RELEASE INVESTIGATION REPORT

RANGE MANAGEMENT UNIT 3
CAMP STANLEY STORAGE ACTIVITY

Prepared for:

Camp Stanley Storage Activity
Boerne, Texas

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EXECUTIVE SUMMARY

Range Management Unit (RMU) 3 is approximately 3.2 acres and is located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary. It was reportedly used as a rifle range from the 1940s to the 1950s. Work performed at the site included environmental sampling, the removal and proper disposal of soil containing contaminants above Tier 1 protective concentration levels (PCLs), and proper documentation of all activities, including preparation of this Release Investigation Report (RIR). This RIR requests No Further Action (NFA) at RMU-3.

In summary, activities at RMU-3, as described in this RIR, showed the following results:

- Excavation, removal, and confirmation sampling were performed at RMU-3.
- The contaminant of concern (COC) identified above soil background concentrations at RMU-3 was lead. Areas of contamination exceeding Tier 1 PCLs have been excavated and removed from the site.

As presented in this report, the results of the investigation at RMU-3 meet the three criteria as described in the Texas Commission on Environmental Quality (TCEQ) (2003) guidance *Determining Which Releases are Subject to* Texas Risk Reduction Program (TRRP). Thus, the following three criteria were met:

- Soil found to have a COC concentrations above the Tier 1 PCLs were excavated from the site.
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at RMU-3. Soil that was found to have concentrations above Tier 1 PCLs was excavated and removed, so there will be no future impact to groundwater, surface water, or sediment from RMU-3.
- RMU-3 passes the Tier 1 Ecological Exclusion Criteria Checklist (**Appendix B**).

Because these three criteria are met, RMU-3 is not subject to TRRP. Therefore, this RIR has been prepared to document the results and to request an NFA decision from TCEQ.

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ACRONYMS AND ABBREVIATIONS

AOC	Area of Concern
APPL	Agriculture & Priority Pollutants Laboratory, Inc.
BS	Bexar Shale
BTOC	below top of casing
CC	Cow Creek
COC	contaminant of concern
CSSA	Camp Stanley Storage Activity
CY	cubic yard
DQO	Data Quality Objective
EE	Environmental Encyclopedia
FSP	Field Sampling Plan
ft	feet
$^{GW}Soil_{Ing}$	soil to groundwater ingestion pathway (PCL)
IM	Interim Measures
LGR	Lower Glen Rose
MCL	maximum contaminant level
mg/kg	milligrams per kilogram
MQL	method quantification limit
NFA	No Further Action
PCL	protective concentration level
QA	Quality Assurance
QAPP	Quality Assurance Project Plan
QC	Quality Control
RCRA	Resource Conservation and Recovery Act
RFI	RCRA Facility Investigation
RIR	Release Investigation Report
RMU	Range Management Unit
SAP	Sampling and Analysis Plan
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAC	Texas Administrative Code
TCEQ	Texas Commission on Environmental Quality
TCLP	toxicity characteristic leaching procedure
$^{Tot}Soil_{Comb}$	total soil combined pathway (PCL)
TRRP	Texas Risk Reduction Program

ACRONYMS AND ABBREVIATIONS *(continued)*

UGR	Upper Glen Rose
USEPA	United States Environmental Protection Agency
VOC	volatile organic compound
WMP	Waste Management Plan
XRF	x-ray fluorescence

1.0 INTRODUCTION

Parsons is under contract to provide investigations and environmental services for waste sites located at Camp Stanley Storage Activity (CSSA) in Boerne, Texas (**Figure 1**). This contract includes characterization of selected waste disposal sites and preparation of appropriate documentation, including a Release Investigation Report (RIR) for Range Management Unit (RMU) 3 (**Figure 2**). RMU-3 is an approximately 3.2-acre site located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary. This work was performed in accordance with requirements of the Resource Conservation and Recovery Act (RCRA) 3008(h) Order in effect for CSSA and in accordance with 30 Texas Administrative Code (TAC) §350, the Texas Risk Reduction Program (TRRP) of the Texas Commission on Environmental Quality (TCEQ). This RIR was prepared following TCEQ reporting and documentation requirements for releases that do not trigger applicability to the TRRP rule.

This report describes environmental investigation activities at RMU-3. Work included x-ray fluorescence (XRF) analysis of soils; environmental sampling; excavation and removal of impacted soil; waste characterization and confirmatory sampling and analysis; and proper documentation of all activities, including preparation of this closure report. All work was performed according to applicable federal, state, and local rules and regulations.

For this report, Section 1 provides the introduction and the documentation to support this RIR. Section 2 provides historical background information for CSSA and for RMU-3. Section 3 describes the objectives and rationale for preparing an RIR for RMU-3 and the findings from environmental investigations for the site. The groundwater and surface water for CSSA and the area near RMU-3 are also described in Section 3. Section 4 summarizes the findings from completing the Tier 1 Ecological Exclusion Criteria Checklist, which is included as Appendix B. Section 5 summarizes the overall findings and recommendations for the site. All figures and tables are provided at the end of this RIR (pages 9 through 16). References cited in this report can be found in the CSSA Environmental Encyclopedia (EE) (Volume 1-1, Bibliography) at www.stanley.army.mil.

2.0 HISTORICAL BACKGROUND

2.1 CAMP STANLEY STORAGE ACTIVITY

Camp Stanley Storage Activity is located in northwestern Bexar County, about 19 miles northwest of downtown San Antonio. The installation consists of approximately 4,004 acres immediately east of Ralph Fair Road, and approximately 0.5 mile east of Interstate Highway 10 (Figure 1). Camp Bullis borders CSSA on the north, east, and south.

The land where CSSA is located was used for ranching and agriculture until the 1900s. During 1906 and 1907, six tracts of land were purchased by the U.S. Government and designated the Leon Springs Military Reservation. The land included campgrounds and cavalry shelters.

In October 1917, the installation was re-designated Camp Stanley. Extensive construction was started during World War I to provide housing for temporary cantonments and support facilities. In 1931, the installation was selected as an ammunition depot, and construction of standard magazines and igloo magazines began in 1938. Land was also used to test, fire and overhaul ammunition components. As a result of these historic activities, CSSA has several historical waste sites, including Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), and RMUs.

The present mission of CSSA is the receipt, storage, issue, and maintenance of ordnance as well as quality assurance testing and maintenance of military weapons and ammunition. Because of its mission, CSSA has been designated a restricted access facility. No changes to the CSSA mission and/or military activities are expected in the future.

2.2 RMU-3

2.2.1 Overview

RMU-3 was reportedly used as a rifle range. Based on the review of historical photos, the dates of its usage are estimated to be during the 1950s and potentially earlier. A series of historical aerial photos of the site are shown on **Figure 3** and photographs showing investigation and excavation activities at the site are provided in **Appendix A**. The analytical results for contaminants of concern (COCs) detected at the site are discussed in Section 3.1.

2.2.2 Setting, Size, and Description

The approximately 3.2-acre site is located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary (Figure 1). Additional background information on RMU-3 can be found in the CSSA Environmental Encyclopedia, Volume 3-2.

2.2.3 Potential Contaminant Sources and Chemicals of Concern

Reported historical use as a rifle range prompted initial investigations at the site. Review of historic aerial photographs showed a disturbed area in the lower left portion of a 1957 photo that may indicate the location of a firing point toward a berm (see Figure 3). The COC at RMU-3 is lead.

3.0 OBJECTIVES OF RIR FOR RMU-3

In accordance with TCEQ (2003) guidance, *Determining Which Releases are Subject to TRRP* (www.tceq.state.tx.us/assets/public/remediation/trrp/releasesTRRPrev.pdf), an RIR can be prepared for a site when results of an investigation lead to the following conclusions:

- Concentrations of chemicals detected at the site do not exceed Tier 1 residential soil action levels;
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at the site; and
- The site passes the Tier 1 Ecological Exclusion Criteria Checklist (the completed checklist is provided in **Appendix B**).

When these three criteria are met for a site, the release is not subject to TRRP. For such a site, an RIR can be submitted to the TCEQ and a No Further Action (NFA) decision can be requested.

As referred to in the criteria listed above, the Tier 1 residential soil action levels are provided by TCEQ (2010) and were selected following TCEQ guidance (TCEQ, 2007). These action levels are referred to as protective concentration levels (PCLs) and are selected for each chemical detected at the site (*i.e.*, COCs). The PCLs are based on the general size of the site, which is also referred to as the "source area" size. The source area is either assumed to be 0.5 acre if the site is less than 0.5 acre in size, or assumed to be 30 acres if the site is larger than 0.5 acre. Thus, the soil action levels for RMU-3 are based on a 30-acre source area, since the size of the site is approximately 3.2 acres. The TRRP Tier 1 PCL identified for this investigation is defined as the lowest value among the following: 1) the TRRP Tier 1 Residential 30-acre PCL for total soil combined ($^{Tot}Soil_{Comb}$); 2) the TRRP Tier 1 Residential 30-acre PCL for groundwater protection ($^{GW}Soil_{Ing}$); and 3) the TCEQ Ecological Benchmark for Soil. If the lowest of these three values is less than the CSSA soil background value, the soil background value becomes the Tier 1 PCL.

Also based on the TCEQ guidance, if the background level or the method quantification limit (MQL) is a higher concentration than the PCL, then the higher of the background or MQL is used as the action level. Based on the metals that are most common to past activities at CSSA, TCEQ has approved background concentrations for nine CSSA metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc) (Parsons, 2002). The statistically calculated and TCEQ-approved background metal concentrations are shown in the analytical summary table (**Table 1**) and are also available in the CSSA EE (Volume 2, Background Metals Levels). It is noted that the action levels/PCLs for five of the nine metals are based on the CSSA background concentrations (these five metals are arsenic, barium, cadmium, lead, and mercury).

3.1 RMU-3 FIELD ACTIVITIES AND INVESTIGATIONS

Previous investigations at RMU-3 include conducting an XRF survey and surface/subsurface soil sampling. The XRF survey was conducted in December 2010 (RMU3-XRF-01 through

RMU3-XRF-80) and indicated lead contamination at concentrations exceeding Tier 1 PCLs as shown on **Figure 4**. In February 2011, ten surface soil samples (RMU3-SS01 through RMU3-SS10) were collected and analyzed for CSSA 9 metals. Two of the samples (RMU3-SS01 and RMU3-SS09) exceeded the Tier 1 PCL for lead of 84.5 milligrams per kilogram (mg/kg). Sixteen additional surface and subsurface samples were collected in January 2012 (RMU3-SS11 through RMU-SS23). Eight of these samples exceeded the PCL for lead and were used to define the vertical and horizontal extent of contamination. Lead concentrations in the samples that exceeded the Tier 1 PCL ranged from 110 mg/kg to 990 mg/kg.

A summary of soil sampling results at the site are shown in Table 1 (detected compounds only) and **Appendix C** (all analytes), and the confirmation soil sampling locations are shown on **Figure 5** and **Figure 6**. Waste characterization results for samples collected from stockpiled soil excavated as part of this effort are shown in **Appendix F**. The data verification summary report for the sampling and analytical results is provided in **Appendix D**. Sample locations for soils remaining at the site, and clearance areas where soils were excavated and removed are shown on Figure 5. Waste characterization sampling is described in Section 3.1.4. Additional information about past activities and investigations at the sites can be found in the CSSA EE (Volume 3-2, RMU-3).

3.1.1 Sampling and Analytical Procedures

For all sampling and analytical activities at CSSA, Parsons follows TCEQ-approved Quality Assurance (QA) and Quality Control (QC) procedures as described in the post-wide CSSA Quality Assurance Project Plan (QAPP) which can be found in the CSSA EE (Volume 1-4, Sampling and Analysis Plan). The detailed CSSA QAPP presents specific policies, organization, functions, and QA/QC requirements for environmental programs at CSSA, including TCEQ-approved analytical methods, reporting limits, and QA/QC procedures.

The CSSA QAPP: (1) was prepared for use by contractors that perform environmental services at CSSA to ensure that the data are scientifically valid and defensible; (2) establishes the analytical protocols and documentation requirements to ensure that the samples are collected and analyzed, and that the data are reviewed and validated in a specified manner; and (3) provides detailed guidance for using the Data Quality Objective (DQO) process for specific investigations. The CSSA QAPP and delivery/task order specific Field Sampling Plans (FSP) constitute the CSSA Sampling and Analysis Plan (SAP). The SAP defines data quality for a specific project. Information regarding post-wide and site-specific plans and TCEQ correspondence can be found in the CSSA EE (Volume1-1, Correspondence).

Following the CSSA-specific plans, the investigative soil analyses for RMU-3 were performed using U.S. Environmental Protection Agency (USEPA) *Test Methods for Evaluating Solid Waste* (SW-846): Method 6010 (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, and zinc). Prior to soil/waste disposal, waste characterization samples were collected from the excavated material and analyzed for toxicity characteristic leaching procedure

(TCLP) metals (Methods SW1311/6010B and SW1311/7470A). All samples were sent to Agriculture & Priority Pollutants Laboratory, Inc. (APPL) for analysis.

3.1.3 Excavation, Removal, and Confirmation Sampling at RMU-3

The excavation of contaminated soils began on December 10, 2012 and resulted in the removal of approximately 4,000 cubic yards (CY) of soil in total. The progression of the excavations and associated confirmation sample locations at RMU-3 are shown on Figure 5. The first round of confirmation samples (RMU3-SS24 through RMU3-SS36) were collected from the excavation footprint on December 17, 2012 (Table 1), and XRF samples were collected in late January 2013 to support the excavation effort. Additional excavation began on February 4, 2013 to remove the road portion of the site and to address previously excavated areas that required additional soil removal (Figure 5, middle and right panels). Confirmation sampling on the newly-excavated areas began on February 6, 2013 with the last sample collected on Feburary 26, 2013 (RMU3-SS37 through RMU3-SS40). The final extent of excavation and confirmation sample locations are shown on Figure 6.

3.1.4 Waste Characterization and Off-Post Disposal Activities

Waste characterization efforts were performed in accordance with requirements of CSSA's *RCRA Facility Investigation (RFI) and Interim Measures (IM) Waste Management Plan (WMP) – Revised*, dated May 2006 (approved by TCEQ in August 2006) and the RFI/IM WMP Addendum for RMU-3, dated November 2012.

Excavated material was stockpiled within the staging area for waste characterization. Stockpiled soil which was considered hazardous after waste characterization was also treated with Phosphate Induced Metal Stabilization (PIMS). All treated soil was mixed with PIMS at a ratio of 20,000 pounds PIMS to 200 CY soil. Results of final waste characterization showed that the impacted and treated soil media from RMU-3 met State of Texas Class 2 non-hazardous criteria (30 TAC §335 Subchapter R). Approximately 4,000 CY of excavated soil was moved to the East Pasture berm for reuse, as per TCEQ approval December 20, 2010 (**Appendix E**).

