FACT SHEET

No. 33 – Annual Fact Sheet for 2012

The purpose of this Fact Sheet is to provide an overview of quarterly groundwater sampling conducted in 2012. ***The off-post groundwater contamination in a small area west of Camp Stanley Storage Activity (CSSA) continues to be stable and CSSA is making progress addressing contamination sources on-post.*** *Results for all groundwater sampling events are available in the CSSA Environmental Encyclopedia located at either the downtown San Antonio Public Library, (600 Soledad Street, on the 2nd floor behind the Reference Desk in the Government Documentation Section), the Patrick Heath Public Library in Boerne (451 North Main, see the Government Librarian for assistance), or on the internet at www.stanley.army.mil.*

On-post Groundwater Monitoring Plan

On-post groundwater monitoring has been conducted since 1991 as part of the CSSA environmental program. The wells sampled include drinking water, monitoring, and agriculture/livestock wells. Sampling frequencies for on-post wells are determined by the long-term monitoring optimization (LTMO) study completed in May 2005 and updated in 2010. This Plan, as approved by the U.S. Environmental Protection Agency (USEPA) and Texas Commission on Environmental Quality (TCEQ), sets the well sampling frequency at either quarterly (3 months), semi-annually (6 months), every nine months, or every 18 months. Currently, groundwater samples from monitoring wells are analyzed for chromium, cadmium, lead, and mercury, while the samples from the drinking water wells are analyzed for the additional metals arsenic, barium, copper, and zinc. All monitoring and drinking water wells were also analyzed for select volatile organic compounds (VOCs). VOCs make up substances such as paint thinners, dry cleaning solvents, and some constituents of petroleum fuels (*e.g.* gasoline and natural gas). Decades-old industrial practices sometimes accidentally release VOCs into the environment, where they can contaminate the soil and groundwater. CSSA ceased using VOC solvents in the mid-1990s. CSSA monitors for VOCs and metals associated with its past industrial processes. The CSSA Groundwater Monitoring Program Data Quality Objectives (DQO) that provides a description of the ongoing groundwater monitoring program and sampling frequencies is available in the Environmental Encyclopedia referenced above.

Off-post Groundwater Monitoring Plan

CSSA describes its groundwater monitoring program for off-post private wells in its *Off Post Monitoring Program and Response Plan*, July 2001 (Plan). The goals of this Plan are to confirm that off-post drinking water meets USEPA and TCEQ safe drinking water standards, determine where VOC contamination has migrated, assess if contaminant levels in those wells exceed standards, and define the appropriate response. As part of the Plan, 56 off-post wells were sampled in 2012.

Off-post water wells are selected for sampling based on CSSA's Plan to ensure protection of drinking water and to provide information for the environmental program. Factors considered in deciding if a well is sampled include where the well is located, how close it is to areas where VOCs have been detected, whether the well owner grants access for sampling, and results of previous sampling at the well. A well is initially sampled for four consecutive quarters (i.e., every three months for one year). Depending on the analytical results for the well, future sampling occurs as illustrated on Figure 1.

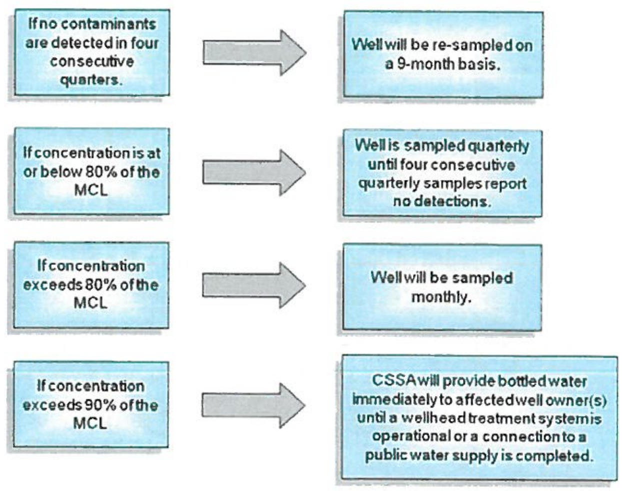

Figure 1. Off-Post Well Sampling Decision Chart

CSSA takes action if VOCs are detected in off-post wells at concentrations that begin approaching greater than 90 percent of the USEPA maximum contaminant level (MCL) of 5 parts per billion (ppb) for tetrachloroethene (PCE) and trichloroethene (TCE) (i.e., action is taken at concentrations greater than 4.5 ppb).

If a VOC exceedance occurs, CSSA will supply bottled water to affected residents within 24 hours of the detection and the well will be resampled to confirm the results. If additional sampling confirms previous test results, CSSA will either install a granular activated carbon (GAC) filtration system to remove contaminants from the water, or provide the well owner with an alternate water supply for as long as contaminant levels in the well exceed standards. Over the history of off-post sampling, eight off-post water wells have been fitted with GAC filtration systems: LS-7 (August 2001), LS-6 (August 2001), RFR-10 (two units, October 2001), RFR-11 (October 2001), LS-2 and LS-3 (installed April 2002, discontinued August 2007 when use of wells ceased), OFR-3 (April 2002), and LS-5 (October 2011).

