 74 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved May 12
AOC 75 Investigation/Report		1.24%	100%	1.240%	0%		NFA closure approved Nov 13
<b>Medium Areas (2-10 acres in size)</b>							
B-1 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved Nov 02
B-2 Investigation/Report		1.2%	100%	1.220%	0%		Active range
B-22 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved Dec 02
B-24 Investigation/Report		1.2%	100%	1.220%	0%		Active range
B-29 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved Feb 08
AOC 36 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved Aug 02
AOC 41 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved July 05
AOC 42 Investigation/Report		1.2%	100%	1.220%	0%		NFA closure approved Dec 11
AOC 48 Investigation/Report		1.2%	100%	1.220%	0%		Delisting approved Nov 04
AOC 57 Investigation/Report		1.2%	100%	1.220%	0%		NFA closure approved Sept 11
<b>Large Areas (&gt;10 acres in size)</b>							
B-20/21 Investigation/Report		1.2%	100%	1.220%	0%		Active range
AOC 38 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved February 05
AOC 51 Investigation/Report		1.2%	100%	1.220%	0%		NFA Closure approved Oct 12
AOC 66 Investigation/Report		1.2%	100%	1.220%	0%		NFA Closure approved Feb 05
RMU-5 Investigation/Report		1.2%	100%	1.220%	0%		NFA Closure approved Sept 12
AOC 65 Investigation/Report		1.2%	100%	1.220%	0%		Final report submitted, additional work recommended
AOC 69 Investigation/Report		1.2%	100%	1.220%	0%		Closure approved Oct 09
Coal Bins Investigation/Report		1.2%	100%	1.220%	0%		Site de-listed as an AOC
RMU-2 Investigation/Report		1.2%	100%	1.220%	0%		NFA closure approved Feb 12
RMU-3 Investigation/Report		1.2%	100%	1.220%	0%		NFA closure approved May 13
RMU-4 Investigation/Report		1.2%	100%	1.220%	0%		Final report submitted to TCEQ
<b>Groundwater Investigation</b>	15%					100%	

**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Phase	% of Task	% Complete	% of Activity Complete	% of Activity Remaining	% of Task Complete	Comments/Status
Conceptual Site Model (CSM)		20.0%	100%	20%	0%		
CSM Update		5.0%	100%	5%	0%		
LTMO 2005 (optimization study)		6%	100%	6%	0%		Complete
LTMO 2010 (review of optimization)		6%	100%	6%	0%		Complete
LTMO 2015 (review of optimization)		6%	100%	6%	0%		In progress
<b>Risk Assessment</b>	10%					100%	
Draft Report		20%	100%	20%	0%		
Draft Final Report		4%	100%	4%	0%		
Final Report		1%	100%	1%	0%		RA approved by EPA Apr 14.
Draft CSM		60%	100%	60%	0%		
Update to CSM		10%	100%	10%	0%		
Final CSM		5%	100%	5%	0%		
<b>Investigation Analysis</b>	10%					100%	
Collect Background Data		10%	100%	10%	0%		
Draft Investigation Analysis		85%	100%	85%	0%		
Final Investigation Analysis		5%	100%	5%	0%		Information included in facility investigation reports; percent complete based on overall percent complete of facility investigation tasks.
<b>Treatability Studies</b>	10%					100%	
Draft Treatability Study Report B-20		15%	100%	15%	0%		
Final Treatability Study Report B-20		5%	100%	5%	0%		
Continued O&M for B-3		10%	100%	10%	0%		
AOC-65 Treatability Studies		10%	100%	10%	0%		
Draft Treatability Study & Technology Evaluation Reports		10%	100%	10%	0%		
Final Treatability Study Report		25%	100%	25%	0%		
Recharge Study		25%	100%	25%	0%		
<b>Progress Reports</b>	5%					100%	

**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Phase	% of Task	% Complete	% of Activity Complete	% of Activity Remaining	% of Task Complete	Comments/Status
% of Phase Complete							100%
<sup>1</sup> Breakdown of percent complete for RFI facility investigations: Field work complete (25%), data validation (20%), boring logs (if applicable)(10%), analytical data tables (10%), figures (10%), draft report (20%), final report (5%). Note: if additional investigations are needed, then the percent complete will need to be adjusted on a site by site basis.							