3.2 GEOLOGY/HYDROGEOLOGY

Based on the sampling results and the geological and hydrogeological characteristics of the site, surface water and groundwater have not been affected by historical activities at RMU-3 A description of the geology and hydrogeology of the area is provided below. Additional information on geology, hydrology and physiography at CSSA are also available in the CSSA EE (Volume 1-1, Background Information Report).

3.2.1 CSSA Geology/Hydrogeology

The Lower Glen Rose (LGR) is the uppermost geologic stratum in the CSSA area. The LGR is a massive, fossiliferous, vuggy limestone that grades upward into thin beds of limestone, marl,

and shale. The LGR is approximately 300-330 ft thick in the CSSA area and is underlain by the Bexar Shale (BS) facies of the Hensell Sand, which is estimated to be from 60 to 150 ft thick under the CSSA area. The BS consists of silty dolomite, marl, calcareous shale, and shaley limestone. The geologic strata dip approximately 1 to 2 degrees to the south-southeast at CSSA.

The uppermost hydrogeologic layer at CSSA is the unconfined Upper Trinity aquifer, which consists of the Upper Glen Rose (UGR) Limestone. Locally at CSSA, very low-yielding perched zones of groundwater can exist in the UGR; however, it is very sporadic and seasonal. Transmissivity values are not available for the UGR. Regionally, groundwater flow is thought to be enhanced along the bedding contacts between marl and limestone; however, the hydraulic conductivity between beds is thought to be poor. This interpretation is based on the observation of discordant static water levels in adjacent wells completed in different beds. Principal development of solution channels is limited to evaporite layers in the UGR Limestone.

The Middle Trinity aquifer functions as the primary source of groundwater at CSSA. It consists of the LGR Limestone, the BS, and the Cow Creek (CC) Limestone. The LGR Limestone outcrops north of CSSA, along Cibolo Creek, and within the central and southwestern portions of CSSA. As such, principal recharge into the Middle Trinity aquifer is via precipitation infiltration at outcrops and along creek beds during flood events. At CSSA, the BS is interpreted as a confining layer, except where it is fractured and faulted, allowing vertical flow from the up-dip CC Limestone into the overlying, down-dip LGR. Fractures and faults within the BS may allow hydraulic communication between the LGR and CC Limestones. Regional groundwater flow within the Middle Trinity aquifer is toward the south and southeast and the average transmissivity coefficient is 1,700 gallons per day per ft (CSSA EE, Volume 5, Hydrogeologic Report). In general, groundwater at CSSA flows in a northeast to southwest direction. However, local flow gradient may vary depending on rainfall, recharge, and possibly well pumping.

3.2.2 RMU-3 Groundwater and Surface Water

No site-specific information regarding groundwater is available for RMU-3. The closest wells to the site include CS-MW2-CC and CS-MW2-LGR (both approximately 490 feet to the north-northwest), CS-MW4-LGR (668 feet to the south), and CS-MW5-LGR (775 feet to the northeast). Of these three wells, CS-MW2-LGR has the most water level data. Between April 1996 and March 2013, measured water levels at CS-MW2-LGR have ranged from 61 ft below top of casing (BTOC) (September 2007) to 283 ft BTOC (March 2009). Concentrations of volatile organic compounds (VOCs) detected in CS-MW2-LGR prior to 2002 were attributed to contaminated groundwater from the SWMU B-3 bioreactor plume. The well was upgraded in 2002 and since then, VOC concentrations in the well have been at trace or non-detect levels.

The closest surface water body to RMU-3 is Salado Creek located approximately 240 ft west of the site (**Figure 7**). The north-south trending creek exits the CSSA boundary approximately 7,854 ft south-southeast of the site. As all the lead contamination above Tier 1 PCLs has been removed from the soil, no significant degradation of high quality receiving waters is anticipated from RMU-3.

4.0 TIER 1 ECOLOGICAL EXCLUSION CRITERIA CHECKLIST

In accordance with TCEQ (2003) guidance, an RIR is submitted when the results of an investigation lead to a conclusion that COCs do not exceed Tier 1 residential soil action levels and there is no evidence of other affected media. The site must also pass the Tier 1 Ecological Exclusion Criteria Checklist. The checklist must be completed as part of the RIR for a site. The completed checklist is provided in Appendix B. Results show that the site passes the checklist and that there are no ecological exposure pathways of concern at RMU-3. Thus, based on the absence of any complete or significant ecological exposure pathways, RMU-3 may be excluded from further ecological assessment.

5.0 SUMMARY AND RECOMMENDATIONS

RMU-3 is located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary. The approximately 3.2-acre site was reportedly used as a rifle range during the 1950s (as can be seen in historic photos) and potentially earlier.

In summary, activities at RMU-3 as described in this RIR showed the following results:

- Excavation, removal, and confirmation sampling were performed at RMU-3.
- The contaminant of concern (COC) identified above soil background concentrations at RMU-3 was lead. Areas of contamination exceeding Tier 1 PCLs have been excavated and removed from the site.
- Approximately 4,000 CY of soil were excavated from the site and managed at the East Pasture berm. Approximately 200 CY were treated with PIMs prior to their transfer to the East Pasture berm.
- Confirmation samples were collected from the excavation footprint and surrounding soils, and all waste had been removed.

From information presented in this report, the results of the investigation at RMU-3 meet the three criteria as described in TCEQ's (2003) guidance *Determining Which Releases are Subject to* TRRP. Thus, the following three criteria were met:

- Soils found to have COC concentrations above Tier 1 PCLs were excavated from the site;
- There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at RMU-3. Soil that was found to have concentrations above Tier 1 PCLs was excavated and removed, so there will be no future impact to groundwater, surface water, or sediment from RMU-3; and
- RMU-3 passes the Tier 1 Ecological Exclusion Criteria Checklist (Appendix B).

Because these three criteria are met, RMU-3 is not subject to TRRP. Therefore, this RIR has been prepared to document the results and to request an NFA decision from the TCEQ.

TABLES AND FIGURES

Table 1. Summary of Chemical Constituents Detected in Soils at RMU-3

	Metals																																	
	Arsenic CAS: 7440-38-2	Qualifier	Dilution	Barium CAS: 7440-39-3	Qualifier	Dilution	Chromium CAS: 7440-47-3	Qualifier	Dilution	Copper CAS: 7440-50-8	Qualifier	Dilution	Lead CAS: 7439-92-1	Qualifier	Dilution	Mercury CAS: 7439-97-6	Qualifier	Dilution	Nickel CAS: 7440-02-0	Qualifier	Dilution	Zinc CAS: 7440-66-6	Qualifier	Dilution
Tier 1 Soil PCLs - 30 acre †																								
Residential Combined Exposure[1]	2.40E+01	n		8.10E+03	n		2.70E+04	n		5.50E+02	n		5.00E+02	n		2.10E+00	n		8.40E+02	n		9.90E+03	n	
Residential Groundwater Exposure[2]	2.50E+00	m	>S	2.20E+02	m	>S	**1.20E+03**	m	>S	**5.20E+02**	a	>S	1.50E+00	a	>S	3.90E-03	m		**7.90E+01**	n	>S	**1.20E+03**	n	>S
TCEQ-Approved Background Values																								
CSSA 9 Metals Background Concentration[3]	**19.6**	††		**300**	†††		40.2	††		23.2	††		**84.5**	††		**0.77**	††		35.5	††		73.2	††	
Sample Locations (Date Collected)																								
RMU3-SS01 (24-Feb-2011) **Excavated**	**1.7**	F	1	**12**		1	**3.6**	F	1	**6.5**		1	**230**		1	**0.040**	F	1	**4.3**		1	**7.8**		1
RMU3-SS02 (24-Feb-2011)	**0.40**	F	1	**10**		1	**2.5**	F	1	**7.8**		1	**31**		1	**0.020**	F	1	**2.6**		1	**8.1**		1
RMU3-SS03 (24-Feb-2011)	**1.2**	F	1	**14**		1	**3.0**	F	1	**27**		1	**75**		1	**0.040**	F	1	**4.1**		1	**18**		1
RMU3-SS04 (24-Feb-2011)	**2.0**	F	1	**12**		1	**3.1**	F	1	**8.8**		1	**16**		1	**0.020**	F	1	**3.9**		1	**7.5**		1
RMU3-SS05 (24-Feb-2011)	**1.9**	F	1	**29**		1	**6.2**	F	1	**13**		1	**45**		1	**0.040**	F	1	**5.6**		1	**15**		1
RMU3-SS05-DUP (24-Feb-2011)	**1.7**	F	1	**29**		1	**6.2**	F	1	**12**		1	**49**		1	**0.040**	F	1	**5.6**		1	**14**		1
RMU3-SS06 (24-Feb-2011)	**1.0**	M	1	**13**	M	1	**2.7**	M	1	**39**	M	1	**28**	M	1	**0.040**	F	1	**4.0**	M	1	**19**	M	1
RMU3-SS07 (24-Feb-2011)	**1.5**	F	1	**12**		1	**3.0**	F	1	**11**		1	**33**		1	**0.030**	F	1	**4.0**		1	**8.6**		1
RMU3-SS08 (24-Feb-2011)	**1.7**	F	1	**27**		1	**5.7**	F	1	**11**		1	**76**		1	**0.050**	F	1	**5.4**		1	**13**		1
RMU3-SS09 (24-Feb-2011) **Excavated**	**1.4**	F	1	**17**		1	**4.7**	F	1	**16**		1	**110**		1	**0.050**	F	1	**5.7**		1	**20**		1
RMU3-SS10 (24-Feb-2011)	**1.4**	F	1	**19**		1	**4.1**	F	1	**14**		1	**69**		1	**0.060**	F	1	**5.7**		1	**12**		1
RMU3-SS11 (03-Jan-2012)	--			--			--			--			**51**		1	--			--			--		
RMU3-SS12(0-0.5) (03-Jan-2012) **Excavated**	--			--			--			--			**3,100**		50	--			--			--		
RMU3-SS12(1-1.5) (10-Jan-2012) **Excavated**	--			--			--			--			**780**		1	--			--			--		
RMU3-SS13(0-0.5) (03-Jan-2012) **Excavated**	--			--			--			--			**990**		10	--			--			--		
RMU3-SS13(1-1.5) (10-Jan-2012) **Excavated**	--			--			--			--			**390**		1	--			--			--		
RMU3-SS13 (11-Jan-2012) **Excavated**	--			--			--			--			**230**		1	--			--			--		
RMU3-SS14 (03-Jan-2012) **Excavated**	--			--			--			--			**67**		1	--			--			--		
RMU3-SS15 (03-Jan-2012)	--			--			--			--			**56**		1	--			--			--		
RMU3-SS15-DUP (03-Jan-2012)	--			--			--			--			**63**		1	--			--			--		
RMU3-SS16 (03-Jan-2012) **Excavated**	--			--			--			--			**140**		1	--			--			--		
RMU3-SS17 (03-Jan-2012)	--			--			--			--			**21**		1	--			--			--		
RMU3-SS18 (03-Jan-2012)	--			--			--			--			**51**		1	--			--			--		
RMU3-SS19 (03-Jan-2012) **Excavated**	--			--			--			--			**86**		1	--			--			--		
RMU3-SS20 (03-Jan-2012) **Excavated**	--			--			--			--			**130**		1	--			--			--		
RMU3-SS20-DUP (03-Jan-2012) **Excavated**	--			--			--			--			**130**		1	--			--			--		
RMU3-SS21 (03-Jan-2012) **Excavated**	--			--			--			--			**98**		1	--			--			--		
RMU3-SS22 (03-Jan-2012)	--			--			--			--			**14**		1	--			--			--		
RMU3-SS23 (03-Jan-2012)	--			--			--			--			**81**		1	--			--			--		
RMU3-SS24 (18-Dec-2012)	--			--			--			--			**37**	M	1	--			--			--		
RMU3-SS25 (18-Dec-2012)	--			--			--			--			**35**	M	1	--			--			--		
RMU3-SS26 (18-Dec-2012)	--			--			--			--			**62**	M	1	--			--			--		
RMU3-SS27 (18-Dec-2012)	--			--			--			--			**72**	M	1	--			--			--		
RMU3-SS28 (18-Dec-2012) **Excavated**	--			--			--			--			**96**	M	1	--			--			--		
RMU3-SS29 (19-Dec-2012)	--			--			--			--			**37**	M	1	--			--			--		
RMU3-SS30 (19-Dec-2012)	--			--			--			--			**24**	M	1	--			--			--		
RMU3-SS31 (19-Dec-2012)	--			--			--			--			**6.0**	M	1	--			--			--		
RMU3-SS32 (19-Dec-2012)	--			--			--			--			**33**	M	1	--			--			--		
RMU3-SS33 (19-Dec-2012)	--			--			--			--			**20**	M	1	--			--			--		
RMU3-SS34 (19-Dec-2012) **Excavated**	--			--			--			--			**210**	M	1	--			--			--		
RMU3-SS35 (19-Dec-2012)	--			--			--			--			**11**	M	1	--			--			--		
RMU3-SS35-DUP (19-Dec-2012)	--			--			--			--			**11**	M	1	--			--			--		
RMU3-SS36 (19-Dec-2012)	--			--			--			--			**15**	M	1	--			--			--		
RMU3-SS36-DUP (19-Dec-2012)	--			--			--			--			**11**	M	1	--			--			--		
RMU3-SS37 (06-Feb-2013)	--			--			--			--			**15**		1	--			--			--		
RMU3-SS38 (26-Feb-2013)	--			--			--			--			**51**		1	--			--			--		
RMU3-SS39 (06-Feb-2013)	--			--			--			--			**3.1**	F	1	--			--			--		
RMU3-SS40 (06-Feb-2013)	--			--			--			--			**24**		1	--			--			--		

NOTES:

† TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: June 29, 2012).

†† CSSA Soil Background Concentrations. Second Revision, Evaluation of Background Metals Concentrations in Soils and Bedrock at CSSA. February 2002. Values from Table 3.3.

††† Texas-Specific median background concentration.

PCLs and CSSA background values coded in this table as [1, 2, 3].

[1] $^{tot}Soil_{comb}$ = PCL for COPC in soil for a 30 acre source area and a potential future resident (combined exposure for ingestion, dermal contact, inhalation of volatiles and particulates, and ingestion of above-ground and below-ground vegetables).

[2] $^{GW}Soil_{ing}$ = PCL for COPC in soil for a 30 acre source area and a potential future resident (soil-to-groundwater leaching of COPC to Class 1 and 2 groundwater).

[3] CSSA Soil Background Concentrations.

PCLs are shown in **blue** font.

All values are measured in milligrams per kilogram (mg/Kg) unless otherwise noted.

c = carcinogenic.

n = noncarcinogenic.

m = primary MCL-based.

a = EPA Action Level-based.

