Cover Page

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Additional Program ID Numbers.: SWR/Facility ID No.: 69026 PST Facility ID No.: N/A

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Other ID Nos.: United States Environmental Protection Agency (USEPA) Facility Identification No. TX2210020739

Reason for submittal (check all that apply):

☒ Initial submittal
☐ Revision

Notice of Deficiency Letter
Permit/Compliance Plan
Voluntary response

Enforcement/Agreed order
Directive/NOV letter
Other:

On-Site Property Information

On-Site Property (Facility) Name: Camp Stanley Storage Activity (CSSA) – Area of Concern 63

Street no. 25800 Pre dir: Street name: Ralph Fair Street type: Road Post dir:

City: Boerne County: Bexar County Code Zip 78015

Nearest street intersection and location description: CSSA main entrance located ½ mile east of intersection of Ralph Fair Road and Interstate Highway 10.

Latitude: Decimal Degrees (indicate one) North Degrees: 29º 42' 12.37"

Longitude: Decimal Degrees (indicate one) West Degrees: 98º 36' 12.03"

Contact Person for On-Site Property Information and Acknowledgment

Company Name or Person: CSSA

Contact Name: Glaré Sanchez Title: Environmental Manager

Mailing Address: 25800 Ralph Fair Road

City: Boerne State: Texas Zip: 78015 Phone: (210) 295-7453

Email: sanchezg@envirodept.net Fax: (210) 295-7386

Person is: property owner property manager potential purchaser tenant operator

other Manager, CSSA Environmental Programs

By my signature below, I acknowledge the requirement of §350.2(a) that no person shall submit information to the executive director or to parties who are required to be provided information under this chapter which they know or reasonably should have known to be false or intentionally misleading, or fail to submit available information which is critical to the understanding of the matter at hand or to the basis of critical decisions which reasonably would have been influenced by that information. Violation of this rule may subject a person to the imposition of administrative, civil, or criminal penalties.

Signature of Person Name (print): Date:

Consultant Contact Person

Consultant Company Name: Weston Solutions, Inc.

Contact Person: Stephen Mitchell, P.G. Title: Project Manager

Mailing Address: 2705 Bee Caves Road

City: Austin State: Texas Zip: 78746

Phone: (512) 651-7104 Fax: (512) 651-7101 E-mail address stephen.mitchell@westonsolutions.com

Professional Signatures and Seals

Professional Geoscientist

Stephen Mitchell, P.G.		
Professional Geoscientist	Geoscientist License number	Expiration date
Signature	Date	
(512) 651-7104	(512) 651-7101	stephen.mitchell@westonsolutions.com
Telephone number	FAX number	E-mail

Professional Engineer

Professional Engineer	P.E. License number	Expiration date
Signature	Date	
Telephone number	FAX number	E-mail

Registered Corrective Action Specialists (RCASs) and Corrective Action Project Managers (CAPMs)

For LPST sites only.

Registered Corrective Action Specialist	RCAS Registration number	Expiration date
Signature	Date	
Corrective Action Project Manager	CAPM Registration number	Expiration date
Signature	Date	
Telephone number	FAX number	E-mail

Seals, as applicable:

EXECUTIVE SUMMARY

Weston Solutions, Inc. (WESTON®) performed an Affected Property Assessment (APA) for Area of Concern (AOC) 63, located at Camp Stanley Storage Activity (CSSA), Bexar County, Texas. The APA was performed in response to the presence of empty drums and a soil pile at the ground surface of the site. The assessment evaluated the potential for buried waste and/or affected soil. The United States Army Corps of Engineers (USACE), Fort Worth District (CESWF), contracted WESTON to perform site investigation activities at CSSA, including the APA for AOC 63, under the Comprehensive Environmental Contract (CEC) No. W912BV-04-2026, Delivery Order (DO) DY01, dated 29 September 2006. The APA was conducted in accordance with requirements of Title 30 of the Texas Administrative Code (TAC), Chapter 350, the Texas Risk Reduction Program.

Assessments to determine the presence of buried waste and residual site contamination at AOC 63 have included a soil vapor survey, an electrical conductivity geophysical survey, an exploratory trenching investigation, and the collection of soil samples throughout the area of investigation. Based on the results of these investigation and sampling activities, there are no chemicals of concern (COCs) at levels presenting unacceptable risk to human health or the environment at AOC 63. The following tables summarize results of the assessment and site-specific conditions at AOC 63 identified during the APA.

Environmental Media	Actual or Probable Exposures On-Site?		Actual or Probable Exposures Off-Site?		Have notifications for actual or probable exposures been completed? (§350.55(e))		
	Yes	No	Yes	No	Yes	No	N/A
Soil		✓		✓			✓
Groundwater		✓		✓			✓
Sediment		✓		✓			✓
Surface Water		✓		✓			✓

Is there, or has there been, an affected or potentially affected water well? ___Yes ___✓___ No
If yes, what is the well used for? Not applicable.
Actual land use: On-site: ___Res ___✓___ C/I Off-site affected property: ___Res ___C/I ___✓___ N/A
Land use for critical PCL determination: On-site: ___✓___ Res ___C/I Off-site affected property: ___Res ___C/I ___✓___ N/A
Did the affected property pass the Tier 1 ecological exclusion criteria checklist? ___Yes ___✓___ No

Affected groundwater-bearing unit(s) (in order from depth below ground surface), or uppermost groundwater-bearing unit if none affected

Unit No.	Name	Depth below ground surface (ft)	Resource Classification (1, 2, or 3)
1	Upper Trinity Aquifer	Not observed, > 8 ft bgs	1
2			
3			

Assessment

Environmental Media		Assessment Levels Exceeded?						Affected property defined to RAL?			Is COC extent stable or expanding?	General classes of COCs (VOCs, SVOCs, metals, etc.)
		On-Site?			Off-Site?							
		Yes	No	Not sampled	Yes	No	Not sampled	Yes	No	N/A		
Soil	Surface		✓				✓			✓	Stable	VOCs, SVOCs
	Subsurface			✓			✓			✓	N/A	N/A
Groundwater				✓			✓			✓	N/A	N/A
Sediment				✓			✓			✓	N/A	N/A
Surface Water				✓			✓			✓	N/A	N/A