**Attachment 3**  
**Overall (H) Order Percent Complete**

<b>Task Name</b>	<b>% of Phase</b>	<b>% of Task</b>	<b>% Complete</b>	<b>% of Activity Complete</b>	<b>% of Task Complete</b>
<b>Identify and Develop Alternatives</b>	15%				100%
Update DCC Report		35%	100%	35%	
Establish Corrective Action Objectives		30%	100%	30%	
ID, Screen, Develop CM Alternatives		35%	100%	35%	
<b>Evaluate Alternatives</b>	60%				100%
Draft Description of CM Alternative		90%	100%	90%	
Final Description of CM Alternative		10%	100%	10%	
<b>Reports</b>	25%				100%
Draft CMS Report		75%	100%	75%	
Final CMS Report		5%	100%	5%	
Progress Report (Period 44)		5%	100%	5%	
Progress Report (Period 45)		5%	100%	5%	
Progress Report (Period 46)		5%	100%	5%	
Progress Report (Period 47)		5%	100%	5%	
<b>% of Phase Complete</b>					<b>100%</b>



**Attachment 3**  
**Overall (H) Order Percent Complete**

Task Name	% of Phase	% of Task	% Complete	% of Activity Complete	% of Task Complete
<b>Implementation Program Plan</b>	5%				100%
Draft Program Management Plan		40%	100%	40%	
Final Program Management Plan		10%	100%	10%	
Draft Update to CRP		40%	100%	40%	
Final Update to CRP		10%	100%	10%	
<b>Corrective Measure Design</b>	15%				100%
Draft CMD Report		90%	100%	90%	
Final CMD Report		10%	100%	10%	
<b>Corrective Measure Construction</b>	60%				100%
Draft Construction QAPP		35%	100%	35%	
Final Construction QAPP		5%	100%	5%	
Implementation of Construction QAPP		60%	100%	60%	
<b>Corrective Measures Report</b>	10%				85%
Draft Corrective Measures Report		50%	100%	50%	
Final Corrective Measures Report		50%	50%	25%	
<b>Progress Reports</b>	10%				10%
Progress Report (Period 48)		5%	100%	2%	
Progress Report (Period 49)		5%	100%	2%	
Progress Report (Period 50)		5%	100%	2%	
Progress Report (Period 51)		5%	100%	2%	
Progress Report (Period 52)		5%	100%	2%	
% of Phase Complete					99%

## **ATTACHMENT 4**

### **GROUNDWATER RESULTS SUMMARY**

**Attachment 4**  
**Quarterly On-Post Groundwater Monitoring Analytical Results, June 2017**

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
<b>CSSA Drinking Water Well System</b>									
CS-1	6/27/2017	0.00022U	<b>0.0331</b>	0.0005U	0.001U	<b>0.014</b>	<b>0.0057F</b>	<b>0.175</b>	0.0001U
CS-1 FD	6/27/2017	<b>0.00101F</b>	<b>0.0357</b>	0.0005U	0.001U	<b>0.015</b>	<b>0.0043F</b>	<b>0.145</b>	0.0001U
CS-10	6/27/2017	<b>0.00121F</b>	<b>0.0376</b>	0.0005U	<b>0.0012F</b>	0.003U	<b>0.0027F</b>	<b>0.387</b>	0.0001U
CS-12	6/27/2017	<b>0.00125F</b>	<b>0.03</b>	0.0005U	<b>0.0746</b>	0.003U	<b>0.0031F</b>	<b>0.033F</b>	0.0001U
CS-13	6/28/2017	<b>0.00418F</b>	<b>0.0319</b>	0.0005U	<b>0.0016F</b>	0.003U	<b>0.0034F</b>	<b>0.435</b>	0.0001U
<b>Comparison Criteria</b>									
<b>Method Detection Limit (MDL)</b>		<b>0.00022</b>	<b>0.0003</b>	<b>0.0005</b>	<b>0.001</b>	<b>0.003</b>	<b>0.0019</b>	<b>0.008</b>	<b>0.0001</b>
<b>Reporting Limit (RL)</b>		<b>0.03</b>	<b>0.005</b>	<b>0.007</b>	<b>0.01</b>	<b>0.01</b>	<b>0.025</b>	<b>0.05</b>	<b>0.001</b>
<b>Max. Contaminant Level (MCL)</b>		<b>0.01</b>	<b>2</b>	<b>0.005</b>	<b>0.1</b>	<b>AL=1.3</b>	<b>AL=0.015</b>	<b>SS=5.0</b>	<b>0.002</b>