>S = solubility limit exceeded during calculation.

na = not applicable.

QA NOTES AND DATA QUALIFIERS:

(NO CODE) - Confirmed identification.

F - Analyte was positively identified, but the quantitation is an estimation above the MDL and below the Reporting Limit (RL).

M = Concentration is estimated due to a matrix effect.

Values shown in **BOLD** indicate detections above the MDL.

Values **HIGHLIGHTED** indicate detections above the PCL.

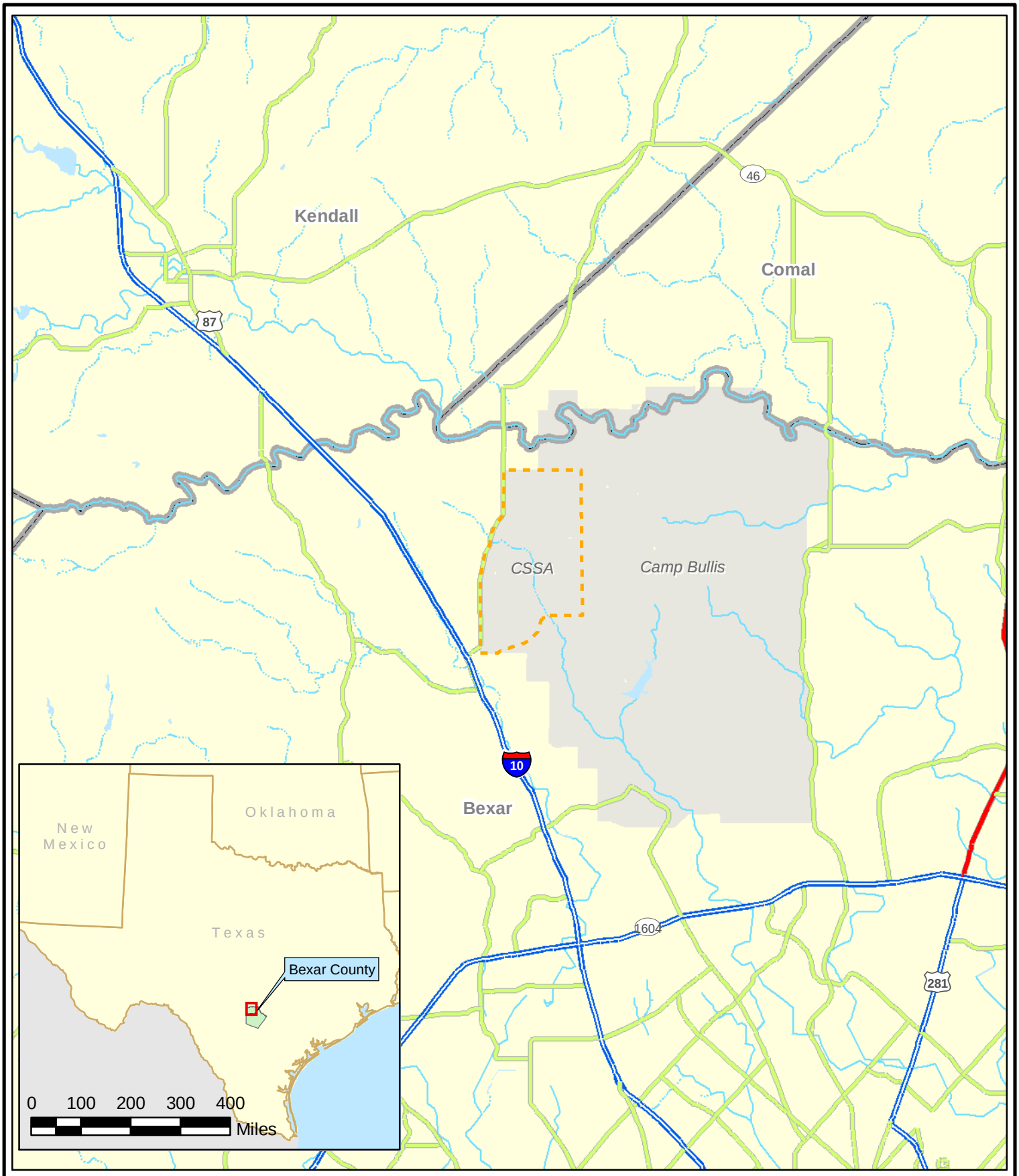
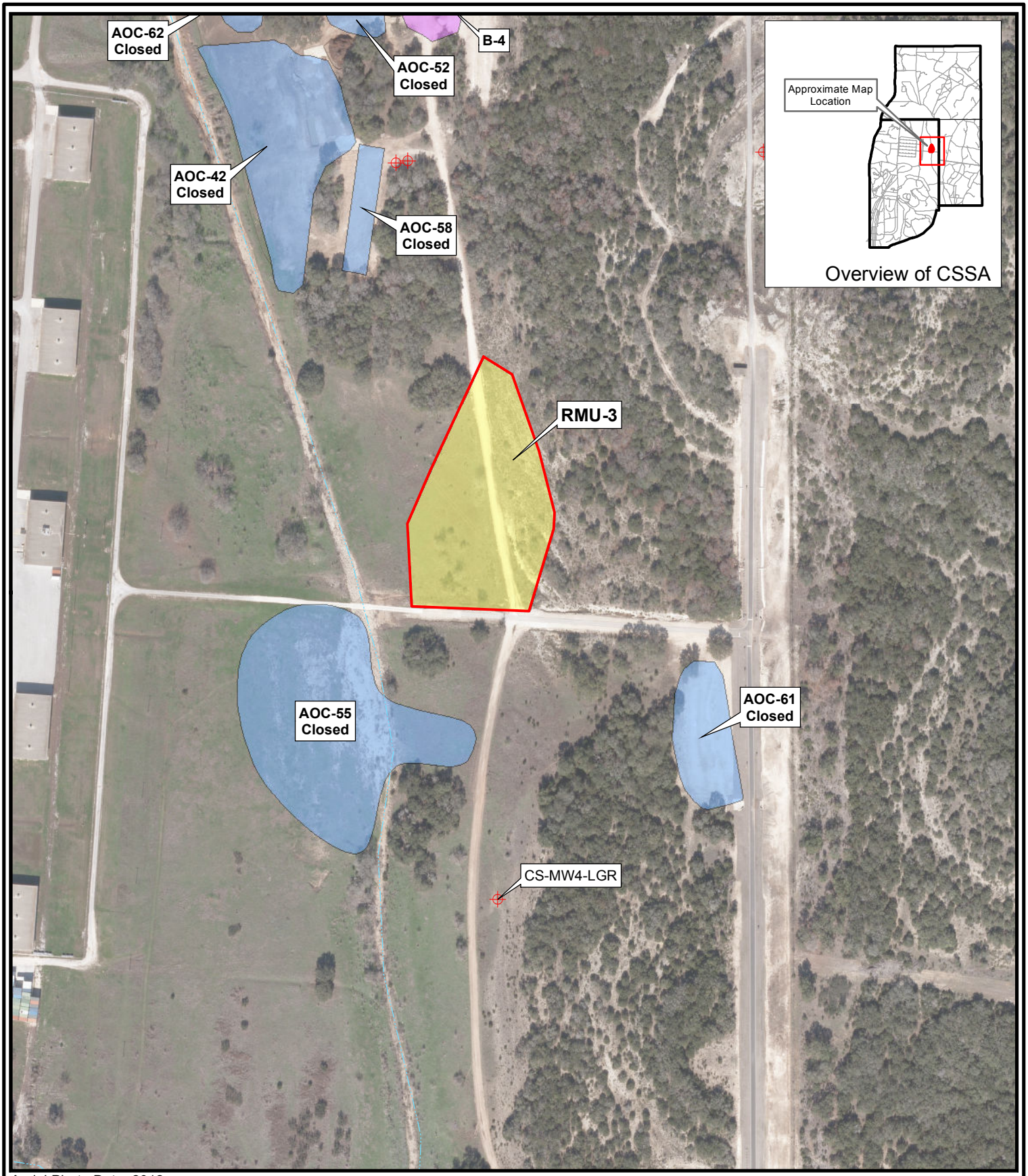


Figure 1

CSSA Location Map
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\Non Site Specific\Maps\cssa_site_location_zoom.mxd - 2/22/2011 @ 3:58:15 PM



Aerial Photo Date: 2012

N
W E
S

RMU-3 Boundary
Well Location
AOC Boundary
SWMU Boundary
RMU Boundary

300 150 0 300 Feet

Figure 2

RMU-3
Site Location Map
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\RMU3\Maps\RMU-3_RIR_site_location_map.mxd

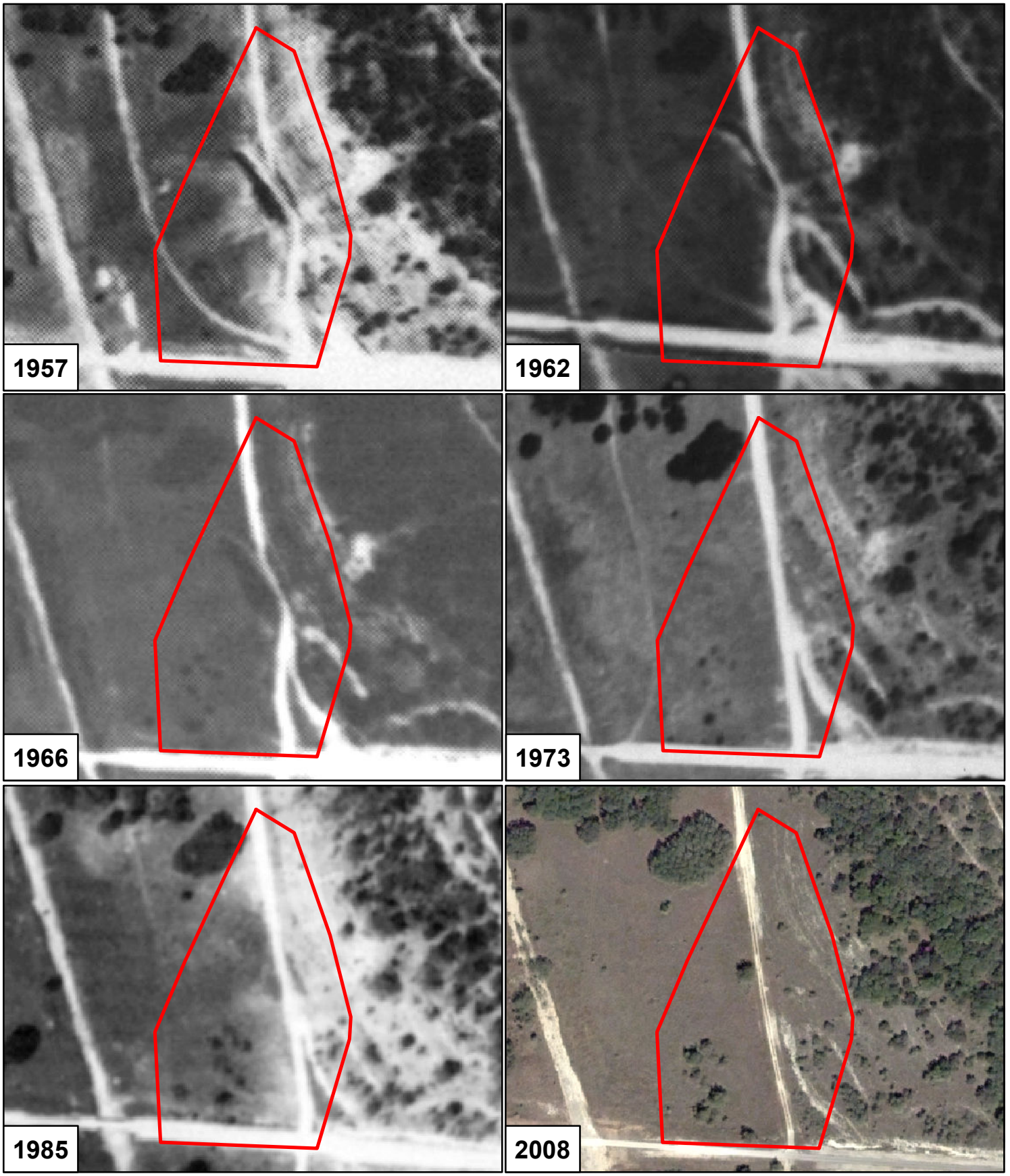
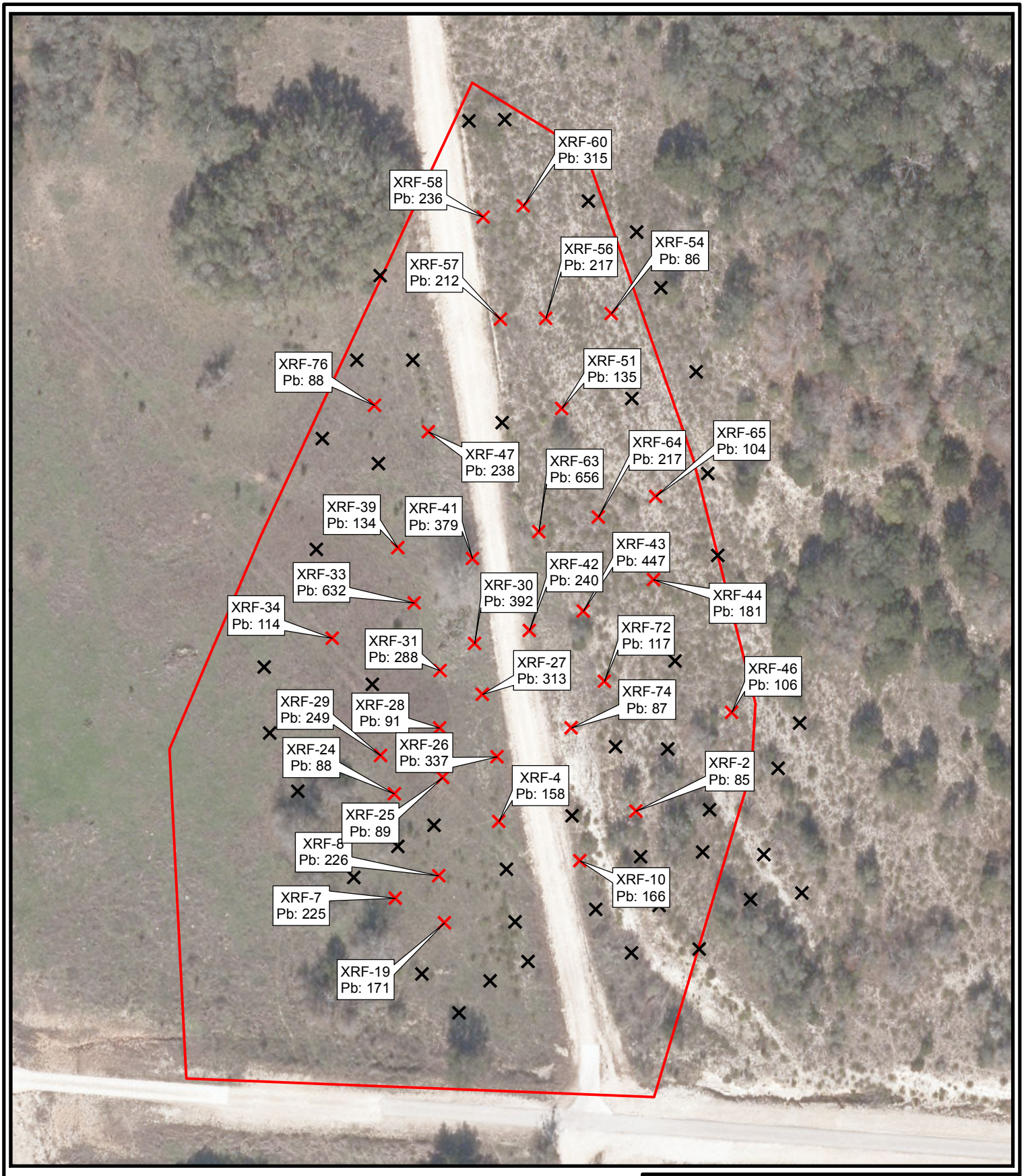