NAPL Occurrence Matrix

		NAPL Occurrence	Description
NAPL in vadose zone	✓	No NAPL in vadose zone	There is no direct or indirect evidence of NAPL in the vadose zone
		NAPL in/on soil	NAPL detected in or on unsaturated, unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
		NAPL in fractured clay	NAPL detected in fractures of unsaturated fine-grained soils
		NAPL in fractured or porous rock	NAPL detected in unsaturated lithologic material
		NAPL in karst	NAPL detected in karst environment
NAPL at capillary fringe	✓	No NAPL at capillary fringe	There is no direct or indirect evidence of NAPL at the capillary fringe
		NAPL at capillary fringe	NAPL detected at vadose-saturated zone transition, capillary fringe (in contact with water table)
NAPL in saturated zone	✓	No NAPL in saturated zone	There is no direct or indirect evidence of NAPL in the saturated zone
		NAPL in soil	NAPL detected in saturated unconsolidated clay-, silt-, sand-, and/or gravel-dominated soils
		NAPL in fractured clay	NAPL detected in fractures of saturated fine-grained soil or other double-porosity sediments
		NAPL in saturated fractured or porous rock	NAPL detected in saturated lithologic material
		NAPL in saturated karst	NAPL detected in karst environment within the saturated zone
NAPL in surface water or sediment	✓	No NAPL in surface water or sediment	There is no direct or indirect evidence of NAPL in surface water or sediments
		NAPL in surface water	NAPL detected in surface water at exceedance concentration levels or visual observation
		NAPL in sediments	NAPL detected in sediments at exceedance concentration levels or visual observation via migration pathway or a direct release

Remedy Decision

Environmental Media		Critical PCL exceeded on-site?			Critical PCL exceeded off-site?			PCLE zones defined?			General class (VOCs, SVOCs, metals, etc.) of COCs requiring remedy
		Yes	No	N/A	Yes	No	N/A	Yes	No	N/A	
Soil	Surface		✓				✓			✓	None
	Subsurface			✓			✓			✓	N/A
Groundwater				✓			✓			✓	N/A
Sediment				✓			✓			✓	N/A
Surface Water				✓			✓			✓	N/A

NAPL Triggers

NAPL Response Action Triggers		Description of Triggers
✓	No NAPL response action triggers	No NAPL triggers have been observed in any assessment zones (vadose, capillary fringe and saturated), nor in surface water or sediments
	NAPL vapor accumulation is explosive	NAPL vapors accumulate in buildings, utility and other conduits, other existing structures, or within anticipated construction areas at levels that are potentially explosive (≥ 25% LEL)
	NAPL zone expanding	NAPL zone is observed to be expanding using time-series data
	Mobile NAPL in vadose zone	NAPL zone is observably mobile, or is theoretically mobile based on COC concentrations and residual saturation
	NAPL creating an aesthetic impact or causing nuisance condition	NAPL is responsible for objectionable characteristics (e.g., taste, odor, color, etc.) resulting in making a natural resource or soil unfit for intended use
	NAPL in contact with Class 1 groundwater	NAPL has come in actual contact with saturated zone or capillary fringe of a Class 1 GWBU
	NAPL in contact with Class 2 or 3 groundwater	NAPL has come in actual contact with saturated zone or capillary fringe of a Class 2 or Class 3 GWBU
	NAPL in contact with surface water	Liquid containing COC concentrations that exceed the aqueous solubility in contact with surface water via various migration pathways or direct release to surface water
	NAPL in or on sediments	Liquid containing COC concentrations that exceed the aqueous solubility impact surface water sediments via migration pathway or a direct release

CONCLUSIONS AND RECOMMENDATIONS

ASSESSMENT RESULTS

Assessment and characterization have determined no evidence of waste materials buried in the subsurface and no conditions indicating the release of COCs exceeding concentrations protective of human health or the environment. Laboratory analysis of soil samples for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), explosives constituents, and a CSSA-specific list of metals indicate low concentrations of VOCs and SVOCs in surface soil; all analyte concentrations, except for benzene, were reported below their respective critical Tier 1 PCLs. No metals constituents or explosives constituents were identified in soil above laboratory detection limits or, for metals, above the CSSA range of naturally occurring background concentrations.

The maximum concentration of benzene identified over the course of three rounds of soil sampling was 0.0409 mg/kg. This maximum benzene concentration is below the TRRP Tier 1 PCL protective of direct human contact with the affected soil ($^{Tot}Soil_{Comb}$), but slightly above the TRRP Tier 1 PCL for the soil-to-groundwater exposure pathway ($^{GW}Soil_{Ing}$). However, all benzene soil concentrations were less than the TRRP Tier 2 soil attenuation model (SAM) derived $^{GW}Soil_{Ing}$ PCL of 0.295 mg/kg. Additionally, analysis of leachable benzene by the synthetic precipitation leaching procedure (SPLP) indicated concentrations less than the laboratory sample quantitation limit (SQL) of 0.000225 milligrams per liter (mg/l). Comparison of these non-detected leachate concentration results to the benzene Tier 1 PCL for ingestion of groundwater, 0.005 mg/l (based on the EPA maximum contaminant level [MCL]), further indicate no risk to groundwater.

Low level VOC and SVOC concentrations in soil at AOC 63 are likely the result of non-point source anthropogenic impact associated with adjacent roadways, with historical brush clearing and burning activities in proximity to the site, or with the historical operation of temporary field burn-latrines (i.e., drums utilized to contain and burn human waste) at or near the site. No site COCs exceed their respective critical Tier 1 or Tier 2 PCLs, and there is no known or suspected

on-site source for the detected VOC and SVOC compounds. No further assessment or remedial response is required.

NAPL DISCUSSION

No non-aqueous phase liquid (NAPL) was identified during the assessment.

RESPONSE ACTIONS AND RECOMMENDATIONS

All COC concentrations were reported below Tier 1 PCLs or calculated Tier 2 PCLs; no additional response actions are necessary.

FIGURE A - AFFECTED PROPERTY AND PCLE ZONE MAP

Figure A illustrates locations with benzene concentrations exceeding the critical Tier 1 PCL. As no benzene concentrations exceed the site-specific Tier 2 critical PCL, no PCLE zone is depicted.

CHRONOLOGY

December 2007. WESTON conducted sampling to obtain vertical delineation of benzene-impacted soil. Three sample locations were excavated to depths ranging from 4 to 8 feet below ground surface (bgs). The trenches were excavated at locations with benzene concentrations exceeding the critical Tier 1 PCL (soil-to-groundwater [$^{GW}Soil_{Ing}$]), including the location with the maximum benzene concentration observed to date at AOC 63. Laboratory analytical results for the samples indicated that benzene concentrations were below the laboratory method quantitation limit (MQL) of 0.00670 milligrams per kilogram (mg/kg).