Well ID	Sample Date	cis-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-D	6/19/2017	<b>4.47</b>	<b>5.32</b>	<b>6.56</b>	0.08U
CS-MWG-LGR	6/26/2017	0.07U	0.06U	0.05U	0.08U
CS-MWH-LGR	6/20/2017	0.07U	0.06U	0.05U	0.08U
CS-I	6/20/2017	0.07U	0.06U	0.05U	0.08U
CS-2	6/16/2017	0.07U	0.06U	0.05U	0.08U
CS-4	6/16/2017	0.07U	<b>0.61F</b>	<b>0.22F</b>	0.08U
CS-4 FD	6/16/2017	0.07U	<b>0.59F</b>	<b>0.25F</b>	0.08U
CS-MW1-LGR	6/19/2017	<b>20.49</b>	<b>13.98</b>	<b>24.73</b>	0.08U
CS-MW1-CC	6/28/2017	0.07U	0.06U	0.05U	0.08U
CS-MW2-LGR	6/19/2017	<b>0.36F</b>	0.06U	0.05U	0.08U
CS-MW2-CC	6/28/2017	0.07U	0.06U	0.05U	0.08U
CS-MW3-LGR	6/19/2017	0.07U	0.06U	0.05U	0.08U
CS-MW4-LGR	6/28/2017	0.07U	0.06U	0.05U	0.08U
CS-MW5-LGR	6/16/2017	<b>11.65</b>	<b>5.87</b>	<b>13.16</b>	0.08U
CS-MW6-LGR	6/8/2017	0.07U	0.06U	0.05U	0.08U
CS-MW6-CC	6/8/2017	0.07U	0.06U	0.05U	0.08U
CS-MW7-LGR	6/20/2017	0.07U	<b>0.88F</b>	0.05U	0.08U
CS-MW7-CC	6/26/2017	0.07U	0.06U	0.05U	0.08U
CS-MW7-CC FD	6/26/2017	0.07U	0.06U	0.05U	0.08U
CS-MW8-LGR	6/8/2017	0.07U	<b>2.62</b>	0.05U	0.08U
CS-MW8-CC	6/8/2017	0.07U	0.06U	0.05U	0.08U
CS-MW9-LGR	6/19/2017	0.07U	0.06U	0.05U	0.08U
CS-MW9-LGR FD	6/19/2017	0.07U	0.06U	0.05U	0.08U
CS-MW9-CC	6/19/2017	0.07U	0.06U	0.05U	0.08U
CS-MW10-LGR	6/26/2017	0.07U	<b>1.89</b>	0.05U	0.08U
CS-MW10-CC	6/26/2017	0.07U	0.06U	0.05U	0.08U
CS-MW11A-LGR	6/26/2017	0.07U	<b>0.89F</b>	0.05U	0.08U
CS-MW11B-LGR	6/26/2017	0.07U	<b>0.98F</b>	0.05U	0.08U
CS-MW12-LGR	6/16/2017	0.07U	0.06U	0.05U	0.08U
CS-MW12-CC	6/16/2017	0.07U	0.06U	0.05U	0.08U
CS-MW17-LGR	6/28/2017	0.07U	<b>0.67F</b>	0.05U	0.08U
CS-MW17-LGR FD	6/28/2017	0.07U	<b>0.76F</b>	0.05U	0.08U
CS-MW18-LGR	6/16/2017	0.07U	0.06U	0.05U	0.08U
CS-MW19-LGR	6/16/2017	0.07U	<b>0.68F</b>	0.05U	0.08U
CS-MW20-LGR	6/26/2017	0.07U	<b>1.23F</b>	0.05U	0.08U
CS-MW21-LGR	6/28/2017	0.07U	0.06U	0.05U	0.08U
CS-MW22-LGR	6/26/2017	0.07U	0.06U	0.05U	0.08U
CS-MW23-LGR	6/26/2017	0.07U	0.06U	0.05U	0.08U
CS-MW24-LGR	6/19/2017	0.07U	0.06U	0.05U	0.08U
CS-MW25-LGR	6/27/2017	0.07U	0.06U	0.05U	0.08U
CS-MW35-LGR	6/26/2017	0.07U	<b>0.66F</b>	0.05U	0.08U
CS-MW36-LGR	6/8/2017	0.07U	<b>5.43</b>	<b>4.2</b>	0.08U