Figure 3

RMU-3
Historical Aerial Photographs
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\RMU3\Maps\RMU-3_RIR_historical_photos.mxd, 1/7/2013, 1:42:19 PM



Aerial Photo Date: 2012

N
W E
S

RMU-3 Boundary

XRF Sample Locations

XRF Results above Tier 1 PCL

75 37.5 0 75 Feet

Figure 4

RMU-3
XRF Sampling Results
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\RMU3\Maps\RMU-3_RIR_XRF_results_map.mxd

Surface Soil Samples (0-0.5 ft bgs)

SS11
SS01
0.0-0.5 Pb: 228.74
SS23
SS22
SS21
0.0-0.5 Pb: 97.52
SS24
SS02
SS03
SS04
SS20
0.0-0.5 Pb: 134.80
SS19
0.0-0.5 Pb: 85.57
SS28
SS25
SS12
0.0-0.5 Pb: 3147.16
SS05
SS06
SS13
0.0-0.5 Pb: 994.40
SS08
SS17
SS07
SS26
SS18
SS27
SS10
SS16
0.0-0.5 Pb: 142.37
SS14
SS09
0.0-0.5 Pb: 107.75
SS15

Subsurface Soil Samples (1-1.5 ft bgs)

SS29
SS30
SS13
1-1.5 Pb: 390.83
SS12
1-1.5 Pb: 777.58
SS31
SS34
SS33
SS32

Subsurface Soil Samples (2-2.5 ft bgs)

SS35 (2-2.5)
SS36 (3-3.5)
SS13
2-2.5 Pb: 230.85

Aerial Photo Date: 2012

N
W E
S

75 0 75 Feet

RMU-3 Boundary
Excavation Extent

Excavation Depth

1 Foot
2 Feet
3 Feet

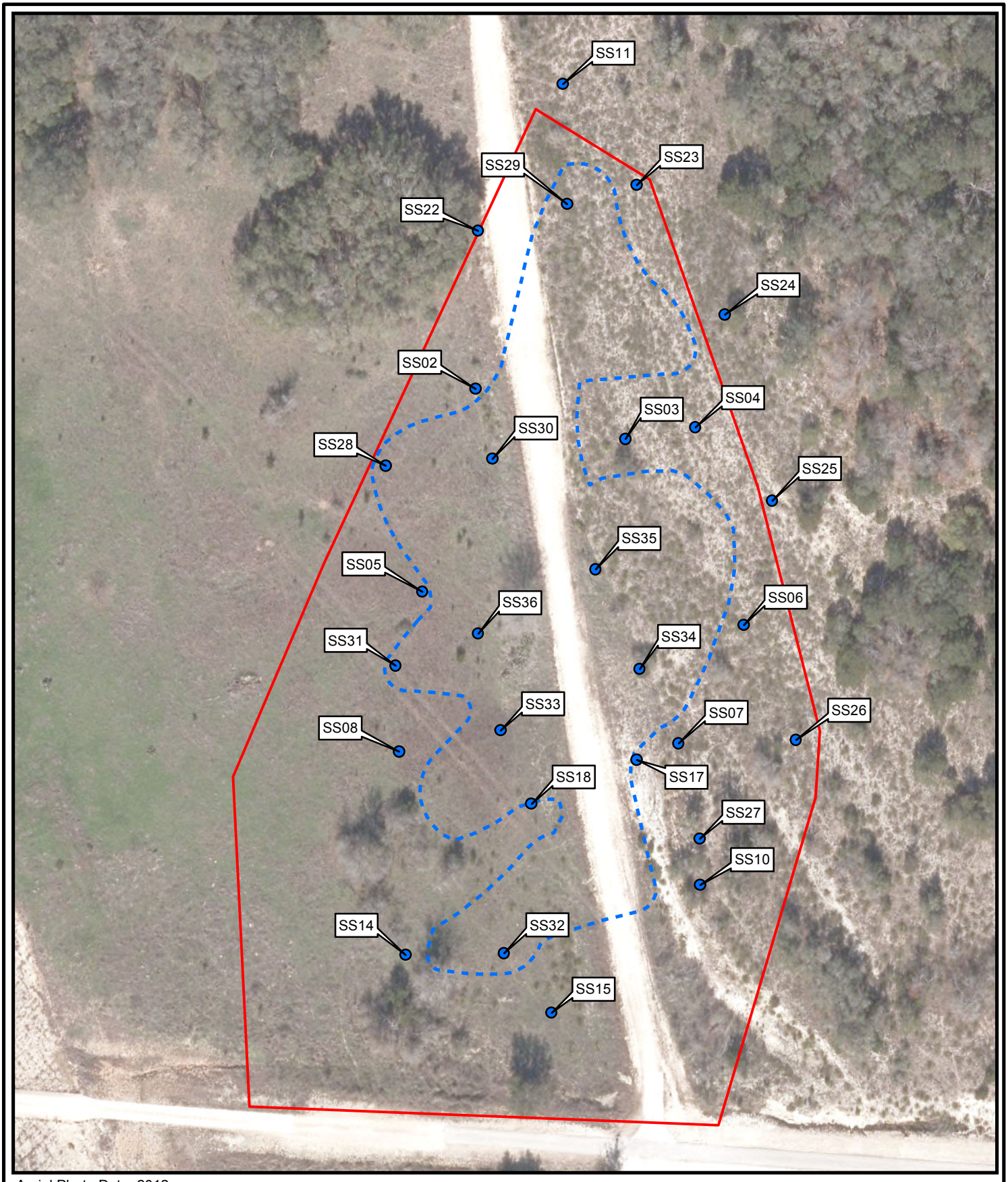
Soil Sample
Soil Sample with Pb result above Tier 1 PCL (mg/kg)

(Red indicates an exceedance of the Tier 1 PCL. Exceeding concentrations are indicated above.)

Figure 5

RMU-3
Sample and Excavation Locations
Camp Stanley Storage Activity

PARSONS



Aerial Photo Date: 2012

N
W E
S

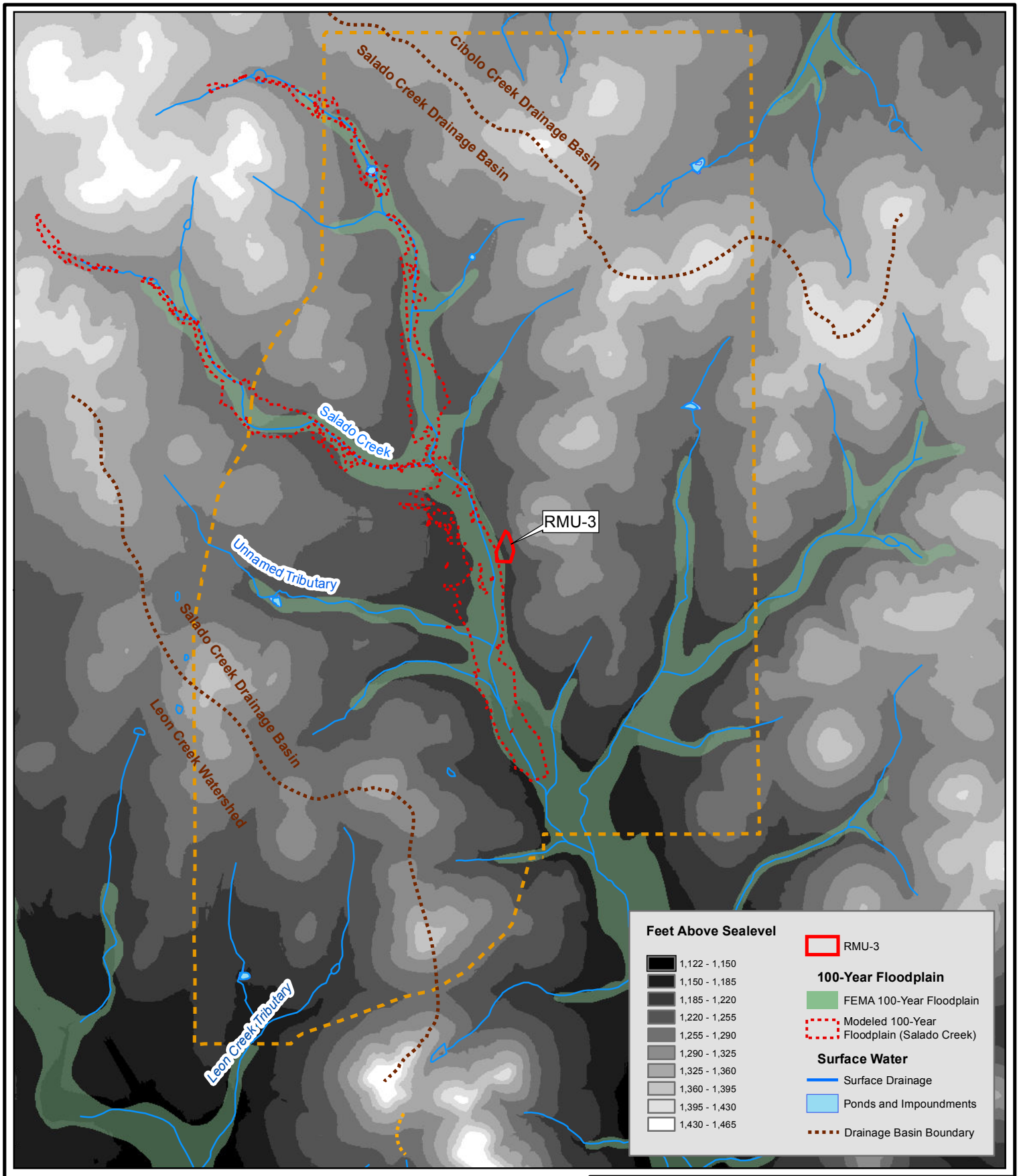
Confirmation Sample
Total Excavation Extent

75 0 75 Feet

Figure 6

RMU-3 Confirmation Samples and Total Excavation Area Camp Stanley Storage Activity

PARSONS



N
W E
S

0 0.25 0.5 0.75 1
Miles

Figure 7

RMU-3 Topography,
Surface Water, and Floodplains
Camp Stanley Storage Activity

PARSONS

J:\CSSA\GIS\RMU3\Maps\RMU-3_RIR_topo_map.mxd

APPENDIX A

Site Photographs

Photo 1. Pre-excavation vegetation removal.

Photo 2. Top portion of excavation, looking north.

Photo 3. Bottom potion of excavation, looking north.

Photo 4. Confirmation sample collection.

APPENDIX B

Tier 1 Ecological Exclusion Criteria Checklist

Figure: 30 TAC §350.77(b)

TIER 1: Exclusion Criteria Checklist

This exclusion criteria checklist is intended to aid the person and the TNRCC in determining whether or not further ecological evaluation is necessary at an affected property where a response action is being pursued under the Texas Risk Reduction Program (TRRP). Exclusion criteria refer to those conditions at an affected property which preclude the need for a formal ecological risk assessment (ERA) because there are **incomplete or insignificant ecological exposure pathways** due to the nature of the affected property setting and/or the condition of the affected property media. This checklist (and/or a Tier 2 or 3 ERA or the equivalent) must be completed by the person for all affected property subject to the TRRP. The person should be familiar with the affected property but need not be a professional scientist in order to respond, although some questions will likely require contacting a wildlife management agency (i.e., Texas Parks and Wildlife Department or U.S. Fish and Wildlife Service). The checklist is designed for general applicability to all affected property; however, there may be unusual circumstances which require professional judgement in order to determine the need for further ecological evaluation (e.g., cave-dwelling receptors). In these cases, the person is strongly encouraged to contact TNRCC before proceeding.

Besides some preliminary information, the checklist consists of three major parts, **each of which must be completed unless otherwise instructed.** PART I requests affected property identification and background information. PART II contains the actual exclusion criteria and supportive information. PART III is a qualitative summary statement and a certification of the information provided by the person. **Answers should reflect existing conditions and should not consider future remedial actions at the affected property.** Completion of the checklist should lead to a logical conclusion as to whether further evaluation is warranted. Definitions of terms used in the checklist have been provided and users are strongly encouraged to familiarize themselves with these definitions before beginning the checklist.

Name of Facility:

Camp Stanley Storage Activity (CSSA), Boerne, Texas.

Affected Property Location:

Range Management Unit 3 (RMU-3) is an approximately 3.2-acre site located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary (see Figure 2 of the RIR).

Mailing Address:

Camp Stanley Storage Activity
25800 Ralph Fair Road
Boerne, TX 78015

TNRCC Case Tracking #s:

Water Customer No.: CN602728206.
Air Customer No.: CN600126262.

Solid Waste Registration #s:

Texas Solid Waste Registration No.: 69026.

Voluntary Cleanup Program #: **Not applicable.**

EPA I.D. #s:

USEPA Identification No.: TX2210020739.

Figure: 30 TAC §350.77(b)

Definitions[1]

Affected property - The entire area (i.e., on-site and off-site; including all environmental media) which contains releases of chemicals of concern at concentrations equal to or greater than the assessment level applicable for residential land use and groundwater classification.

Assessment level - A critical protective concentration level for a chemical of concern used for affected property assessments where the human health protective concentration level is established under a Tier 1 evaluation as described in §350.75(b) of this title (relating to Tiered Human Health Protective Concentration Level Evaluation), except for the protective concentration level for the soil-to-groundwater exposure pathway which may be established under Tier 1, 2, or 3 as described in §350.75(i)(7) of this title, and ecological protective concentration levels which are developed, when necessary, under Tier 2 and/or 3 in accordance with §350.77(c) and/or (d), respectively, of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels).