September 2007. Proposed parameters for calculating a Tier 2 soil-to-groundwater PCL for benzene were discussed during a quarterly Technical Interchange Meeting with representatives from CSSA, the United States Environmental Protection Agency (USEPA), and the Texas Commission on Environmental Quality (TCEQ). Key issues of discussion were related to data gaps, including a lack of vertical delineation of benzene to concentrations below the MQL and a lack of groundwater sampling data for the site. TCEQ representatives concurred that utilization of a SAM-derived $^{GW}Soil_{Ing}$ PCL would be acceptable without characterization of groundwater, provided that vertical delineation of benzene to concentrations below the MQL in soil was obtained.

July 2007. WESTON and CSSA support-contractor personnel conducted an informal reconnaissance survey to look for potential sources of the low VOC and SVOC concentrations observed at AOC 63. Prior to conducting the survey, a review of ground surface contour maps indicated that the topography of the area surrounding the site restricts potential locations of upgradient sources of impact to a readily definable area bounded by hill crests to the north, west, and south. A windshield survey of this area indicated several burn piles and abutting unpaved roadways. No other potential sources of the observed VOC and SVOC concentrations in soil were observed.

June 2007. WESTON re-sampled three of the trench locations investigated in March 2007, including those locations with the highest reported benzene concentrations. Laboratory analytical results confirmed the presence of low concentrations of benzene at levels comparable to the March 2007 sample results for each of the locations sampled. Follow-on analysis by synthetic precipitation leaching procedure (SPLP) on the samples with the two highest results indicated no detectable benzene (< 0.000225 mg/l).

May 2007. Preliminary results of the geophysical survey and trenching investigation were presented to USEPA and TCEQ representatives during a project status meeting conducted at CSSA. Based on the lack of any indicated subsurface disposal activities at AOC 63, as well as a lack of any other identified potential sources of the observed benzene concentrations, the meeting attendees concurred on a benzene resampling approach to evaluate the potential for non-site-related cross-contamination of the original sample set. In addition, meeting attendees concurred with a plan to conduct follow up analytical testing by the SPLP in order to evaluate potential risk to groundwater, should the re-sampling effort confirm benzene concentrations exceeding the Tier 1 $^{GW}Soil_{Ing}$ PCL.

March 2007. WESTON conducted exploratory trenching to investigate geophysical survey anomalies potentially associated with disturbed soils or buried materials. A total of six trenches were advanced to depths ranging from 2 to 6 feet bgs. The trenches were excavated at locations underlying and adjacent to the original locations of the three discarded drums, within the area of disturbed soil observable at the ground surface, and at other areas identified with anomaly signatures during a previously conducted geophysical survey. Each of the trenches was

advanced to the depth of bedrock at its respective location. No evidence of buried material, no indications of subsurface disturbance (e.g., imported soil or obvious artificial breaks in soil horizons), and no groundwater was observed at any of the exploratory trench locations.

A total of 12 discrete soil samples were collected from five of the six trench locations and submitted for laboratory analysis for VOCs, SVOCs, explosives, and a CSSA-specific list of metal analytes. The soil analytical results indicated that analyte concentrations were generally below method detection limits or below TRRP Tier 1 PCLs for both human health and groundwater protection, with the exception of concentrations of benzene reported for each of the five trench locations sampled.

February 2007. WESTON conducted a geophysical survey to investigate the potential presence of buried materials at AOC 63. An electromagnetic induction indicator instrument was utilized to evaluate the subsurface for anomalies indicative of buried metallic objects, disturbed soils, or imported fill. Results of the survey indicated that potential presence of both disturbed soils and buried metallic objects was generally limited to areas in which those features were observable at the ground surface.

December 2006. WESTON reviewed aerial photographs obtained from the CSSA Environmental Office for visual indications of site activity associated with hazardous waste generation, storage, or disposal (e.g., disposal trenches, aboveground storage tanks [ASTs], evaporation ponds, etc.). An area with denuded vegetation at the approximate location of the soil pile currently present at the site can be seen in the 1957 photo; however, none of the other aerial photos provided any indications of potential waste-disposal-related activities at AOC 63.

January 2001. Parsons, Inc., (Parsons) performed a soil gas survey at AOC 63 as part of investigations for a group of solid waste management units (SWMUs) and AOCs suspected as contaminant release sites. Two sample points were advanced in the general area of the drums to a depth of approximately 4 feet bgs. Soil vapor samples were analyzed by an on-site mobile lab equipped with a gas chromatograph for benzene, toluene, ethylbenzene, xylenes (BTEX); vinyl chloride; tetrachloroethene (PCE); trichloroethene (TCE); trans-1,2-dichloroethene (DCE); and cis-1,2-DCE. The soil gas survey found no detectable VOC contamination present at the locations sampled (CSSA, 2001a).

SPECIALIZED SUBMITTALS CHECKLIST

____ Check here if no specialized submittals in this report

	If included, specify section or appendix
Ecological Risk Assessment	
Reasoned justification, expedited stream evaluation, Section 9 ecological risk assessment, and/or proposal for ecological services analysis	Section 9
Statistics	
Calculated site-specific background concentrations	Appendix 8
Used alternate statistical methods to determine proxy values for non-detected results (§350.51(n))	
Calculated representative concentrations (§350.79(2)) for remedy decision	
Analytical Issues	
Used SQL for assessment or critical PCL instead of the MQL (§350.51(d)(1)) or PCL (§350.79)	Section 10
The MQL of the analytical method exceeds assessment levels/critical PCLs (§350.54(e)(3))	Section 10
Human Health/Toxicology	
Variance to exposure factors approved by TCEQ Executive Director[1] (§350.74(j)(2))	
Developed PCLs based on alternate exposure areas	
Evaluated non-standard exposure pathway (e.g., agricultural, contact recreation, etc)	
Combined exposure pathways across media for simultaneously exposed populations (§350.71(j))	
Adjusted PCLs due to residual saturation, cumulative risk, hazard index, aesthetic concerns, or theoretical soil vapor	
Utilized non-default human health RBELs to calculate PCLs (includes use of non-default parameters, toxicity factors not published in rule, etc.) (§350.51(l), §350.73, §350.74)	
Calculated Tier 2 or 3 RBELs/PCLs or TSCA levels for polychlorinated biphenyls, or calculated Tier 2 or 3 RBELS/PCLs for cadmium, lead, dibenzo-p-dioxins, dibenzofurans, and/or polycyclic aromatic hydrocarbons	
Calculated Tier 1, 2, or 3 total petroleum hydrocarbon (TPH) PCLs	
Developed sediment/surface water human health RBELs and PCLs	
Fate and Transport	
Used or developed groundwater to surface water dilution factors	
Calculated Tier 2 PCL	Section 11
Calculated Tier 3 PCL	
Groundwater Issues	
Conducted aquifer test, classified Class 3 groundwater, or determined non-groundwater bearing unit (saturated soil)	

[1] Prior approval by Executive Director is required.