**Attachment 4**  
**Quarterly On-Post Groundwater Monitoring Analytical Results, June 2017**

CSSA Drinking Water Well System					
CS-1	6/27/2017	0.07U	0.06U	<b>0.16F</b>	0.08U
CS-1 FD	6/27/2017	0.07U	0.06U	<b>0.19F</b>	0.08U
CS-10	6/27/2017	0.07U	0.06U	0.05U	0.08U
CS-12	6/27/2017	0.07U	0.06U	0.05U	0.08U
CS-13	6/28/2017	0.07U	0.06U	0.05U	0.08U
Comparison Criteria					
Method Detection Limit (MDL)		0.07	0.06	0.05	0.08
Reporting Limit (RL)		1.2	1.4	1	1.1
Max. Contaminant Level (MCL)		70	5	5	2

<b>BOLD</b>	= Above the MDL
<b>BOLD</b>	= Above the RL
<b>BOLD</b>	= Above the MCL

All samples were analyzed by APPL, Inc.

VOC data reported in ug/L & metals data reported in mg/L.

**Abbreviations/Notes:**

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard

**Data Qualifiers:**

U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

F-The analyte was positively identified but the associated numerical value is below the RL.

NA - data not available

**ATTACHMENT 4**  
**QUARTERLY ON-POST GROUNDWATER**  
**MONITORING ANALYTICAL RESULTS**  
**JUNE 2017**

Well ID:	CS-MW37-LGR			
Sample Date:	7/12/2017			
Analyte	MDL	RL	MCL	Concentration
Organics (µg/L)				
1,1,1,2-TETRACHLOROETHANE	0.09	0.5	NA	0.09U
1,1,1-TCA	0.03	0.8	200	0.03U
1,1,2,2-TETRACHLOROETHANE	0.07	0.4	NA	0.07U
1,1,2-TCA	0.06	1	5	0.06U
1,1-DCA	0.07	0.4	NA	0.07U
1,1-DCE	0.12	1.2	7	0.12U
1,1-DICHLOROPROPENE	0.1	1	NA	0.1U
1,2,3-TRICHLOROBENZENE	0.24	0.3	NA	0.24U
1,2,3-TRICHLOROPROPANE	0.17	3.2	NA	0.17U
1,2,4-TRICHLOROBENZENE	0.16	0.4	70	0.16U
1,2,4-TRIMETHYLBENZENE	0.04	1.3	NA	0.04U
1,2-DCA	0.05	0.6	5	0.05U
1,2-DCB	0.02	0.3	NA	0.02U
1,2-DIBROMO-3-CHLOROPROPANE	0.76	2.6	0.2	0.76U
1,2-DICHLOROPROPANE	0.06	0.4	5	0.06U
1,2-EDB	0.06	0.6	NA	0.06U
1,3,5-TRIMETHYLBENZENE	0.04	0.5	NA	0.04U
1,3-DCB	0.03	1.2	NA	0.03U
1,3-DICHLOROPROPANE	0.05	0.4	NA	0.05U
1,4-DCB	0.07	0.3	NA	0.07U
1-CHLOROHEXANE	0.04	0.5	NA	0.04U
2,2-DICHLOROPROPANE	0.1	3.5	NA	0.1U
2-CHLOROTOLUENE	0.04	0.4	NA	0.04U
4-CHLOROTOLUENE	0.04	0.6	NA	0.04U
BENZENE	0.07	0.4	NA	0.07U
BROMOBENZENE	0.06	0.3	NA	0.06U
BROMOCHLOROMETHANE	0.11	0.4	NA	0.11U
BROMODICHLOROMETHANE	0.06	0.8	*80	0.06U
BROMOFORM	0.13	1.2	*80	0.13U
BROMOMETHANE	0.08	1.1	NA	0.08U
CARBON TETRACHLORIDE	0.06	2.1	5	0.06U
CHLOROBENZENE	0.04	0.4	0.1	0.04U
CHLOROETHANE	0.07	1	NA	0.07U
CHLOROFORM	0.06	0.3	*80	0.06U
CHLOROMETHANE	0.16	1.3	NA	0.16U
CIS-1,2-DCE	0.07	1.2	70	0.07U
CIS-1,3-DICHLOROPROPENE	0.03	1	NA	0.03U
DIBROMOCHLOROMETHANE	0.06	0.5	*80	0.06U
DIBROMOMETHANE	0.06	2.4	NA	0.06U
DICHLORODIFLUOROMETHANE	0.11	1	NA	0.11U
ETHYLBENZENE	0.05	0.6	700	0.05U
HEXACHLOROBUTADIENE	0.17	1.1	NA	0.17U
ISOPROPYLBENZENE	0.04	0.5	NA	0.04U
M&P-XYLENE	0.07	0.5	NA	0.07U
METHYLENE CHLORIDE	0.35	1	NA	0.35U
N-BUTYLBENZENE	0.17	1.1	NA	0.17U
N-PROPYLBENZENE	0.03	0.4	NA	0.03U
NAPHTHALENE	0.07	0.4	NA	0.07U