Bedrock - The solid rock (i.e., consolidated, coherent, and relatively hard naturally formed material that cannot normally be excavated by manual methods alone) that underlies gravel, soil or other surficial material.

Chemical of concern - Any chemical that has the potential to adversely affect ecological or human receptors due to its concentration, distribution, and mode of toxicity. Depending on the program area, chemicals of concern may include the following: solid waste, industrial solid waste, municipal solid waste, and hazardous waste as defined in Texas Health and Safety Code, §361.003, as amended; hazardous constituents as listed in 40 Code of Federal Regulations Part 261, Appendix VIII, as amended; constituents on the groundwater monitoring list in 40 Code of Federal Regulations Part 264, Appendix IX, as amended; constituents as listed in 40 CFR Part 258 Appendices I and II, as amended; pollutant as defined in Texas Water Code, §26.001, as amended; hazardous substance as defined in Texas Health and Safety Code, §361.003, as amended, and the Texas Water Code §26.263, as amended; regulated substance as defined in Texas Water Code §26.342, as amended and §334.2 of this title (relating to Definitions), as amended; petroleum product as defined in Texas Water Code §26.342, as amended and §334.122(b)(12) of this title (relating to Definitions for ASTs), as amended; other substances as defined in Texas Water Code §26.039(a), as amended; and daughter products of the aforementioned constituents.

Community - An assemblage of plant and animal populations occupying the same habitat in which the various species interact via spatial and trophic relationships (e.g., a desert community or a pond community).

Complete exposure pathway - An exposure pathway where a human or ecological receptor is exposed to a chemical of concern via an exposure route (e.g., incidental soil ingestion, inhalation of volatiles and particulates, consumption of prey, etc).

De minimus - The description of an area of affected property comprised of one acre or less where the ecological risk is considered to be insignificant because of the small extent of contamination, the absence of protected species, the availability of similar unimpacted habitat nearby, and the lack of adjacent sensitive environmental areas.

Ecological protective concentration level - The concentration of a chemical of concern at the point of exposure within an exposure medium (e.g., soil, sediment, groundwater, or surface water) which is determined in accordance with §350.77(c) or (d) of this title (relating to Ecological Risk Assessment and Development of Ecological Protective Concentration Levels) to be protective for ecological receptors. These concentration levels are primarily intended to be protective for more mobile or wide-ranging ecological receptors and, where appropriate, benthic invertebrate communities within the waters in the state. These concentration levels are not intended to be directly protective of receptors with limited mobility or range (e.g., plants, soil invertebrates, and small rodents), particularly those residing within active areas of a facility, unless these receptors are threatened/endangered species or unless

[1]These definitions were taken from 30 TAC §350.4 and may have both ecological and human health applications. For the purposes of this checklist, it is understood that only the ecological applications are of concern.

impacts to these receptors result in disruption of the ecosystem or other unacceptable consequences for the more mobile or wide-ranging receptors (e.g., impacts to an off-site grassland habitat eliminate rodents which causes a desirable owl population to leave the area).

Ecological risk assessment - The process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors; however, as used in this context, only chemical stressors (i.e., COCs) are evaluated.

Environmental medium - A material found in the natural environment such as soil (including non-waste fill materials), groundwater, air, surface water, and sediments, or a mixture of such materials with liquids, sludges, gases, or solids, including hazardous waste which is inseparable by simple mechanical removal processes, and is made up primarily of natural environmental material.

Exclusion criteria - Those conditions at an affected property which preclude the need to establish a protective concentration level for an ecological exposure pathway because the exposure pathway between the chemical of concern and the ecological receptors is not complete or is insignificant.

Exposure medium - The environmental medium or biologic tissue in which or by which exposure to chemicals of concern by ecological or human receptors occurs.

Facility - The installation associated with the affected property where the release of chemicals of concern occurred.

Functioning cap - A low permeability layer or other approved cover meeting its design specifications to minimize water infiltration and chemical of concern migration, and prevent ecological or human receptor exposure to chemicals of concern, and whose design requirements are routinely maintained.

Landscaped area - An area of ornamental, or introduced, or commercially installed, or manicured vegetation which is routinely maintained.

Off-site property (off-site) - All environmental media which is outside of the legal boundaries of the on-site property.

On-site property (on-site) - All environmental media within the legal boundaries of a property owned or leased by a person who has filed a self-implementation notice or a response action plan for that property or who has become subject to such action through one of the agency's program areas for that property.

Physical barrier - Any structure or system, natural or manmade, that prevents exposure or prevents migration of chemicals of concern to the points of exposure.

Point of exposure - The location within an environmental medium where a receptor will be assumed to have a reasonable potential to come into contact with chemicals of concern. The point of exposure may be a discrete point, plane, or an area within or beyond some location.

Protective concentration level - The concentration of a chemical of concern which can remain within the source medium and not result in levels which exceed the applicable human health risk-based exposure limit or ecological protective concentration level at the point of exposure for that exposure pathway.

Release - Any spilling, leaking, pumping, pouring, emitting, emptying, discharging, injecting, escaping, leaching, dumping, or disposing into the environment, with the exception of:

(A) A release that results in an exposure to a person solely within a workplace, concerning a claim that the person may assert against the person's employer;

(B) An emission from the engine exhaust of a motor vehicle, rolling stock, aircraft, vessel, or pipeline pumping station engine;

(C) A release of source, by-product, or special nuclear material from a nuclear incident, as those terms are defined by the Atomic Energy Act of 1954, as amended (42 U.S.C. §2011 et seq.), if the release is subject to requirements concerning financial protection established by the Nuclear Regulatory Commission under §170 of that Act;

(D) For the purposes of the environmental response law §104, as amended, or other response action, a release of source, by-product, or special nuclear material from a processing site designated under §102(a)(1) or §302(a) of the Uranium Mill Tailings Radiation Control Act of 1978 (42 U.S.C. §7912 and §7942), as amended; and

(E) The normal application of fertilizer.

Sediment - Non-suspended particulate material lying below surface waters such as bays, the ocean, rivers, streams, lakes, ponds, or other similar surface water body (including intermittent streams). Dredged sediments which have been removed from below surface water bodies and placed on land shall be considered soils.

Sensitive environmental areas - Areas that provide unique and often protected habitat for wildlife species. These areas are typically used during critical life stages such as breeding, hatching, rearing of young, and overwintering. Examples include critical habitat for threatened and endangered species, wilderness areas, parks, and wildlife refuges.

Source medium - An environmental medium containing chemicals of concern which must be removed, decontaminated and/or controlled in order to protect human health and the environment. The source medium may be the exposure medium for some exposure pathways.

Stressor - Any physical, chemical, or biological entity that can induce an adverse response; however, as used in this context, only chemical entities apply.

Subsurface soil - For human health exposure pathways, the portion of the soil zone between the base of surface soil and the top of the groundwater-bearing unit(s). For ecological exposure pathways, the portion of the soil zone between 0.5 feet and 5 feet in depth.

Surface cover - A layer of artificially placed utility material (e.g., shell, gravel).

Surface soil - For human health exposure pathways, the soil zone extending from ground surface to 15 feet in depth for residential land use and from ground surface to 5 feet in depth for commercial/industrial land use; or to the top of the uppermost groundwater-bearing unit or bedrock, whichever is less in depth. For ecological exposure pathways, the soil zone extending from ground surface to 0.5 feet in depth.

Surface water - Any water meeting the definition of surface water in the state as defined in §307.3 of this title (relating to Abbreviations and Definitions), as amended.

PART I. Affected Property Identification and Background Information

1) Provide a description of the specific area of the response action and the nature of the release. Include estimated acreage of the affected property and the facility property, and a description of the type of facility and/or operation associated with the affected property. Also describe the location of the affected property with respect to the facility property boundaries and public roadways.

Camp Stanley Storage Activity: CSSA is located in northwestern Bexar County, about 19 miles northwest of downtown San Antonio. The installation consists of approximately 4,004 acres immediately east of Ralph Fair Road, and approximately 0.5 mile east of Interstate Highway 10 (see Figure 1 of the RIR). CSSA has several historical waste sites, including Solid Waste Management Units (SWMUs), Areas of Concern (AOCs), and RMUs. The present mission of CSSA is the receipt, storage, issue, and maintenance of ordnance as well as quality assurance testing and maintenance of military weapons and ammunition. Because of its mission, CSSA has been designated a restricted access facility. No changes to the CSSA mission and/or military activities are expected in the future.

RMU-3: RMU-3 is an approximately 3.2-acre site located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary (see Figure 2 of the RIR).

Attach available USGS topographic maps and/or aerial or other affected property photographs to this form to depict the affected property and surrounding area. Indicate attachments:

☐ Topo map ☐√ Aerial photo ☐√ Other

Aerial photos of the site and land adjacent to the site are shown on Figure 3 of the RIR. Figure 2 of the RIR shows the general location of RMU-3.

2) Identify environmental media known or suspected to contain chemicals of concern (COCs) at the present time. Check all that apply:

Known/Suspected COC Location	Based on sampling data?	
☐ **NO –** Soil ≤ 5 ft below ground surface	☐ Yes	☐ √No
☐ **NO –** Soil >5 ft below ground surface	☐ Yes	☐ √No
☐ **NO –** Groundwater	☐ Yes	☐ √No
☐ **NO –** Surface Water/Sediments	☐ Yes	☐ √No

Explain (previously submitted information may be referenced):

The closest wells to the site include CS-MW2-CC and CS-MW2-LGR (both approximately 490 feet to the north-northwest), CS-MW4-LGR (668 feet to the south), and CS-MW5-LGR (775 feet to the northeast). Of these three wells, CS-MW2-LGR has the most water level data. Between April 1996 and March 2013, measured water levels at CS-MW2-LGR have ranged from 61 ft below top of casing (BTOC) (September 2007) to 283 ft BTOC (March 2009). Concentrations of volatile organic compounds (VOCs) detected in CS-MW2-LGR prior to 2002 were attributed to contaminated groundwater from the SWMU B-3 bioreactor plume. The well was upgraded in 2002 and since then, VOC concentrations in the well have been at trace or non-detect levels.

The closest surface water body to RMU-3 is Salado Creek located approximately 240 ft west of the site (Figure 6). The north-south trending creek exits the CSSA boundary approximately 7,854 ft south-southeast of the site. As all the lead contamination above Tier 1 PCLs has been removed from the soil, no significant degradation of high quality receiving waters is anticipated from RMU-3.

Based on soil samples collected at RMU-3, there are no explosives or metals explosives at the site that exceed their respective PCL (see Appendix C of this RIR). Metals with concentrations exceeding Tier 1

PCLs at the site were excavated and removed. There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at RMU-3. Additionally, since soils found to have concentrations of metals above their PCLs were excavated and removed, there will be no impact to groundwater, surface water or sediment from RMU-3.

3) Provide the information below for the nearest surface water body which has become or has the potential to become impacted from migrating COCs via surface water runoff, air deposition, groundwater seepage, etc. Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. A lso exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

The nearest surface water body, **Salado Creek**, is **approximately 240 ft west of** the affected property **(RMU-3).** The water body is best described as a:

☐ freshwater stream: _____ perennial (has water all year)

__√__ intermittent (dries up completely for at least 1 week a year) **[only has water during and immediately after rain events.]**

_____ intermittent with perennial pools

☐ freshwater swamp/marsh/wetland

☐ saltwater or brackish marsh/swamp/wetland

☐ reservoir, lake, or pond; approximate surface acres**:**

☐ drainage ditch

☐ tidal stream ☐ bay ☐ estuary

☐ other; specify

Is the water body listed as a State classified segment in Appendix C of the current Texas Surface Water Quality Standards; §§307.1 - 307.10?

☐√ **Yes** Segment # __**1910**_____ Use Classification:

☐ No

If the water body is not a State classified segment, identify the first downstream classified segment.

Name:

Salado Creek Drainage Basin

Segment #:

Segment 1910 – From the confluence with the San Antonio River in Bexar County to Rocking Horse Lane west of Camp Bullis in Bexar County.

Use Classification:

Salado Creek is classified as an intermittent creek upstream (south) of CSSA to Loop 410 in San Antonio. The creek is classified as perennial downstream of Loop 410. Although water uses are not distinguished between the upstream intermittent and the downstream perennial sections, the designated uses of Segment 1910 as a whole are high aquatic life, contact recreation, public water supply, and

aquifer protection. No significant degradation of high quality receiving waters is anticipated from RMU-3.

PART II. Exclusion Criteria and Supportive Information

Subpart A. Surface Water/Sediment Exposure

1) Regarding the affected property where a response action is being pursued under the TRRP, have COCs migrated and resulted in a release or imminent threat of release to either surface waters or to their associated sediments via surface water runoff, air deposition, groundwater seepage, etc.? Exclude wastewater treatment facilities and stormwater conveyances/impoundments authorized by permit. Also exclude conveyances, decorative ponds, and those portions of process facilities which are:

a. Not in contact with surface waters in the State or other surface waters which are ultimately in contact with surface waters in the State; and

b. Not consistently or routinely utilized as valuable habitat for natural communities including birds, mammals, reptiles, etc.

☐ Yes ☐√ No

Explain:

There is no evidence of other affected or threatened environmental media (groundwater, surface water, or sediment) at RMU-3. Since soils that were found to have concentrations of metals above their PCLs were removed, there will be no impact to groundwater, surface water, or sediment from RMU-3.

If the answer is Yes to Subpart A above, the affected property does not meet the exclusion criteria. However, complete the remainder of Part II to determine if there is a complete and/or significant soil exposure pathway, then complete PART III - Qualitative Summary and Certification. If the answer is No, go to Subpart B.

Subpart B. Affected Property Setting

In answering "Yes" to the following question, it is understood that the affected property is not attractive to wildlife or livestock, including threatened or endangered species (i.e., the affected property does not serve as valuable habitat, foraging area, or refuge for ecological communities). (May require consultation with wildlife management agencies.)

1) Is the affected property wholly contained within contiguous land characterized by: pavement, buildings, landscaped area, functioning cap, roadways, equipment storage area, manufacturing or process area, other surface cover or structure, or otherwise disturbed ground?

☐ Yes ☐√ No

Explain:

RMU-3 is an approximately 3.2-acre site located in the northeastern portion of the Inner Cantonment, approximately 2,000 yards east of the western CSSA boundary. Figure 2 of the RIR shows the location of RMU-3 and the surrounding area.

If the answer to Subpart B above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subparts C and D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart B above is No, go to Subpart C.

Subpart C. Soil Exposure **Subparts C and D skipped based on answers to Subparts A and B.**

1) Are COCs which are in the soil of the affected property solely below the first 5 feet beneath ground surface **or** does the affected property have a physical barrier present to prevent exposure of receptors to COCs in surface soil?