1 PROPERTY INFORMATION

1.1 PHYSICAL LOCATION

Property Location and Land Use

CSSA is located approximately 19 miles northwest of downtown San Antonio in northwest Bexar County, in south central Texas. The installation consists of 4,008 acres immediately east of Ralph Fair Road (State Farm-to-Market [FM] Road 3351), approximately 0.5 miles east of Interstate Highway 10. Its eastern boundary and parts of its northern and southern boundaries are contiguous with the Camp Bullis Military Training Reservation. The northern boundary is formed by Dietz Elkhorn/Old County Road and the western boundary is formed by Ralph Fair Road (Figure 1 A -1).

The primary mission of CSSA is receipt, storage, and issuance of ordnance material, as well as quality assurance testing and maintenance of military weapons and ammunition. CSSA is a conditionally exempt, small quantity generator (USEPA Identification Number TX22100120739).

AOC 63 consists of less than 1 acre of undeveloped land within the CSSA East Pasture, which is an approximately 1000-acre, generally undeveloped portion of the installation with restricted access due to its down-line location relative to an active munitions firing range. There is no documented historical use of the specific area containing AOC 63. The site is in an area of the East Pasture used for seasonal hunting purposes by CSSA personnel. The location of AOC 63 within CSSA is presented on Figure 1A-1. Figure 1A-2 presents an aerial photo of the site and surrounding area.

The site was identified for environmental investigation primarily due to the presence of three empty metal drums partially buried within a linear soil and rock pile visible at the ground surface. The disposal history and past contents of the drums are unknown; however, they were observed to contain limited amounts of apparently clean gravel. The individual drums are located on, and in close proximity to, a pile of disturbed soil and rock in the approximate center of the site.

Topography

AOC 63 is located at the toe slope of a topographic rise which located to north of the site. Surface water flow trends to the south across AOC 63; at the southern portion of the site a generally flat surface topography trends to the east towards a dry tributary of Salado Creek. The site is not located within the 100-year floodplain (FEMA, 2008).

Weather

CSSA receives an estimated average of approximately 36 inches of rain per year (CSSA, 2006b). Storm water flow from areas to the north, east, and south of AOC 63 discharges to the relatively flat, eastern-trending topography at the southern portion of the site. Surface water flow in this area can persist for days after significant rainfall events. Surface soils in the southern portion of the site were observed to be saturated for weeks following significant seasonal rains in the summer of 2007. Portions of the site were temporarily inundated by the storm water discharge flowing towards the east during this period.

1.2 AFFECTED PROPERTY AND SOURCES OF RELEASE

History and Operations

No records of any activity that would indicate the potential release of COCs at AOC 63 are available at CSSA. Aerial photographs dated 1934, 1945, 1962, 1966, 1978, 1985, 1991, and 1996 were reviewed for visual indications of activity at the site associated with a potential for hazardous waste generation, storage, or disposal (e.g., disposal trenches, aboveground storage tanks [ASTs], evaporation ponds, etc.). All of the photos indicated the property to be vacant, undeveloped land; however, the 1957 photo indicates an area with denuded vegetation at the approximate location of the soil pile currently at the site. No other reviewed aerial photos provided any indication of activities at AOC 63 which may have resulted in environmental contamination. A figure presenting the denuded vegetation (as seen in the 1957 aerial) relative to AOC 63 areas of investigation is provided in Appendix 11 as Figure A11-1.

Project Overview

A Section 3008(h) Administrative Order on Consent (Order) was issued to CSSA by the USEPA in May 1999 in response to chlorinated solvent contamination identified in water supply wells at the installation. In addition to other corrective actions related to addressing the groundwater contamination, the Order required CSSA to conduct a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) to evaluate all potential historical sources of contaminant releases at the installation. Facility-wide surveys of known or suspected waste disposal sites identified AOC 63 for additional investigation based on the presence of discarded drums observed at the ground surface in proximity to an area of disturbed soil and limestone rubble.

Assessment for the presence of buried waste and residual site contamination at AOC 63 has included a soil vapor survey, an electrical conductivity geophysical survey, a trenching investigation to assess anomalies identified during the geophysical survey, and the collection of soil samples throughout the area of investigation. No indications of buried waste material or of a potential on-site source of contaminants were observed during investigations at AOC 63. Soil samples indicated low levels of VOC and SVOC impact at the site. Of the detected COCs, only benzene concentrations exceed critical Tier 1 soil-to-groundwater ($^{GW}Soil_{Ing}$) PCLs (assumed residential land use and 30-acre source area). Development of a site-specific Tier 2 $^{GW}Soil_{Ing}$ PCL for benzene indicated all concentrations are below levels protective of groundwater as a drinking water source. Maximum concentrations of benzene observed in soil at AOC 63 are presented on Figure 1B.

Based on the level and distribution of VOC and SVOC impact to soils at the site, it is assumed that the compounds represent non-point-source anthropogenic impact associated with nearby roadways and brush-clearing activities. As all detected COC concentrations are below levels protective of human health and the environment, no further assessment or remedial response is required.

1.3 GEOLOGY/HYDROGEOLOGY

According to the Final Hydrogeologic Conceptual Site Model (HCSM), dated January 2006, the principal water-bearing unit at CSSA is the Middle Trinity Aquifer. The Middle Trinity Aquifer

is comprised of the Lower Glen Rose (LGR) Limestone, the Bexar Shale, and the Cow Creek (CC) Limestone. The water-bearing portions of the LGR and the underlying CC member are hydraulically separated by the Bexar Shale aquitard. Most domestic and water supply wells are drilled through the entire thickness of the Middle Trinity Aquifer to maximize yield from the two major production intervals (LGR and CC). Within the aquifer, the LGR stratum is typically the highest yielding and generally provides better water quality than the underlying CC member.

The Middle Trinity Aquifer is overlain by the Upper Trinity Aquifer, which is comprised solely of Upper Glen Rose (UGR) Limestone. In other portions of Central Texas where the UGR member can reach 500 feet in thickness, the Upper Trinity Aquifer is a principal aquifer. However, at CSSA most of the UGR stratigraphy has been eroded, leaving only the basal portion of the unit in outcrop at CSSA. Therefore, the remnants of the Upper Trinity Aquifer at CSSA are of limited areal extent and generally yield very small quantities of poor quality groundwater, when present.