**ATTACHMENT 4**  
**QUARTERLY ON-POST GROUNDWATER**  
**MONITORING ANALYTICAL RESULTS**  
**JUNE 2017**

Well ID:	CS-MW37-LGR			
Sample Date:	7/12/2017			
Analyte	MDL	RL	MCL	Concentration
O-XYLENE	0.06	1.1	NA	0.06U
P-ISOPROPYLTOLUENE	0.05	1.2	NA	0.05U
SEC-BUTYLBENZENE	0.05	1.3	NA	0.05U
STYRENE	0.08	0.4	100	0.08U
TCE	0.05	1	5	0.05U
TERT-BUTYLBENZENE	0.04	1.4	NA	0.04U
TETRACHLOROETHENE	0.06	1.4	5	0.06U
TOLUENE	0.06	1.1	1000	0.06U
TRANS-1,2-DCE	0.08	0.6	100	0.08U
TRANS-1,3-DICHLOROPROPENE	0.04	1	NA	0.04U
TRICHLOROFLUOROMETHANE	0.07	0.8	NA	0.07U
VINYL CHLORIDE	0.08	1.1	2	0.08U
<b>Metals (mg/L)</b>				
ARSENIC	0.00022	0.03	0.01	<b>0.00076F</b>
BARIUM	0.0003	0.005	2	<b>0.0442</b>
CADMIUM	0.0005	0.007	0.005	0.0005U
CHROMIUM	0.001	0.01	0.1	<b>0.0076F</b>
COPPER	0.003	0.01	AL = 1.3	0.003U
LEAD	0.0019	0.025	AL = 0.015	0.0019U
ZINC	0.008	0.05	SS = 5	<b>0.588</b>
MERCURY	0.0001	0.001	0.002	0.0001U
<b>Inorganics (mg/L)</b>				
TOTAL DISSOLVED SOILIDS	4.4	10	SS = 500	<b>321</b>
BROMIDE	0.07	0.5	NA	<b>0.2F</b>
CHLORIDE	0.08	1	SS = 250	<b>11.96</b>
FLUORIDE	0.1	0.1	4	<b>0.42</b>
NITRATE	0.03	0.5	10	<b>4.6</b>
NITRITE	0.04	0.3	1	<b>0.12F</b>
SULFATE	0.26	1	SS = 250	<b>20.74</b>
BICARBONATE AS CaCO3	0.3	2	NA	<b>264</b>

<b>BOLD</b>	= Above the MDL
<b>BOLD</b>	= Above the RL
<b>BOLD</b>	= Above the MCL

**Data Qualifiers:**

U-The analyte was analyzed for, but not detected. The associated numerical value is at or below

F-The analyte was positively identified but the associated numerical value is below the RL.