☐ Yes ☐ No

Explain:

If the answer to Subpart C above is Yes, the affected property meets the exclusion criteria, assuming the answer to Subpart A was No. Skip Subpart D and complete PART III - Qualitative Summary and Certification. If the answer to Subpart C above is No, proceed to Subpart D.

Subpart D. *De Minimus* Land Area Subparts C and D skipped based on answers to Subparts A and B.

In answering "Yes" to the question below, it is understood that all of the following conditions apply:

☐ The affected property is not known to serve as habitat, foraging area, or refuge to threatened/endangered or otherwise protected species. (Will likely require consultation with wildlife management agencies.)

☐ Similar but unimpacted habitat exists within a half-mile radius.

☐ The affected property is not known to be located within one-quarter mile of sensitive environmental areas (e.g., rookeries, wildlife management areas, preserves). (Will likely require consultation with wildlife management agencies.)

☐ There is no reason to suspect that the COCs associated with the affected property will migrate such that the affected property will become larger than one acre.

1) Using human health protective concentration levels as a basis to determine the extent of the COCs, does the affected property consist of one acre or less and does it meet all of the conditions above?

☐ Yes ☐ No

Explain how conditions are met/not met:

If the answer to Subpart D above is Yes, then no further ecological evaluation is needed at this affected property, assuming the answer to Subpart A was No. Complete PART III - Qualitative Summary and Certification. If the answer to Subpart D above is No, proceed to Tier 2 or 3 or comparable ERA.

PART III. Qualitative Summary and Certification (Complete in all cases).

Attach a brief statement (not to exceed 1 page) summarizing the information you have provided in this form. This summary should include sufficient information to verify that the affected property meets or does not meet the exclusion criteria. The person should make the initial decision regarding the need for further ecological evaluation (i.e., Tier 2 or 3) based upon the results of this checklist. After review, TNRCC will make a final determination on the need for further assessment. **Note that the person has the continuing obligation to re-enter the ERA process if changing circumstances result in the affected property not meeting the Tier 1 exclusion criteria.**

I believe that the information submitted is true, accurate, and complete, to the best of my knowledge.

Julie Burdey, P.G. *(Typed/Printed Name of Person)*

Project Manager *(Title of Person)*

(Signature of Person)

May 2, 2013 *(Date Signed)*

APPENDIX C

Confirmation Sample Results for All Analytes at RMU-3

Appendix C. Summary of Chemical Constituents Remaining in Soils at CSSA RMU3

	Explosives																																						
	1,3,5-Trinitrobenzene CAS: 99-35-4	Qualifier	Dilution	1,3-Dinitrobenzene CAS: 99-65-0	Qualifier	Dilution	2,4,6-Trinitrotoluene (TNT) CAS: 118-96-7	Qualifier	Dilution	2,4-Dinitrotoluene CAS: 121-14-2	Qualifier	Dilution	2,6-Dinitrotoluene CAS: 606-20-2	Qualifier	Dilution	2-Nitrotoluene CAS: 88-72-2	Qualifier	Dilution	3-Nitrotoluene CAS: 99-08-1	Qualifier	Dilution	4-Nitrotoluene CAS: 99-99-0	Qualifier	Dilution	HMX CAS: 2691-41-0	Qualifier	Dilution	Nitrobenzene CAS: 98-95-3	Qualifier	Dilution	RDX CAS: 121-82-4	Qualifier	Dilution	Tetryl CAS: 479-45-8	Qualifier	Dilution
Tier 1 Soil PCLs - 30 acre†																																							
Residential Combined Exposure[1]	2.00E+03	n		6.70E+00	n		3.30E+01	n		6.90E+00	c		6.90E+00	c		2.10E+01	c		6.70E+02	n		2.70E+02	n		1.60E+03	n		3.40E+01	c		4.30E+01	c		2.70E+02	n	
Residential Groundwater Exposure[2]	**9.10E-01**	n		**3.80E-03**	n		**8.60E-02**	n		**2.70E-03**	c		**2.40E-03**	c		**1.60E-02**	c		**9.20E-01**	n		**2.20E-01**	c		**1.20E+00**	n		**1.80E-01**	n		**1.80E-02**	c		**5.50E-01**	n	
TCEQ-Approved Background Values																																							
CSSA 9 Metals Background Concentration[3]	na			na			na			na			na			na			na			na			na			na			na			na		
Sample Locations (Date Collected)																																							
RMU3-SS01 (24-Feb-2011) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS02 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS03 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS04 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS05 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS05-DUP (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS06 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS07 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS08 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS09 (24-Feb-2011) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS10 (24-Feb-2011)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS11 (03-Jan-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS12(0-0.5) (03-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS12(1-1.5) (10-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS13(0-0.5) (03-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS13(1-1.5) (10-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS13 (11-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS14 (03-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS15 (03-Jan-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS15-DUP (03-Jan-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS16 (03-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS17 (03-Jan-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS18 (03-Jan-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS19 (03-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS20 (03-Jan-2012) **Excavated**	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS20-DUP (03-Jan-2012) **Excavated**	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS21 (03-Jan-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS22 (03-Jan-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS23 (03-Jan-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS24 (18-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS25 (18-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS26 (18-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS27 (18-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS28 (18-Dec-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS29 (19-Dec-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS30 (19-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS31 (19-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS32 (19-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS33 (19-Dec-2012)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS34 (19-Dec-2012) **Excavated**	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS35 (19-Dec-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS35-DUP (19-Dec-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS36 (19-Dec-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS36-DUP (19-Dec-2012)	0.075	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.075	U	1	0.075	U	1	0.080	U	1	0.080	U	1	0.080	U	1	0.075	U	1	0.080	U	1	0.075	U	1
RMU3-SS37 (06-Feb-2013)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS38 (26-Feb-2013)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS39 (06-Feb-2013)	--			--			--			--			--			--			--			--			--			--			--			--		
RMU3-SS40 (06-Feb-2013)	--			--			--			--			--			--			--			--			--			--			--			--		

	Metals																										
	Arsenic CAS: 7440-38-2	Qualifier	Dilution	Barium CAS: 7440-39-3	Qualifier	Dilution	Cadmium CAS: 7440-43-9	Qualifier	Dilution	Chromium CAS: 7440-47-3	Qualifier	Dilution	Copper CAS: 7440-50-8	Qualifier	Dilution	Lead CAS: 7439-92-1	Qualifier	Dilution	Mercury CAS: 7439-97-6	Qualifier	Dilution	Nickel CAS: 7440-02-0	Qualifier	Dilution	Zinc CAS: 7440-66-6	Qualifier	Dilution
Tier 1 Soil PCLs - 30 acre†																											
Residential Combined Exposure[1]	2.40E+01	n		8.10E+03	n		5.20E+01	n		2.70E+04	n		5.50E+02	n		5.00E+02	n		2.10E+00	n		8.40E+02	n		9.90E+03	n	
Residential Groundwater Exposure[2]	2.50E+00	m	>S	2.20E+02	m	>S	7.50E-01	m	>S	**1.20E+03**	m	>S	**5.20E+02**	a	>S	1.50E+00	a	>S	3.90E-03	m		**7.90E+01**	n	>S	**1.20E+03**	n	>S
TCEQ-Approved Background Values																											
CSSA 9 Metals Background Concentration[3]	**19.6**	††		**300**	†††		**3**	††		40.2	††		23.2	††		**84.5**	††		**0.77**	††		35.5	††		73.2	††	
Sample Locations (Date Collected)																											
RMU3-SS01 (24-Feb-2011) **Excavated**	**1.7**	F	1	**12**		1	0.030	U	1	**3.6**	F	1	**6.5**		1	**230**		1	**0.040**	F	1	**4.3**		1	**7.8**		1
RMU3-SS02 (24-Feb-2011)	**0.40**	F	1	**10**		1	0.030	U	1	**2.5**	F	1	**7.8**		1	**31**		1	**0.020**	F	1	**2.6**		1	**8.1**		1
RMU3-SS03 (24-Feb-2011)	**1.2**	F	1	**14**		1	0.030	U	1	**3.0**	F	1	**27**		1	**75**		1	**0.040**	F	1	**4.1**		1	**18**		1
RMU3-SS04 (24-Feb-2011)	**2.0**	F	1	**12**		1	0.030	U	1	**3.1**	F	1	**8.8**		1	**16**		1	**0.020**	F	1	**3.9**		1	**7.5**		1
RMU3-SS05 (24-Feb-2011)	**1.9**	F	1	**29**		1	0.030	U	1	**6.2**	F	1	**13**		1	**45**		1	**0.040**	F	1	**5.6**		1	**15**		1
RMU3-SS05-DUP (24-Feb-2011)	**1.7**	F	1	**29**		1	0.030	U	1	**6.2**	F	1	**12**		1	**49**		1	**0.040**	F	1	**5.6**		1	**14**		1
RMU3-SS06 (24-Feb-2011)	**1.0**	M	1	**13**	M	1	0.030	M	1	**2.7**	M	1	**39**	M	1	**28**	M	1	**0.040**	F	1	**4.0**	M	1	**19**	M	1
RMU3-SS07 (24-Feb-2011)	**1.5**	F	1	**12**		1	0.030	U	1	**3.0**	F	1	**11**		1	**33**		1	**0.030**	F	1	**4.0**		1	**8.6**		1
RMU3-SS08 (24-Feb-2011)	**1.7**	F	1	**27**		1	0.030	U	1	**5.7**	F	1	**11**		1	**76**		1	**0.050**	F	1	**5.4**		1	**13**		1
RMU3-SS09 (24-Feb-2011) **Excavated**	**1.4**	F	1	**17**		1	0.030	U	1	**4.7**	F	1	**16**		1	**110**		1	**0.050**	F	1	**5.7**		1	**20**		1
RMU3-SS10 (24-Feb-2011)	**1.4**	F	1	**19**		1	0.030	U	1	**4.1**	F	1	**14**		1	**69**		1	**0.060**	F	1	**5.7**		1	**12**		1
RMU3-SS11 (03-Jan-2012)	--			--			--			--			--			**51**		1	--			--			--		
RMU3-SS12(0-0.5) (03-Jan-2012) **Excavated**	--			--			--			--			--			**3,100**		50	--			--			--		
RMU3-SS12(1-1.5) (10-Jan-2012) **Excavated**	--			--			--			--			--			**780**		1	--			--			--		
RMU3-SS13(0-0.5) (03-Jan-2012) **Excavated**	--			--			--			--			--			**990**		10	--			--			--		
RMU3-SS13(1-1.5) (10-Jan-2012) **Excavated**	--			--			--			--			--			**390**		1	--			--			--		
RMU3-SS13 (11-Jan-2012) **Excavated**	--			--			--			--			--			**230**		1	--			--			--		
RMU3-SS14 (03-Jan-2012) **Excavated**	--			--			--			--			--			**67**		1	--			--			--		
RMU3-SS15 (03-Jan-2012)	--			--			--			--			--			**56**		1	--			--			--		
RMU3-SS15-DUP (03-Jan-2012)	--			--			--			--			--			**63**		1	--			--			--		
RMU3-SS16 (03-Jan-2012) **Excavated**	--			--			--			--			--			**140**		1	--			--			--		
RMU3-SS17 (03-Jan-2012)	--			--			--			--			--			**21**		1	--			--			--		
RMU3-SS18 (03-Jan-2012)	--			--			--			--			--			**51**		1	--			--			--		
RMU3-SS19 (03-Jan-2012) **Excavated**	--			--			--			--			--			**86**		1	--			--			--		
RMU3-SS20 (03-Jan-2012) **Excavated**	--			--			--			--			--			**130**		1	--			--			--		
RMU3-SS20-DUP (03-Jan-2012) **Excavated**	--			--			--			--			--			**130**		1	--			--			--		
RMU3-SS21 (03-Jan-2012) **Excavated**	--			--			--			--			--			**98**		1	--			--			--		
RMU3-SS22 (03-Jan-2012)	--			--			--			--			--			**14**		1	--			--			--		
RMU3-SS23 (03-Jan-2012)	--			--			--			--			--			**81**		1	--			--			--		
RMU3-SS24 (18-Dec-2012)	--			--			--			--			--			**37**	M	1	--			--			--		
RMU3-SS25 (18-Dec-2012)	--			--			--			--			--			**35**	M	1	--			--			--		
RMU3-SS26 (18-Dec-2012)	--			--			--			--			--			**62**	M	1	--			--			--		
RMU3-SS27 (18-Dec-2012)	--			--			--			--			--			**72**	M	1	--			--			--		
RMU3-SS28 (18-Dec-2012) **Excavated**	--			--			--			--			--			**96**	M	1	--			--			--		
RMU3-SS29 (19-Dec-2012)	--			--			--			--			--			**37**	M	1	--			--			--		
RMU3-SS30 (19-Dec-2012)	--			--			--			--			--			**24**	M	1	--			--			--		
RMU3-SS31 (19-Dec-2012)	--			--			--			--			--			**6.0**	M	1	--			--			--		
RMU3-SS32 (19-Dec-2012)	--			--			--			--			--			**33**	M	1	--			--			--		
RMU3-SS33 (19-Dec-2012)	--			--			--			--			--			**20**	M	1	--			--			--		
RMU3-SS34 (19-Dec-2012) **Excavated**	--			--			--			--			--			**210**	M	1	--			--			--		
RMU3-SS35 (19-Dec-2012)	--			--			--			--			--			**11**	M	1	--			--			--		
RMU3-SS35-DUP (19-Dec-2012)	--			--			--			--			--			**11**	M	1	--			--			--		
RMU3-SS36 (19-Dec-2012)	--			--			--			--			--			**15**	M	1	--			--			--		
RMU3-SS36-DUP (19-Dec-2012)	--			--			--			--			--			**11**	M	1	--			--			--		
RMU3-SS37 (06-Feb-2013)	--			--			--			--			--			**15**		1	--			--			--		
RMU3-SS38 (26-Feb-2013)	--			--			--			--			--			**51**		1	--			--			--		
RMU3-SS39 (06-Feb-2013)	--			--			--			--			--			**3.1**	F	1	--			--			--		
RMU3-SS40 (06-Feb-2013)	--			--			--			--			--			**24**		1	--			--			--		

NOTES:

† TCEQ, TRRP Tier 1 Soil PCLs (Last Revised: June 29, 2012).

†† CSSA Soil Background Concentrations. Second Revision, Evaluation of Background Metals Concentrations in Soils and Bedrock at CSSA. February 2002. Values from Table 3.3.

††† Texas-Specific median background concentration.

PCLs and CSSA background values coded in this table as [1, 2, 3].

[1] $^{Tot}Soil_{Comb}$ = PCL for COPC in soil for a 30 acre source area and a potential future resident (combined exposure for ingestion, dermal contact, inhalation of volatiles and particulates, and ingestion of above-ground and below-ground vegetables).