The LGR portion of the Middle Trinity Aquifer present at CSSA is apparently unconfined and is recharged from 1) direct precipitation on the outcrop, 2) stream flow infiltration, and 3) infiltration of the overlying Upper Trinity Aquifer. Features of the geologic units within the regional area including CSSA are predominately influenced by the Balcones Fault Zone (BFZ) escarpment. The presence and movement of groundwater at CSSA is significantly influenced by fractures and karstic limestone features occurring throughout the BFZ region (CSSA, 2006a). A map of the surface outcrop lithology and a cross section of the regional geology underlying CSSA are presented on Figure 1C and Figure 1D, respectively.

Regional groundwater movement for both the Upper and Middle Trinity Aquifers generally corresponds with surface topography trends, resulting in a general direction of groundwater flow to the south or southeast. Middle Trinity aquifer groundwater elevations observed during a post-wide monitoring event conducted in September 2006 ranged from 874.32 feet above mean sea level (MSL) to 1,027.96 feet above MSL with an averaged general gradient of 0.009 ft/ft (CSSA, 2006b). Depths to groundwater can vary significantly with seasonal precipitation levels.

The Upper Glen Rose (UGR) member overlies the LGR at the majority of CSSA at an average thickness of approximately 50 feet, with estimated thicknesses ranging to over 400 feet in some areas. The HCSM indicates that,

> *"movement of groundwater in the [Upper Glen Rose formation] Upper Trinity aquifer is restricted to lateral flow along bedding planes between marl and limestone, where solution has enhanced permeability [...] Static water levels in adjacent wells completed in different beds are often different, demonstrating the possibility that beds are not hydraulically connected by avenues of vertical permeability [...] Upper Trinity water is generally of poor quality and most wells achieve only low production."*

No UGR monitoring wells are located in the immediate vicinity of AOC-63. However, the UGR is monitored at two other environmental restoration sites at CSSA. There are several discrete-interval UGR monitoring wells at SWMU B-3 and at AOC-65. SWMU B-3 is located approximately 4,000 feet to the northwest and AOC-65 is approximately 12,000 feet southwest of AOC-63. Monitoring of these wells indicates that, after significant rainfall (>1 inch), a perched water table can be present in the UGR for a short period of time at depths ranging from 10 to 20 feet bgs. After rainfall stops, the perched water table gradually recedes (Beal, 2008a).

Groundwater was not observed during any of the assessment activities conducted at AOC 63 to date. Groundwater measurements from the UGR at CSSA are obtained at locations which, because of their distance from AOC 63, are not considered to be hydraulically connected to any groundwater potentially underlying the site (CSSA, 2006a). However, AOC-63 is comparable in land surface elevation to CS-MW17-LGR (~2,500 feet south). Since its inception, CS-MW17-LGR groundwater depths have ranged between 80 and 320 feet bgs, with an average of 160 feet bgs.

AOC 63 is located on an outcropping classified by the CSSA HCSM as UGR Interval D, UGR(D). The site is at an elevation of approximately 1,230 feet above MSL. The UGR(D) interval is characterized at CSSA by alternating bedding planes of wackenstone, packstone, and marl with a total thickness estimated to vary between 130 and 180 feet. Groundwater in the UGR is laterally discontinuous and generally follows preferential pathways along the top of less-permeable bedding planes. Significant recharge to lower units (i.e., the LGR member of the Middle Trinity Aquifer) is assumed to occur in areas where the outcrop is bisected by faults and fractures. An inferred fault line has been identified approximately 450 feet east of the site,

roughly corresponding with the location of an intermittent tributary of Salado Creek (CSSA, 2006a).

The near-surface stratigraphic profile observed during the Affected Property Assessment activities consisted of 2.5 to 6 feet of brown, silty, clay loam soils with moderate organic content underlain by weathered limestone. The observed thickness of the loam layer increased toward the south and toward the western portions of the site. Penetrations into the limestone layer indicated thicknesses ranging from 1.5 to greater than 2 feet (note: the maximum depth investigated at most locations did not penetrate through to a different stratigraphic interval underlying the limestone). The weathered limestone was observed to be underlain by a yellow to reddish-brown, moist, marly clay at the southeast corner of the site. Generalized cross-sections of subsurface conditions observed during the exploratory trenching activities are presented on Figures 4C-1 and 4C-2.

According to the CSSA HCSM, soils present in the vicinity of AOC 63 include the Crawford and Bexar Stony Soils group (Cb) and the Krum Complex (Kr). The Cb group is characterized by very dark gray to dark reddish-brown, non-calcareous, loamy and clayey soils which are predominantly shallow and stony. The Kr soils are calcareous, dark grayish-brown or very dark grayish-brown materials which develop from sediment and runoff received from higher elevation soil (CSSA, 2006a). Based on observations at the site, Kr soils are present in the southern portion of the site in association with a topographic low drainage feature which runs down-slope from west to east, with a trend to the thinner Cb group on the northern portion of AOC 63.

Table 1A - Sources of Release

The following sources were identified as potentially contributing to COCs observed at AOC 63. However, none of the sampling activities or field observations collected during the site assessment confirmed that these potential sources are contributing to VOC and SVOC concentrations identified in surface soils at the site.

Table 1A. Sources of Release (see input values on preceding page)

Affected property name/number1	Name of potential source[2] (supplied by the person)	Type of potential source (select from Column 1 on Inputs list)	NOR unit or SWMU number, if applicable	Substances of potential concern (select from Column 2 on Inputs list)	Size of source (capacity, area, or volume)	Status of source (select from Column 3 on Inputs list)		Was a release from this source confirmed? (if yes, indicate the discovery method from Column 4 on Inputs list, and date release was discovered)			
						Status[3]:	If closed or other, list date closed or explain:	No	Yes	Discovery method	Date
AOC 63	Discarded burn-latrine drums	Unauthorized disposal	N/A	VOCs, SVOCs	Three 55-gallon drums	Inactive			✓	Soil sampling	March 2007
AOC 63	Controlled grassland burning	Non-point source anthropogenic	N/A	VOCs, SVOCs	Up-gradient areas	Inactive			✓	Soil sampling	March 2007
AOC 63	Roadway-associated impact	Non-point source anthropogenic	N/A	VOCs, SVOCs	Adjacent vehicle roadways	Inactive			✓	Soil sampling	March 2007

[1] The name or number is an identification of the affected property assigned by the person. Continue using the name or number identification throughout this report and all other correspondence on the affected property.
[2] The potential source is the source of the release. The person determines the name given to the potential source. Examples: northwest tank farm, Main Street landfill, etc.
[3] Specify whether the source status is active, inactive, abandoned, closed, or specify another status as appropriate.

Table 1B - Potential Off-Site Sources

No off-site sources are suspected of contributing to COCs observed at AOC 63.