**Abbreviations/Notes:**

\* Total Trihalomethanes (TTHMs) - maximum allowable annual average level

NA = no applicable standard

SS = secondary standard

AL = action level

MDL = method detection limit

RL = reporting limit

MCL = maximum contaminant level

**Attachment 4**  
**June 2017 Quarterly Off-post Groundwater Analytical Results**

Well ID	Sample Date	cis-1,2-DCE	PCE	TCE	Vinyl Chloride
BSR-04	6/6/2017	0.07U	0.06U	0.05U	0.08U
FO-J1	6/27/2017	0.07U	0.06U	0.05U	0.08U
HS-1	6/7/2017	0.07U	0.06U	0.05U	0.08U
I10-8	6/7/2017	0.07U	0.06U	0.05U	0.08U
I10-10	6/7/2017	0.07U	0.06U	0.05U	0.08U
I10-10 FD	6/7/2017	0.07U	0.06U	0.05U	0.08U
JW-7	6/7/2017	0.07U	0.06U	0.05U	0.08U
JW-8	7/12/2017	0.07U	0.06U	0.05U	0.08U
JW-20	6/8/2017	0.07U	0.06U	0.05U	0.08U
LS-5	6/5/2017	0.07U	<b>1.07F</b>	<b>2.4</b>	0.08U
LS-6	6/5/2017	0.07U	<b>0.80F</b>	<b>0.52F</b>	0.08U
LS-7	6/5/2017	0.07U	<b>1.14F</b>	0.05U	0.08U
OFR-3	6/5/2017	0.07U	<b>6.29</b>	<b>3.62</b>	0.08U
RFR-10	6/5/2017	0.07U	<b>9.67</b>	<b>5.30</b>	0.08U
RFR-11	6/5/2017	0.07U	<b>0.87F</b>	<b>1.63</b>	0.08U
RFR-12	6/7/2017	0.07U	0.06U	<b>0.69F</b>	0.08U
RFR-14	6/7/2017	0.07U	0.06U	0.05U	0.08U
Laboratory Detection Limits & Maximum Contaminant Level					
Method Detection Limit (MDL)		<b>0.07</b>	<b>0.06</b>	<b>0.05</b>	<b>0.08</b>
Reporting Limit (RL)		<b>1.2</b>	<b>1.4</b>	<b>1</b>	<b>1.1</b>
Max. Contaminant Level (MCL)		<b>70</b>	<b>5</b>	<b>5</b>	<b>2</b>

<b>BOLD</b>	≥ MDL
<b>BOLD</b>	≥ RL
<b>BOLD</b>	≥ MCL

All samples were analyzed by APPL, Inc.

VOC data reported in ug/L.

**Abbreviations/Notes:**

FD = field duplicate

TCE = trichloroethene

PCE = tetrachloroethene

DCE = dichloroethene

A2 & B2 = sample collected after Granular Activated Carbon System

**Data Qualifiers:**

U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

F-The analyte was positively identified but the associated numerical value is below the RL.

**Attachment 4**  
**Westbay Well Analytical Results, June 2017**

Well ID	Date Sampled	cis-1,2-DCE (cis-1,2-dichloroethene)	TCE (trichloroethene)	PCE (tetrachloroethene)	Vinyl Chloride
CS-WB01-UGR-01	6/21/2017	Dry			
CS-WB01-LGR-01	6/21/2017	<0.07	0.43F	1.20F	<0.08
CS-WB01-LGR-02	6/21/2017	<0.07	2.34	11.08	<0.08
CS-WB01-LGR-03	6/21/2017	<0.07	10.45	4.02	<0.08
CS-WB01-LGR-04	6/21/2017	<0.07	<0.05	<0.06	<0.08
CS-WB01-LGR-05	6/21/2017	1.48	<0.05	<0.06	<0.08
CS-WB01-LGR-06	6/21/2017	1.60	4.37	<0.06	<0.08
CS-WB01-LGR-07	6/21/2017	<0.07	14.11	14.07	<0.08
CS-WB01-LGR-08	6/21/2017	19.78	1.23	<0.06	<0.08
CS-WB01-LGR-09	6/21/2017	0.49F	<0.05	<0.06	1.94
CS-WB02-UGR-01	6/22/2017	port clogged			
CS-WB02-LGR-01	6/22/2017	Dry			
CS-WB02-LGR-02	6/22/2017	Dry			
CS-WB02-LGR-03	6/22/2017	<0.07	0.47F	2.93	<0.08
CS-WB02-LGR-04	6/22/2017	<0.07	4.65	2.6	<0.08
CS-WB02-LGR-05	6/22/2017	0.61F	1.66	<0.06	<0.08
CS-WB02-LGR-06	6/22/2017	0.72F	2.33	4.24	<0.08
CS-WB02-LGR-07	6/22/2017	0.59F	1.14	<0.06	<0.08
CS-WB02-LGR-08	6/22/2017	3.08	<0.05	<0.06	<0.08
CS-WB02-LGR-09	6/22/2017	<0.07	6.82	7.14	<0.08
CS-WB03-UGR-01	6/22/2017	9.56	103.64**	9356.24***	<0.08
CS-WB03-LGR-01	6/22/2017	0.54F	16.79	365.80*	<0.08
CS-WB03-LGR-02	6/22/2017	Dry			
CS-WB03-LGR-03	6/22/2017	<0.07	0.52F	3.79	<0.08
CS-WB03-LGR-04	6/22/2017	<0.07	4.9	15.87	<0.08
CS-WB03-LGR-05	6/22/2017	<0.07	2.18	13.38	<0.08
CS-WB03-LGR-06	6/22/2017	7.01	<0.05	<0.06	<0.08
CS-WB03-LGR-07	6/22/2017	2.38	5.89	2.31	<0.08
CS-WB03-LGR-08	6/22/2017	2.00	<0.05	<0.06	0.90F
CS-WB03-LGR-09	6/22/2017	<0.07	2.29	2.57	<0.08
CS-WB04-UGR-01	7/10/2017	Dry			
CS-WB04-LGR-01	7/10/2017	<0.07	<0.05	0.68F	<0.08
CS-WB04-LGR-02	7/10/2017	Dry			
CS-WB04-LGR-03	7/10/2017	<0.07	<0.05	<0.06	<0.08
CS-WB04-LGR-04	7/10/2017	0.31F	<0.05	<0.06	<0.08
CS-WB04-LGR-06	7/10/2017	3.74	12.69	16.87	<0.08
CS-WB04-LGR-07	7/10/2017	32.58	4.71	<0.06	<0.08
CS-WB04-LGR-08	7/10/2017	0.53F	1.05	0.74F	<0.08
CS-WB04-LGR-09	7/10/2017	<0.07	6.93	8.75	<0.08
CS-WB04-LGR-10	7/10/2017	<0.07	0.46F	2.02	<0.08
CS-WB04-LGR-11	7/10/2017	<0.07	<0.05	0.45F	<0.08
CS-WB04-BS-01	7/10/2017	<0.07	<0.05	<0.06	<0.08
CS-WB04-BS-02	7/10/2017	<0.07	<0.05	<0.06	<0.08
CS-WB04-CC-01	7/10/2017	1.15F	<0.05	<0.06	<0.08
CS-WB04-CC-02	7/10/2017	<0.07	<0.05	0.24F	<0.08
CS-WB04-CC-03	7/10/2017	<0.07	<0.05	0.44F	<0.08
<b>Comparison Criteria</b>					
Method Detection Limit	MDL	0.07	0.05	0.06	0.08
Reporting Limit	RL	1.2	1	1.4	1.1
Max. Contaminant Level	MCL	70	5	5	2