[2] $^{GW}Soil_{Ing}$ = PCL for COPC in soil for a 30 acre source area and a potential future resident (soil-to-groundwater leaching of COPC to Class 1 and 2 groundwater).

[3] CSSA Soil Background Concentrations.

PCLs are shown in **blue** font.

All values are measured in milligrams per kilogram (mg/Kg) unless otherwise noted.

c = carcinogenic.

n = noncarcinogenic.

m = primary MCL-based.

a = EPA Action Level-based.

>S = solubility limit exceeded during calculation.

na = not applicable.

QA NOTES AND DATA QUALIFIERS:

(NO CODE) - Confirmed identification.

U - Analyte was not detected above the indicated Method Detection Limit (MDL).

F - Analyte was positively identified, but the quantitation is an estimation above the MDL and below the Reporting Limit (RL).

M = Concentration is estimated due to a matrix effect.

Values shown in **BOLD** indicate detections above the MDL.

Values **HIGHLIGHTED** indicate detections above the PCL.

APPENDIX D

Data Verification Summary Report

DATA VERIFICATION SUMMARY REPORT

for samples collected from

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples and the associated field quality control (QC) samples collected from Camp Stanley Storage Activity (CSSA) under Environmental Protection Support, Investigations, and Treatability Studies on February 24, 2011. The samples in the following Sample Delivery Group (SDG) included samples collected from B28, B24, and RMU3:

63998

The field QC sample collected in association with this SDG were two field duplicate (FD) samples, two sets of matrix spike/matrix spike duplicate (MS/MSD), and one equipment blank (EB).

All samples were collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.5° C which was within the 2-6° C range recommended by the CSSA QAPP.

There were five waste characterization samples shipped to the lab in this SDG, however, the data validation discussion does not include results of those waste characterization samples.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

ICP METALS

General

The ICP metals portion of this SDG consisted of twenty-five (25) samples, including eighteen (18) environmental soil samples, two (2) pairs of MS/MSD, two (2) FDs, and

one (1) EB. The samples were collected on February 24, 2011. Samples collected from B28 were analyzed for barium only, sample collected from B24 was analyzed for TX 11 metals, sample from RMU3 were analyzed for CSSA-9 metals which include arsenic, barium, cadmium, chromium, copper, lead, nickel, and zinc. . The ICP metals analyses were performed using USEPA SW846 Method 6010B. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The ICP metals samples were digested in four batches, one for the EB and three for soil. All digetates were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the four laboratory control samples (LCS) and MS/MSD. Samples B28-BOT17 and RMU3-SS06 were designated as parent samples for MS/MSD analyses.

All LCS, MS, and MSD recoveries were within acceptance criteria.

Precision

Precision was evaluated using the relative percent difference (RPD) obtained from the MS/MSD results and two sets of parent and FD analyte results. Two sets of samples were collected from B28-BOT11 and RMU3-SS05. The second set of was submitted to the laboratory as a field duplicate.

All RPDs were compliant in the two pairs of MS/MSD analyses.

All target metals detected above the RL in both the parent and field duplicate are listed below:

B28-BOT11

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Barium	19.1	17.7	7.6	RPD ≤ 20

RUM3-SS05

Metal	Parent Conc. (mg/kg)	FD Conc. (mg/kg)	RPD	Criteria
Barium	29.4	29.3	0.3	RPD ≤ 20
Copper	13.19	11.97	9.7	
Lead	44.57	48.96	9.4	
Nickel	5.62	5.60	0.4	
Zinc	15.4	13.7	12	

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;

- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. All three ICV were prepared using a secondary source.
- All interference check criteria were met.
- All internal standard criteria were met.
- Dilution test (DT) was analyzed on sample B28-BOT17 for barium:

B28-BOT17

Metal	%D	Criteria
Barium	87	%D ≤ 10

- A post digestion spike (PDS) was analyzed on the same sample as the DT.

B28-BOT17

Metal	%R	Criteria
Barium	166	75-125%

"J" flags were applied to all barium results of samples collected from B28.

- Another DT was performed on sample RMU3-SS06 for barium, copper and lead:

RMU3-SS06

Metal	%D	Criteria
Barium	45	%D ≤ 10
Copper	46	
Lead	54	

- A post digestion spike (PDS) was analyzed on the same sample as the DT.

B28-BOT17

Metal	%R	Criteria
Arsenic	88	75-125%
Barium	86	
Cadmium	78	
Chromium	83	
Copper	108	

Nickel	82	
Lead	88	
Zinc	76	

There were three method blanks and several calibration blanks associated with the ICP analyses in this SDG. All blanks were free of any target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP results for the samples in this SDG were considered usable. The completeness for the ICP portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

Mercury

General

The mercury portion of this SDG consisted of fifteen (15) samples which consisted of eleven (11) field soil samples, one (1) EB, one (1) pair of MS/MSD and one (FD). Samples were collected on February 24, 2011 and were analyzed for mercury. The mercury metals analyses were performed using USEPA SW846 Method 7470A for the EB and 7471A for all soil. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The mercury samples were extracted, digested, and analyzed in three batches, one for the EB and the other two for soil.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the three LCSs.

All LCS recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the RPD of MS/MSD and parent/FD results.

RPD of the MS/MSD was compliant.

RPD of the parent and FD set of sample RMU3-SS05 could not be calculated, since both results are less than the reporting limit.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;

- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All second source verification criteria were met. The two ICV were prepared using a secondary source.

There were three method blanks and several calibration blanks associated with the mercury in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The mercury results of the samples in this SDG were considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for samples collected from RMU3

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples and the associated field quality control (QC) sample collected from Camp Stanley Storage Activity (CSSA) on January 3rd, 2012. The samples in the following Sample Delivery Group (SDG) included samples collected from RMU3:

66637

Samples were tested for explosives and selected metals. Not all samples were tested for all parameters.

There were two pairs of parent/field duplicate (FD) samples and one set of matrix spike/matrix spike duplicate (MS/MSD) samples.

All samples were collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.0° C which was within the recommended range is 2-6° C.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

ICP METALS

General

The ICP metals portion of this SDG consisted of seventeen (17) soil samples including two FDs and one pair of MS/MSD. All samples were collected on January 3rd, 2012. Two samples were tested for TCLP arsenic, barium, cadmium, chromium, lead, selenium and silver; the rest of samples were analyzed for total lead only.

The ICP metals analyses were performed using USEPA SW846 Method 6010B and the TCLP procedure was based on SW1311. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The ICP metals samples were digested in two batches. Lead in sample RMU3-SS12 required a 50 fold dilution and RMU3-SS13 required a 10 fold dilution due to the high concentration of lead. All other samples were analyzed undiluted for metals.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the two laboratory control samples (LCS) and MS/MSD results. Sample RMU3-SS15 was designated as the parent sample for MS and MSD analyses. The parent sample was analyzed for lead, according to Chain of Custody (COC).

All LCS recoveries were within acceptance criteria.

The %R of both MS/MSD met the 75-125% criteria for lead.

Precision

Precision was evaluated based on the %RPD of the MS/MSD results and two sets of parent/FD sample results. Samples RMU3-SS20 and RMU3-SS15 were collected in duplicate.

%RPD of the MS/MSD for lead met the criteria.

%RPD calculation of the parent and FD results is only applicable when both concentrations are greater than reporting limits.

RMU3-SS20

Metals	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
Lead	134.80	134.68	0.1	≤20

RMU3-SS15

Metals	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
Lead	56.22	62.53	11	≤20

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and

- Examining laboratory blanks for cross contamination of samples during sample analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All three ICVs were prepared using a secondary source.
- All second source verification criteria were met.
- All interference check criteria were met.
- All internal standard criteria were met.
- Dilution test (DT) was analyzed on sample RMU3-SS15.

RMU3-SS15

Metal	%D	Criteria
Lead	**18**	%D ≤ 10

- Post digestion spike (PDS) was analyzed on the same sample as the DT.

RMU43-SS15

Metal	%R	Criteria, %R
Lead	80	75 - 125

There were two method blanks (MB) and several calibration blanks associated with the ICP analyses in this SDG. All blanks were free of any target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP results for the samples in this SDG were considered usable. The completeness for the ICP portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERURY

General

The mercury portion of this SDG consisted of two (2) soil waste characterization samples. These samples were collected on January 3rd, 2012, prepared and analyzed for TCLP mercury using USEPA Method SW1311/SW7470A.

Both samples were analyzed following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

Both samples were digested in batch #162995. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the LCS.

The LCS recovery for mercury was within acceptance criteria.

Precision

Precision could not be evaluated for mercury since there were no duplicate analyses involved in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

Both samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. Both samples were prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. The ICV was prepared using a secondary source.
- All calibration verification criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The mercury result for the two samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

EXPLOSIVES

General

This data package consisted of six (6) soil samples including two field samples, two FDs and one pair of MS/MSD. All samples were collected on January 3rd, 2012 and were analyzed for a full list of explosives by SW8330B.

The explosive analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8330B. The samples were analyzed in one analytical batch under one set of initial calibration (ICAL) curves. All samples were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method. All samples were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS, MS, MSD, and the surrogate spikes. Sample RMU3-SS15 was designated as the parent sample for the MS/MSD analyses by Parsons.

All LCS, MS, MSD, and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of MS/MSD and parent/FD. Samples RMU3-SS20 and SS15 were collected in duplicate.

Neither parent or FD had explosives detected at reporting limits in both pairs, therefore, the %RPD calculation is not applicable. All %RPDs of MS/MSD were compliant.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during sample preparation and analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- The LCS was prepared with a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.

- All continuing calibration verification (CCV) criteria were met.

There were one MB and several calibration blanks associated with the explosive analyses in this SDG. All blanks were non-detect for all target explosives.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All explosive results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA VERIFICATION SUMMARY REPORT

for samples collected from RMU3, AOC75, and B8

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples and the associated field quality control (QC) sample collected from Camp Stanley Storage Activity (CSSA) on January 10 and 11, 2012. The samples in the following Sample Delivery Group (SDG) included samples collected from RMU3, AOC75, and B8:

66684

Samples were tested for selected metals. There were two pairs of parent/field duplicate (FD) samples and two sets of matrix spike/matrix spike duplicate (MS/MSD) samples.

All samples were collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 2.0°C which was within the recommended range is 2-6° C.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

ICP METALS

General

The ICP metals portion of this SDG consisted of twenty-seven (27) soil samples including two FDs and two pairs of MS/MSD. All samples were collected on January 10 and 11, 2012. Five samples were tested for TCLP arsenic, barium, cadmium, chromium, lead, selenium and silver. Samples from AOC75 were analyzed for barium and lead, samples from RMU3 were analyzed for lead only and samples from B8 were analyzed for barium, copper, lead and zinc.

The ICP metals analyses were performed using USEPA SW846 Method 6010B and the TCLP procedure was based on SW1311 All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method.

The ICP metals samples were digested in three batches. All analyses were performed without any dilution.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the three laboratory control samples (LCS) and two sets of MS/MSD results. Sample AOC75-SS39 and B6-SS51 were designated as the parent sample for MS and MSD analyses.

All LCS recoveries were within acceptance criteria for all three batches.

The %R of both sets of MS/MSD met the 75-125% criteria except barium was recovered 1% below the 75-125%R limit in the MSD of AOC75-SS39. The "M" flag applied by the lab was removed by Parsons data validator due to minor exceedance.

Precision

Precision was evaluated based on the %RPD of the two sets of MS/MSD results and two sets of parent/FD sample results. Samples AOC75-SS39 and B8-SS51 were collected in duplicate.

%RPD of the MS/MSD met the criteria in both pairs.

%RPD calculation of the parent and FD results is only applicable when both concentrations are greater than reporting limits.

AOC75-SS39

Metals	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
Barium	240.3	255.5	6.1	≤20
Lead	76.74	93.83	20	

B8-SS51

Metals	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
Barium	81.3	87.2	7.0	
Copper	11.36	12.93	13	≤20
Lead	31.43	32.11	2.1	
Zinc	36.2	37.4	3.3	

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during sample analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All three ICVs were prepared using a secondary source.
- All second source verification criteria were met.
- All interference check criteria were met.
- All internal standard criteria were met.
- Dilution tests (DT) were analyzed on samples AOC75-SS39 and B8-SS51.

AOC75-SS39

Metal	%D	Criteria
Barium	**18**	%D ≤ 10
Lead	**23**	

B8-SS51

Metal	%D	Criteria
Barium	**15**	%D ≤ 10
Copper	0.22	
Lead	**20**	

- Post digestion spikes (PDS) were analyzed on the same samples as the DT.

AOC75-SS39

Metal	%R	Criteria, %R
Barium	**58**	75 - 125
Lead	80	

"J" flags were applied to the barium results of all associated samples.

B8-SS51

Metal	%R	Criteria, %R
Barium	79	

Lead	88	75 - 125
Zinc	86	

There were three method blanks (MB) and several calibration blanks associated with the ICP analyses in this SDG. All blanks were free of any target metals at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All ICP results for the samples in this SDG were considered usable. The completeness for the ICP portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

MERURY

General

The mercury portion of this SDG consisted of fifteen (15) soil samples including one FD and one set of MS/MSD. These samples were collected on January 10 and 11, 2012. Five samples were prepared and analyzed for TCLP mercury using USEPA Method SW1311/SW7470A and the reaminder were analyzed for total mercury with method SW7471A.

All analyses were done by following the procedures outlined in the CSSA QAPP, prepared and analyzed within the holding time required by the method.

The sample was digested in two batches, #163066 and #163068, one for TCLP and one for total. The analyses were performed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery obtained from the two LCSs and one set of MS/MSD. Sample AOC75-SS39 was designated as the parent sample for the MS/MSD analyses.

Both LCS recoveries for mercury were within acceptance criteria.

Precision

Precision was evaluated based on the parent/FD and MS/MSD results. Sample AOC75-SS39 was collected in duplicate.

The %RPD of the MS/MSD met the criteria.

AOC75-SS39

Metals	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
Mercury	0.44	0.42	4.7	≤20

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during analysis.

The sample in this SDG was analyzed following the COC and the analytical procedures described in the CSSA QAPP. The sample was prepared and analyzed within the holding time required by the method.

- All initial calibration criteria were met.
- All second source verification criteria were met. Both ICVs were prepared using a secondary source.
- All calibration verification criteria were met.

There were two method blanks and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of mercury at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

The mercury result for the two samples in this SDG was considered usable. The completeness for the mercury portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for samples collected from RMU3

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers soil samples and the associated field quality control (QC) sample collected from Camp Stanley Storage Activity (CSSA) on December 18 and 19, 2012. The samples in the following Sample Delivery Group (SDG) included samples collected from RMU3:

69597

Samples were tested for explosives and lead. Not all samples were tested for both parameters.