Figure 1A - On-Site Property Map

Figure 1A-1 presents the location of AOC 63 within the CSSA installation boundaries. Figure 1A-2 illustrates relevant physical features of the subject property and immediately adjacent areas. The site and all areas within a minimum radius of approximately 2,500 feet consist of undeveloped land.

Figure 1B - Affected Property Map

Figure 1B presents locations and concentrations exceeding soil Tier 1 PCLs for benzene. Although not the only COC detected during the assessment, benzene was the only constituent exceeding the Tier 1 PCL and has been used on Figure 1B to characterize the affected property.

Figure 1C - Regional Geologic Map

Figure 1C consists of a regional geologic map obtained from the CSSA HCSM. The approximate location of AOC 63 within CSSA is presented for reference.

Figure 1D - Regional Geologic Cross Section(s)

Figure 1D presents a geologic cross section obtained from the CSSA HCSM that illustrates the regional stratigraphy of the area from the surface to the base of the principal regional water supply aquifers. The cross section includes formation names, aquitards, and minor and major aquifers.

2 EXPOSURE PATHWAYS AND GROUNDWATER RESOURCE CLASSIFICATION

The following section discusses complete and potentially complete exposure pathways and the results of the receptor survey conducted for the AOC 63 Affected Property Assessment. As the entirety of the site, as well as the full 1/2-mile radius utilized for the review of potentially affected or threatened water supply wells, lies well within the boundaries of CSSA, research for the receptor survey was limited to review of TCEQ- and EPA-approved documents prepared in response to the CSSA Agreed Order and available on the installation's administrative record website. These documents included review of records for drinking water and agricultural supply wells and critical hydrogeologic data for CSSA related to the presence of karst terrain, faults, and fractures associated with the on-post lithology. References used in this research are listed in Appendix 16.

2.1 SOURCE(S) OF POTABLE WATER FOR ON-SITE PROPERTY AND AFFECTED OFF-SITE PROPERTIES

CSSA obtains its potable drinking water supply from wells located on post and completed within the LGR member of the Middle Trinity Aquifer (CSSA, 2002a). As the site is currently and has historically been undeveloped, no water supply is available within the area of investigation. The nearest well, CSSA Well CS-4, is located approximately 5,000 feet to the northwest of AOC 63. However, the well is located within the CSSA chlorinated solvent plume and is used only for contaminant monitoring purposes. The closest active CSSA drinking water supply well, CS-1, is located approximately 6,600 feet south of AOC 63. Based on distance and direction from the site, there is no potential for contamination from AOC 63 to impact these wells.

2.2 FIELD RECEPTOR SURVEY

A 500-ft field receptor survey, as measured from the boundary of the investigation area, was conducted in April 2008 by Ms. Elisa Morales and Ms. Olga Spears of WESTON. The survey included field observations of geologic fault features identified during the records research and photo documentation of site features, such as surface drainage pathways and bedrock outcrops, as well as general features of the ecological habitat present at AOC 63. Additionally, the

location and status of water wells identified during the records search and interviews with CSSA and Camp Bullis personnel were conducted (Beal, 2008b; Meneilly, 2008). An aerial photo map of the area included in the receptor survey is provided as Figure 2A. Photos obtained during the receptor survey are presented on Figure 2B.

2.3 RECORDS SURVEY

As the site and the surrounding 1/2-mile radius utilized for the review of potentially affected or threatened water supply wells lies well within the boundaries of CSSA, research for the receptor survey was limited to review of TCEQ- and EPA-approved documents prepared in response the CSSA Agreed Order. These documents included records for drinking water and agricultural supply wells and critical hydrogeologic data for CSSA related to the presence of karst terrain, faults, and fractures associated with the post lithology.

Documents reviewed were obtained from the on-line CSSA Environmental Encyclopedia or directly from the CSSA Environmental Office included the following:

- Final Hydrogeologic Conceptual Site Model for CSSA (CSSA, 2006a)
- Off-site Well Survey Report (CSSA, 2002)
- Species and Habitat Distributions of Black-Capped Vireos and Golden-Cheeked Warblers, 2007 Breeding/Nesting Season (Parsons, 2008).

Results of the document reviews were discussed with Mr. Chris Beal of CSSA and confirmed to be accurate for current site conditions (Beal, 2008b).

2.4 RECEPTOR SURVEY RESULTS

AOC 63 is located in an approximately 1,000-acre portion of undeveloped land at CSSA with restricted access due to its down-line location relative to an active munitions firing range. The site is located within a cleared pasture area surrounded by Oak and Juniper woods at the toe of a moderately sloped hill, which rises toward the north. Surface water runoff in the general area of AOC 63 is dominated by flow from hills located to the north, west, and south. The crests of these hills represent the most upgradient source of surface water runoff in their respective

directions, effectively directing and concentrating surface water flow to a centrally located pasture area that includes AOC 63. The storm water discharge from this area flows to the east along a topographic low that traverses the southern edge of the site. This drainage feature discharges to an intermittent feeder branch of Salado Creek located approximately 500 feet to the east. The location of the creek is associated with an inferred geologic fault zone that could provide a direct source for infiltration of surface water or shallow, perched groundwater to deeper and more prolific water-bearing strata, including members of a regional drinking water source aquifer (Middle Trinity Aquifer).

CSSA personnel and visitors potentially present at the site are limited to CSSA grounds-keeping personnel and seasonal hunters. Potential human receptors would be limited to site transient visitors, hunters, or grounds-keeping workers spending a limited amount of time within the confines of the investigation area.

Review of information contained in the report *Species and Habitat Distributions of Black-Capped Vireos and Golden-Cheeked Warblers, 2007 Breeding/Nesting Season* indicated two endangered species are seasonally present at CSSA. Although Figure 9A shows that habitat is present, the report indicates that AOC 63 is not located within confirmed nesting areas for these species. Results of the Tier 2 SLERA (see Section 9) indicate the nature of environmental contamination present at AOC 63 does not present an unacceptable level of ecological risk; therefore, no additional evaluation of ecological receptors was conducted.

Two environmental monitoring wells, CS-MW5-LGR and CS-MW17-LGR, are located approximately 2,500 feet to the west and south of AOC 63, respectively. Both of the wells are completed in the LGR with screened intervals ranging from approximately 367 to 455 feet bgs. Groundwater samples collected these wells following their installation in June 2001 (CS-MW5-LGR) and September 2002 (CS-MW17-LGR) indicated no detectable benzene concentrations (Beal, 2008C).

Based on information obtained during the records review and site reconnaissance, receptors with the potential to be affected from environmental contamination at AOC 63 are limited:

- No water supply wells are located within 1/2 mile of the AOC 63.