**Data Qualifiers**

'--' indicates the result was non-detect.

F-The analyte was positively identified but the associated numerical value is below the RL.

\* dilution of 5 run for this sample.

\*\* dilution of 50 run for this sample.

\*\*\* dilution of 200 run for this sample

All values are reported in µg/L.

<b>BOLD</b>	≥ MDL
<b>BOLD</b>	≥ RL
<b>BOLD</b>	≥ MCL



**Attachment 4**  
**Quarterly On-Post Groundwater Monitoring Analytical Results, September 2017**

Well ID	Sample Date	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Zinc	Mercury
<b>CSSA Drinking Water Well System</b>									
CS-1	9/26/2017	0.00022U	<b>0.0342</b>	0.0005U	0.001U	0.003U	0.0019U	<b>0.115J</b>	0.0001U
CS-10	9/26/2017	0.00022U	<b>0.0351</b>	0.0005U	0.001U	0.003U	0.0019U	<b>0.353J</b>	0.0001U
CS-12	9/26/2017	0.00022U	<b>0.0298</b>	0.0005U	0.001U	<b>0.008F</b>	0.0019U	<b>0.059J</b>	0.0001U
CS-12 FD	9/26/2017	0.00022U	<b>0.0297</b>	0.0005U	0.001U	<b>0.006F</b>	0.0019U	<b>0.083J</b>	0.0001U
CS-13	9/25/2017	0.00022U	<b>0.0287</b>	0.0005U	0.001U	0.003U	0.0019U	<b>0.378</b>	0.0001U
<b>Comparison Criteria</b>									
<b>Method Detection Limit (MDL)</b>		<b>0.00022</b>	<b>0.0003</b>	<b>0.0005</b>	<b>0.001</b>	<b>0.003</b>	<b>0.0019</b>	<b>0.008</b>	<b>0.0001</b>
<b>Reporting Limit (RL)</b>		<b>0.03</b>	<b>0.005</b>	<b>0.007</b>	<b>0.01</b>	<b>0.01</b>	<b>0.025</b>	<b>0.05</b>	<b>0.001</b>
<b>Max. Contaminant Level (MCL)</b>		<b>0.01</b>	<b>2</b>	<b>0.005</b>	<b>0.1</b>	<b>AL=1.3</b>	<b>AL=0.015</b>	<b>SS=5.0</b>	<b>0.002</b>