There were two pairs of parent/field duplicate (FD) samples and one pair of matrix spike/matrix spike duplicate (MS/MSD) collected as field QC sample.

All samples were collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 3.0°C which was within the recommended range is 2-6° C.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

LEAD

General

The metal portion of this SDG consisted of seventeen (17) soil samples including thirteen (13) field samples, two FDs and one pair of MS/MSD. Samples were collected on January 18 and 19, 2012 and were analyzed for total lead only.

The lead analyses were performed using USEPA SW846 Method 6010B. All samples in this SDG were analyzed following the procedures outlined in the CSSA

QAPP. All samples were prepared and analyzed within the holding time required by the method.

The lead samples were digested in one batch and were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control sample (LCS) and MS/MSD. Sample RMU3-SS29 was designated for the MS/MSD analyses.

The LCS recovery was within acceptance criteria of 80 – 120%.

The %R of MS was 64.8% and MSD was 71.3% with control limits of 75-125%. "M" flag was applied to the lead result of the following samples in this SDG: SS-24, 25, 26, 27, 29, 35, and 35FD.

Precision

Precision was evaluated based on the relative percent difference (%RPD) of MS and MSD results. In addition, precision was measured by comparing the parent and FD sample results. Samples RMU-SS35 and RMU-SS36 were collected in duplicate.

The %RPD of the MS/MSD results was compliant.

Sample ID	Parent, mg/kg	FD, mg/kg	%RPD	Criteria, %RPD
RMU3-SS36	14.75	10.69	32	≤20
RMU3-SS35	10.59	10.64	0.47	

"J" flag was applied to the parent and FD pair of RMU3-SS36.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during sample analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- All three ICVs were prepared using a secondary source.

- All second source verification criteria were met.
- All interference check criteria were met.
- All internal standard criteria were met.
- Dilution tests (DT) were analyzed on sample RMU3-SS29.

RMU3-SS29

Metal	%D	Criteria
Lead	**15.5**	%D ≤ 10

- Post digestion spikes (PDS) were analyzed on the same samples as the DT.

RMU3-SS29

Metal	%R	Criteria, %R
Lead	85.7	75 - 125

There were one method blank (MB) and several calibration blanks associated with the ICP analyses in this SDG. All blanks were free of lead at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

Both lead results for the samples in this SDG were considered usable. The completeness for the lead portion of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

EXPLOSIVES

General

This data package consisted of seven (7) soil samples including three field samples, two FDs, one pair of MS/MSD. All samples were collected on December 19, 2012 and were analyzed for a full list of explosives by SW8330B.

The explosive analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8330B. The samples were analyzed in one analytical batch under one set of initial calibration (ICAL) curves. All samples were analyzed following the procedures outlined in the CSSA QAPP. All samples were prepared and analyzed within the holding time required by the method. All samples were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the LCS, MS, MSD, and the surrogate spikes. Sample RMU3-SS29 was designated as the parent sample for the MS/MSD analyses.

All LCS, MS, MSD, and surrogate spike recoveries were within acceptance criteria.

Precision

Precision was evaluated based on the %RPD of MS/MSD results and two sets of parent/FD results. Samples RMU3-SS36 and RMU3-SS35 were collected in duplicate.

All %RPDs of MS and MSD were compliant.

Neither parent nor FD had explosives detected at reporting limits for both sets; therefore, the %RPD calculation is not applicable.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during sample preparation and analysis.

All samples in this data package were analyzed following the COC and the analytical procedures described in the CSSA QAPP, Version 1.0. All samples were prepared and analyzed within the holding time required by the method.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- The LCS was prepared with a secondary source. All second source verification criteria were met.
- All initial calibration verification (ICV) criteria were met.
- All continuing calibration verification (CCV) criteria were met.

There were one MB and several calibration blanks associated with the explosive analyses in this SDG. All blanks were non-detect for all target explosives.

Completeness

Completeness has been evaluated in accordance with the CSSA QAPP. The number of usable results has been divided by the number of possible individual analyte results and expressed as a percentage to determine the completeness of the data set.

All explosive results for the samples in this SDG were considered usable. The completeness for this SDG is 100%, which meets the minimum acceptance criteria of 95%.

DATA VERIFICATION SUMMARY REPORT

for samples collected from RMU3

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers three soil samples collected from Camp Stanley Storage Activity (CSSA) on February 6, 2013. The samples in the following Sample Delivery Group (SDG) included samples collected from RMU3:

69868

Samples were tested for lead.

All samples were collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

The samples in this SDG were shipped to the laboratory in one cooler. The cooler was received by the laboratory at a temperature of 1.5° C which was slightly below the recommended range is 2-6° C.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; field and laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

LEAD

General

This SDG consisted of three (3) soil samples collected on February 6, 2013 and were analyzed for lead only.

The lead analyses were performed using USEPA SW846 Method 6010B. All samples in this SDG were analyzed following the procedures outlined in the CSSA QAPP within the holding time required by the method.

All three samples were digested in batch #174895. All three samples were analyzed undiluted.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control sample (LCS).

The LCS recovery was within acceptance criteria.

Precision

Precision could not be evaluated due to the lack of duplicate analyses in this SDG.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the COC procedures to those described in the CSSA QAPP;
- Comparing actual analytical procedures to those described in the CSSA QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during sample analysis.

The samples in this SDG were analyzed following the COC and the analytical procedures described in the CSSA QAPP. All samples were prepared and analyzed within the holding times required by the method.

- All instrument tune criteria were met.
- All initial calibration criteria were met.
- All calibration verification criteria were met.
- The initial calibration verification sample was prepared using a secondary source.
- All second source verification criteria were met.
- All interference check criteria were met.
- All internal standard criteria were met.
- Dilution test (DT) was analyzed on sample AOC75-SW06 in the SDG #69867. The DT was not applicable due to the low concentration of the sample
- Post digestion spike (PDS) was analyzed on the same sample as the DT.

AOC75-SW06

Metal	%R	Criteria, %R
Lead	77	75 - 125

There were one method blank and several calibration blanks associated with the ICP analyses in this SDG. All blanks were free of lead at or above the RL.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All lead results for the samples in this SDG were considered usable. The completeness of this SDG is 100%, which meets the minimum acceptance criteria of 90%.

DATA VERIFICATION SUMMARY REPORT

for sample collected from RMU3

CAMP STANLEY STORAGE ACTIVITY

BOERNE, TEXAS

Data Verification by: Tammy Chang
Parsons - Austin

INTRODUCTION

The following data verification summary report covers one soil sample collected from RMU3 Camp Stanley Storage Activity (CSSA) on February 26, 2013. This sample was logged in the following Sample Delivery Group (SDG) and was tested for lead:

70025

This sample was collected by Parsons and analyzed by Agriculture & Priority Pollutants Laboratories, Inc. (APPL) in Clovis, California, following the procedures outlined in the Statement of Work and CSSA QAPP, Version 1.0.

This sample was shipped to the laboratory with cooler temperature of 3.0° C upon delivery which was within the recommended range is 2-6° C.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the CSSA QAPP, Version 1.0. Information reviewed in the data packages included sample results; laboratory quality control results; calibrations; case narratives; raw data; COC forms and the cooler receipt checklist. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the CSSA QAPP, Version 1.0, were met.

LEAD

General

This sample was collected on February 26, 2013 and was analyzed for lead only.

The lead analyses were performed using USEPA SW846 Method 6010B. This sample was analyzed following the procedures outlined in the CSSA QAPP within the holding time required by the method.

Accuracy

Accuracy was evaluated using the percent recovery (%R) obtained from the laboratory control sample (LCS).

The LCS recovery was within acceptance criteria.

APPENDIX E

TCEQ Approval for Non-Hazardous Soils Reuse, December 20, 2010

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

December 3, 2010

U-029-10

Mr. Kirk Coulter, P.G., Project Manager
Texas Commission on Environmental Quality
Corrective Action Team 1, VCP-CA Section
Remediation Division
PO Box 13087 (MC-127)
Austin, TX 78711-3087

SUBJECT: Movement of Non-Hazardous Metals Impacted Soils from SWMU/AOC Closure Efforts to East Pasture Firing Range, Camp Stanley Storage Activity, Boerne, Texas TCEQ Industrial Solid Waste Registration #69026, EPA Identification Number TX2210020739

Dear Mr. Coulter:

The Camp Stanley Storage Activity (CSSA), McAlester Army Ammunition Plant, U.S. Army Field Support Command, Army Material Command, U.S. Army, is providing this letter to notify the TCEQ of CSSA's plan to move and manage non-hazardous metals-impacted soils generated during remedial actions at CSSA's Solid Waste Management Units (SWMU) and Area of Concerns (AOC) to CSSA's East Pasture Firing Range Berm located in Range Management Unit 1 (RMU-1).

CSSA currently has a need for additional soils on the small arms firing range berm in the east pasture. In recent years, this berm has been modified with non-hazardous soils generated from various SWMUs and AOCs remedial actions. The non-hazardous soil movement and management within the east pasture RMU-1 was authorized by TCEQ and USEPA during a Technical Interchange Meeting held on April 19, 2006 and subsequent letter by Mr. Sonny Rayos, TCEQ Project Manager, dated May 7, 2008. This letter is provided to TCEQ to reaffirm regulatory agreement with this practice.

To verify the generated remediation soils are non-hazardous prior to movement to the east pasture, soil samples will be collected and analyzed for TCLP metals in accordance with CSSA's approved RFI/IM Waste Management Plan dated May 2006. Movement of the non-hazardous metals-impacted soils from CSSA SWMUs and AOCs to the East Pasture Firing Range Berm is expected to occur on an as needed basis as determined by CSSA.

If you have any questions regarding this notification, please contact Gabriel Moreno-Fergusson at (210) 698-5208 or Mr. Ken Rice, Parsons, at (512) 719-6050.

Sincerely,

Jason D. Shirley
Installation Manager

cc: Mr. Greg Lyssy, EPA Region 6
Mr. Jorge Salazar, TCEQ Region 13
Ms. Julie Burdey, Parsons

Schoepflin, Shannon

From: Kirk Coulter [KCoulter@tceq.state.tx.us]
Sent: Monday, December 20, 2010 2:40 PM
To: Rice, Ken R
Subject: Re: Revised workplan fo Vapor Intrusion Survey Investigation at AOC-65

Hi Ken

On the movement of non-haz waste letter. I am sending this E-Mail to you as an informal approval of the letter sent to me on December 3, 2010. I understand that this procedure was approved during Technical meeting held on April 19, 2006 between Camp Stanley, Mr. Sonny Rayos (TCEQ), Parsons Engineeriong and Mr. Greg Lyssy (EPA).

If you have any questions, please call me

Thanks

Kirk

>>> "Rice, Ken R" <Ken.R.Rice@parsons.com> 12/7/2010 4:48 PM >>>
Greg,

I was preparing for our upcoming meeting in January and realized I have not set you the attached revised vapor intrusion survey work plan you requested from our last meeting. This was revised to include that three additional soil gas samples within AOC-65 southwest of building 90 for
TO-15 PCE SIM analysis. We have collected soil gas samples directly west of building 90 (at CSSA's fence line) and indoor air samples within building 90. The remaining effort is to collect soil gas data similar to what may be present off-post. That is, the groundwater PCE concentrations within the LGR aquifer in the southern portion of AOC-65 are conservatively similar in off-post groundwater PCE concentrations.
Therefore soil gas samples collected in the southern portion of AOC-65 may be more representative of the off-post soil gas present above similar LGR contaminated groundwater. We intend to take the soil gas samples for TO-15 PCE SIM analysis prior to our meeting so that all results may be discussed and finalization of the Vapor Intrusion Survey Report initiated. If you have any questions or concerns please do not
hesitate to call or contact me.

Regards,

Ken Rice
Parsons
512-719-6050 (Austin)
512-497-0075 (mobile)

Safety - Make it Personal !

APPENDIX F

Waste Characterization Sampling Results

Appendix F
Analytical Results for CSSA RMU-3 Soil Waste Characterization Samples

SAMPLE ID:		RMU3-SS12		RMU3-SS13		RMU3-WC01		RMU3-WC02		RMU3-WC03		RMU3-WC04		RMU3-WC05		RMU3-WC06		RMU3-WC07		RMU3-WC08		RMU3-WC09		RMU3-WC10		RMU3-WC11-PIMS		RMU3-WC12		RMU3-WC13	
DATE SAMPLED:		1/3/2012		1/3/2012		12/19/2012		12/19/2012		12/19/2012		12/19/2012		12/19/2012		12/19/2012		12/19/2012		12/19/2012		2/6/2013		2/6/2013		2/6/2013		2/6/2013		2/6/2013	
LAB SAMPLE ID:		AY52539		AY52540		AY73409		AY73408		AY73407		AY73406		AY73405		AY73404		AY73402		AY73403		AY74810		AY74811		AY74812		AY74813		AY74814	
	Units																														
TCLP Metals - SW6010B/SW7470A																															
Arsenic	mg/L	**0.010**	F	**0.0060**	F	**0.0040**	F	**0.0040**	F	**0.0050**	F	**0.0050**	F	**0.0050**	F	**0.0050**	F	**0.0030**	F	**0.0040**	F	**0.0030**	F	**0.0030**	F			**0.0050**	F	0.0020	U
Barium	mg/L	**0.32**		**0.41**		**0.45**		**0.48**		**0.60**		**0.62**		**0.50**		**0.35**		**0.42**		**0.33**		**0.36**		**0.50**				**0.33**		**0.57**	
Cadmium	mg/L	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U	0.00030	U			0.00030	U	0.00030	U
Chromium	mg/L	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U	0.0010	U			0.0010	U	0.0010	U
Lead	mg/L	**3.5**		**0.53**		0.0012	U	**0.0063**	F	**0.051**		**0.051**		**0.029**		**1.9**		**5.7**		**0.018**	F	**0.022**	F	**2.8**		**0.0073**	F	**0.46**		**0.0040**	F
Mercury	mg/L	**0.00020**	F	**0.00020**	F	0.00010	U	0.00010	U	0.00010	U	0.00010	U	0.00010	U	0.00010	U	0.00010	U	0.00010	U	0.00010	U	0.00010	U			0.00010	U	0.00010	U
Selenium	mg/L	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U	0.0020	U			0.0020	U	0.0020	U
Silver	mg/L	**0.015**		**0.015**		**0.0070**	F	**0.0059**	F	**0.0063**	F	**0.0065**	F	**0.0067**	F	**0.0067**	F	**0.0069**	F	**0.0066**	F	**0.0080**	F	**0.0081**	F			**0.0081**	F	**0.0079**	F

QA NOTES AND DATA QUALIFIERS:

(NO CODE) - Confirmed identification.
U - Analyte was not detected above the indicated Method Detection Limit (MDL).
F - Analyte was positively identified, but the quantitation is an estimation above the MDL and below the Reporting Limit (RL).
Detections are bolded.