- The nearest downgradient active potable water supply well is CS-1, located approximately 6,600 feet to the south of AOC 63. Based on distance and direction from the site, there is no potential for contamination from AOC 63 to impact this well.

2.5 GROUNDWATER RESOURCE CLASSIFICATION

Groundwater at CSSA is identified as a Class 1 resource. The installation overlies and obtains its potable water from the Middle Trinity Aquifer, a regional drinking water resource. Shallow groundwater potentially present at AOC 63 is presumed to be hydraulically connected to the Middle Trinity Aquifer.

2.6 EXPOSURE PATHWAYS

As site COCs do not exceed Tier 1 or Tier 2 PCLs protective of human health from direct exposure and of cross-media impact of groundwater from affected soils, there are no current or future threats of completed receptor exposure pathways. Based on the results of the Tier 2 SLERA, site COCs do not present an unacceptable ecological risk. Thus, there are no current or future threats of completed ecological receptor exposure pathways.

Table 2A - Water Well Summary

Table 2A presents a summary of all water well located within a ½ mile radius of AOC 63.

Table 2A. Water Well Summary

Well no. / designation	Well owner's name of record	Distance from affected property (ft.)	Screened interval/open interval (ft)	Cemented interval (ft)	Completion type	Total depth	Date drilled	Producing formation	Current water use[1]	Current status[2]	Data source[3]
Downgradient Wells											
CS-MW17-LGR	CSSA	2,500 ft	420-445 ft bgs			450 ft bgs		LGR	Environmental Monitoring	Active	CSSA
Cross-gradient Wells											
CS-MW5-LGR	CSSA	2,500 ft	367-392 ft bgs			392.5 ft bgs		LGR	Environmental Monitoring	Active	CSSA
Upgradient Wells											
None											

[1] Current water use: Dom - domestic; PS - public supply/municipal; Ind - industrial; Comm - commercial; Irr - irrigation; Liv - livestock
[2] Current status: Act - active; Ab - abandoned/not in use; SB - standby/backup; P&A - plugged and abandoned
[3] Indicate the specific primary source of well information.

Table 2B - Affected Water Well Summary

No affected water wells at CSSA are associated with site AOC 63.

Table 2C - Complete or Reasonably Anticipated to be Complete Exposure Pathways

Not applicable; there are no COCs exceeding levels protective of human health or ecological receptors.

Figure 2A - Potential Receptors Map

Figure 2A presents the location of the potential receptors identified within at least a 500-ft radius of the affected property.

Figure 2B - Field Survey Photographs

Color copies of photographs depicting observations made during the 500-ft field survey are presented in Figure 2B.

Figure 2C - Water Well Map

Although there are no water wells located within the applicable search radius, Figure 2C includes a color aerial photo map illustrating the locations of CSSA water supply wells relative to a 1/2 mile radius of the site. Additional information regarding the indicated wells and drinking water resources at CSSA is provided in Appendix 5.

Attachment 2A - Tier 1 Ecological Exclusion Criteria Checklist

A Tier 1 Ecological Exclusion Criteria Checklist is attached to this section.

Attachment 2B - Tier 1 Ecological Exclusion Criteria Supporting Documentation

Not applicable.

3 ASSESSMENT STRATEGY

3.1 GENERAL ASSESSMENT ISSUES

Environmental Media Assessed

Potentially complete exposure pathways at AOC 63 are direct contact with surface soil ($^{Tot}Soil_{Comb}$) for site visitors and soil-to-groundwater cross-media contamination ($^{GW}Soil_{Ing}$). Tier 1 $^{Tot}Soil_{Comb}$ PCLs and Tier 1/Tier 2 $^{GW}Soil_{Ing}$ PCLs (residential land use, 30-acre source area) were not exceeded in surface soil for any constituents at any sample location. Vertical delineation to laboratory MQLs of the only site COC exceeding Tier 1 PCLs was achieved at a depth of less than 15 feet bgs without encountering groundwater at any of the AOC 63 locations investigated. As such, surface soil (assumed as 0-15 feet bgs for residential land use) was the only environmental medium assessed at AOC 63, as concurred to by TCEQ representatives during the CSSA Regulatory Technical Interchange meeting conducted 14 September 2008.

Target COCs

Surfaced soil samples collected during the initial release determination sampling at the site were analyzed for VOCs (EPA Method SW846-8260B), SVOCs (EPA Method SW846-8270C), explosives (EPA method SW846-3330), and a CSSA-specific list of metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, zinc). The selected analytical suite was based on the potential use of AOC 63 for the subsurface disposal of undetermined material, potentially including munitions and explosives of concern (MEC) materials.

Field observations obtained during the March 2007 trenching investigation indicated no signs of buried waste or of the release of chemical contaminants. Sample analytical results indicated low levels of VOC and SVOC constituents commonly associated with non-point-source anthropogenic contamination. No metals were detected above the range of naturally occurring background concentrations. Reported explosives concentrations were below laboratory MQLs (see Section 10 for additional information on explosives SQLs with respect to screening criteria). Of the detected VOC and SVOC compounds, only benzene concentrations exceeded its critical

Tier 1 PCL. Subsequent sampling and analysis at the site conducted in June and December 2007 was limited to verifying the presence of benzene and obtaining vertical delineation of benzene in soil. Additionally, analysis by the SPLP was conducted on samples collected from the two locations with the highest benzene concentrations observed during the confirmation sampling event conducted in June 2007.

Background

A background metals concentration evaluation was previously conducted for CSSA and is documented in the report titled *Evaluation of Background Metals Concentrations in Soils and Bedrock* (CSSA, 2002). The report was reviewed and approved by TCEQ in correspondence dated 23, April 2002. A copy of the TCEQ letter approving the background metals report and a table obtained from the background metals report presenting the 95 percent upper confidence limit (95% UCL) of the range of naturally occurring metals concentrations at CSSA is provided in Appendix 8.

3.2 ASSESSMENT STRATEGY

General Assessment Approach

The objective of the assessment was to determine the potential presence of buried waste material and residual environmental contamination at AOC 63 based on the presence of abandoned empty 55-gallon drums and an area of disturbed soil visible at the ground surface. Subsurface exploratory trenching and sampling locations were selected based on results of an electrical conductance geophysical survey and on review of historical aerial photos of the site. The collection of soil samples was accomplished through the excavation of exploratory trenches utilizing a backhoe and hand augers. A copy of the geophysical survey report is attached in Appendix 11. A figure presenting an overlay of geophysical anomalies identified and suspect features identified during the review of historical aerial photos relative to the area investigated is also provided in Appendix 11 as Figure A11-2.