Well ID	Sample Date	cis-1,2-DCE	PCE	TCE	Vinyl Chloride
CS-MW37-LGR	9/22/2017	0.07U	0.06U	0.05U	0.08U

**Attachment 4**  
**Quarterly On-Post Groundwater Monitoring Analytical Results, September 2017**

CSSA Drinking Water Well System					
CS-1	9/26/2017	0.07U	0.06U	0.05U	0.08U
CS-10	9/26/2017	0.07U	0.06U	0.05U	0.08U
CS-12	9/26/2017	0.07U	0.06U	0.05U	0.08U
CS-12 FD	9/26/2017	0.07U	0.06U	0.05U	0.08U
CS-13	9/25/2017	0.07U	0.06U	0.05U	0.08U
Comparison Criteria					
Method Detection Limit (MDL)		0.07	0.06	0.05	0.08
Reporting Limit (RL)		1.2	1.4	1	1.1
Max. Contaminant Level (MCL)		70	5	5	2

<b>BOLD</b>	= Above the MDL
<b>BOLD</b>	= Above the RL
<b>BOLD</b>	= Above the MCL

All samples were analyzed by APPL, Inc.

VOC data reported in ug/L & metals data reported in mg/L.

**Abbreviations/Notes:**

FD	Field Duplicate
TCE	Trichloroethene
PCE	Tetrachloroethene
DCE	Dichloroethene
AL	Action Level
SS	Secondary Standard

**Data Qualifiers:**

U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

F-The analyte was positively identified but the associated numerical value is below the RL.

J - Analyte detected, concentration estimated.

NA - data not available

**Attachment 4**  
**September 2017 Quarterly Off-post Groundwater Analytical Results**

Well ID	Sample Date	cis-1,2-DCE	PCE	TCE	Vinyl Chloride
BSR-04	9/20/2017	0.07U	0.06U	0.05U	0.08U
HS-1	9/20/2017	0.07U	0.06U	0.05U	0.08U
LS-5	9/21/2017	0.07U	<b>0.99F</b>	<b>2.85</b>	0.08U
LS-5-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
LS-6	9/21/2017	0.07U	0.06U	<b>1.65</b>	0.08U
LS-6-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
LS-7	9/21/2017	0.07U	<b>1.60</b>	<b>0.50F</b>	0.08U
LS-7 FD	9/21/2017	0.07U	<b>1.79</b>	0.05U	0.08U
LS-7-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
OFR-3	9/27/2017	0.07U	<b>3.69</b>	<b>2.06</b>	0.08U
OFR-3-A2	9/27/2017	0.07U	0.06U	0.05U	0.08U
RFR-10	9/21/2017	<b>0.35F</b>	<b>17.63</b>	<b>11.03</b>	0.08U
RFR-10-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
RFR-10-B2	9/21/2017	0.07U	0.06U	0.05U	0.08U
RFR-11	9/21/2017	0.07U	<b>0.68F</b>	<b>2.12</b>	0.08U
RFR-11-A2	9/21/2017	0.07U	0.06U	0.05U	0.08U
<b>Laboratory Detection Limits &amp; Maximum Contaminant Level</b>					
<b>Method Detection Limit (MDL)</b>		<b>0.07</b>	<b>0.06</b>	<b>0.05</b>	<b>0.08</b>
<b>Reporting Limit (RL)</b>		<b>1.2</b>	<b>1.4</b>	<b>1</b>	<b>1.1</b>
<b>Max. Contaminant Level (MCL)</b>		<b>70</b>	<b>5</b>	<b>5</b>	<b>2</b>

<b>BOLD</b>	≥ MDL
<b>BOLD</b>	≥ RL
<b>BOLD</b>	≥ MCL

All samples were analyzed by APPL, Inc.  
VOC data reported in ug/L.

**Abbreviations/Notes:**

FD = field duplicate

TCE = trichloroethene

PCE = tetrachloroethene

DCE = dichloroethene

A2 & B2 = sample collected after Granular Activated Carbon System

**Data Qualifiers:**

U-The analyte was analyzed for, but not detected. The associated numerical value is at or below the MDL.

F-The analyte was positively identified but the associated numerical value is below the RL.