Sampling Approach

Initial site investigation activities conducted in March 2007 consisted of advancing six exploratory trenches, designated as AOC63-A1 through AOC63-A5 and AOC63-B1, in areas identified with conductivity survey anomalies or aerial photo features potentially indicative of buried material or disturbed soil. Soil samples were collected at depth intervals representing ground surface to a depth of approximately 6 feet bgs, including representative samples from the bottom of each excavation and from intermediary depths to evaluate potential impact. Soil samples were screened with a photo-ionization detector (PID) for VOCs to help in evaluating the presence of potential impacted materials. Field screening results did not indicate the presence of volatile contaminants and were generally not used for selecting soil samples to be submitted for laboratory analysis. Exploratory trench locations are presented on Figure 1-B.

Based on the results of the March 2007 investigation, a second round of samples was collected in June 2007 to verify the presence of benzene and to evaluate its leaching potential by conducting analysis by SPLP. Sample points were placed with GIS coordinates obtained during the March 2007 investigation to verify conditions at three previously sampled locations, including AOC 63-A2, AOC 63-A4, and AOC63-B1. Samples were collected from depth intervals representing the ground surface to a depth of approximately 1.5 feet bgs. Additional soil volume was collected from each sample point to allow for SPLP analysis on the two samples with the highest total benzene results.

To support calculation of a site-specific Tier 2 $^{GW}Soil_{Ing}$ PCL, a total of two samples were collected at locations designated as AOC63-A6 and AOC63-B2 for a determination of fraction organic carbon (FOC) by ASTM Method D2974. As discussed in Section 1.3, AOC 63 is located at the transition from Crawford-Bexar soils to the Krum Complex soil group. Accordingly, the FOC sample locations were placed at the northern and southern portions of the site to account for potential variations in organic material content.

In December 2007, a second event was conducted to attempt to vertically delineate benzene concentrations in soil utilizing a backhoe to collect samples. Locations sampled included the point with the highest observed benzene concentration to date (AOC63-B1), the center of the area of disturbed soil visible at the ground surface (AOC 63-A1), and a location downgradient by

surface slope of the area of disturbed soil (AOC63-A4). Samples were collected from depth intervals representing 6.5 to 7.0 feet bgs, 7.5 to 8.0 feet bgs, and 3.5 to 4.0 feet bgs at AOC63-A1, AOC63-A4, and AOC63-B1, respectively. The excavations were advanced to bedrock, with the objective of penetrating through the limestone layer to a sufficient depth to confirm vertical delineation of benzene concentrations. Excavations at AOC63-A1 and AOC63-A4 did not penetrate through the bedrock layer underlying the site; therefore, samples at those two locations were collected from weathered limestone inter-bedded with minor amounts of marl. The excavation at AOC63-B1 penetrated the weathered bedrock, exposing a moist, marly clay layer underneath. The sample at AOC63-B1 was collected from this clay layer.

Surface Water and Sediment Assessment

No threat to surface water or sediment is presented by the AOC 63 site COCs. Vertical delineation of benzene was obtained prior to encountering groundwater, and all soil samples collected at the site to date have indicated VOC, SVOC, explosives, and metals constituents below critical PCLs or laboratory MQLs.

Aerial Photo Review

A review of aerial photos obtained from the CSSA Environmental Office (photos dated 1934, 1945, 1962, 1966, 1978, 1985, 1991, and 1996) was conducted to aid in determining areas to be addressed by the geophysical survey and exploratory trenching. The photos were evaluated for indications of historical site conditions with a potential of being associated with a release of environmental contaminants. None of the photos indicated clear evidence of any such activities or conditions; however, the 1957 photo exhibits an area of denuded vegetation in the general location of the disturbed soil pile currently visible at the site. Figure 11-A1 presents the 1957 photo site feature and is provided in Appendix 11.

Geophysical Survey

An electrical conductivity geophysical survey was conducted in January 2007 to evaluate for the presence of buried material and disturbed soils in the subsurface. The extent of the survey was determined by review of aerial photographs and from site features visible at the ground surface (i.e., a mound of disturbed soil in the center of the site and abandoned drums). Results of the

survey indicated anomalies potentially indicating the presence of disturbed subsurface soil and buried metallic objects at the locations of AOC63-A1 and AOC63-B1. A copy of the Geophysical Survey Report is provided in Appendix 11.

Utilities

AOC 63 is located in an undeveloped portion of CSSA. There are no utilities present within a 500-foot radius of the site boundary.

Assessment Methods

Samples collected during March 2007 and December 2007 trenching investigations were obtained from the open excavation if less than 3 feet in depth or, for samples from lower depths, from the backhoe bucket. When collecting soil samples from a backhoe bucket, the equipment operator was directed to remove a volume of soil clear of any sloughed material and at the specific depth interval to be sampled. Samples were then collected from soils that had not come into contact with the backhoe bucket walls.

Samples collected in June 2007 to confirm the presence of benzene and for SPLP analysis were collected with a hand auger. FOC samples collected in October 2007 were also collected with a hand auger. Hand augers were decontaminated between sample locations with a detergent scrub and a double distilled-water rinse.

All samples were collected with disposable nitrile gloves, disposable scoops or disposable sample kits (VOCs only). VOC samples were collected during the March 2007 and June 2007 sampling event with an Encore® disposable sampler and placed into 40 ml VOA containers preserved with methanol. Due to the nature of material encountered in the December 2007 trenching investigation (i.e., weathered limestone with marl), samples were collected by hand and directly placed into unpreserved glass containers.

Field screening of soils for volatile organic vapors was conducted during the March, 2007 investigation with a Mini-REA PID unit calibrated at the beginning of each day. Results of field screening identified one sample at AOC63-A1 with a reading of 0.7 parts per million by volume (ppmv); all other samples and locations did not exhibit detectable VOCs. A summary of field

screening results is presented in Appendix 2 on Table A2-1. Based on the nature of PID readings observed during the initial investigation, as well as the general objective of the subsequent events to re-characterize locations already sampled, field-screening of soils was not conducted during the June and December 2007 sample events.

Data Quality

The initial release detection analytical data suite of VOCs, SVOCs, explosives, and metals was based on sampling conducted for historical release determination activities conducted at CSSA pursuant to the requirements of the USEPA Order. Although exceeding Tier 1 PCLs, and laboratory MQLs for a limited number of explosives, VOC and SVOC constituents were considered appropriate for evaluating site conditions based on the lack of any on-site source for the compounds in question. Additional information on the specific compounds with laboratory MQLs exceeding Tier 1 PCLs is presented in Section 10. A Data Usability Summary (DUS) Report for laboratory analytical results is provided in Appendix 10.

Table 3A - Underground Utilities

Not applicable; no utilities are present at or within 500 feet of AOC 63.