2012 Groundwater Sampling Results

The locations of all on- and off-post wells sampled in 2012 are shown on Figure 2 (Page 2). According to the USEPA, concentrations below 5.0 ppb for PCE and TCE meet safe drinking water standards. Table 1 (Page 3) presents off-post groundwater data for PCE and TCE from all four 2012 sampling events (March, June, September, December). Three wells (I10-4, OFR-3, and RFR-10) exceeded the MCL for PCE, and two wells (OFR-3 and RFR-10) exceeded the MCL for TCE. In the past, four additional wells (LS-5, LS-6, LS-7, and RFR-11) had PCE and/or TCE detections at concentrations approaching or above the MCL (5.0 ppb). All in-use off-post wells with approaching or above-MCL detections have been equipped with GAC filtration systems, and samples of water collected after filtration for these wells had no detections of the VOC contamination. Well I10-4 is not currently being used and therefore is not equipped with a GAC filtration system. In all other wells

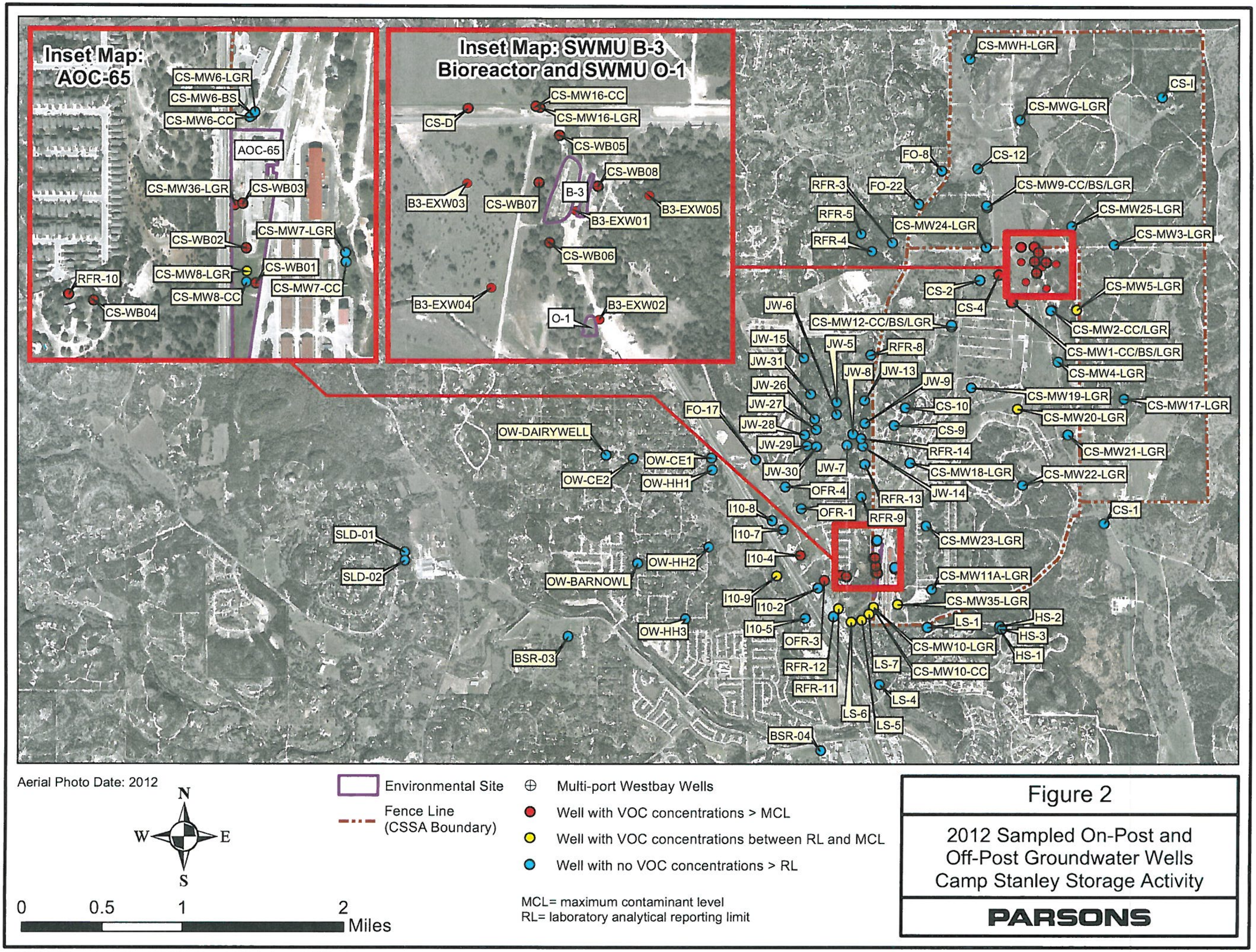

Figure 2

2012 Sampled On-Post and Off-Post Groundwater Wells Camp Stanley Storage Activity

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Table 1 Off-Post Groundwater Sampling Results

Well ID	Sample Date	PCE (ppb)	TCE (ppb)
BSR-03	3/9/12	ND	ND
	12/6/12	ND	ND
Duplicate	12/6/12	ND	ND
BSR-04	12/6/12	ND	ND
FO-8	3/5/12	ND	ND
	12/5/12	ND	ND
FO-17	3/5/12	ND	ND
	12/3/12	ND	ND
FO-22	3/5/12	ND	ND
	12/5/12	ND	ND
HS-1	3/7/12	ND	ND
	12/5/12	ND	ND
HS-2	3/7/12	ND	ND
	12/5/12	ND	ND
HS-3	3/7/12	ND	ND
	12/5/12	ND	ND
I10-2	3/5/12	ND	ND
	12/4/12	0.20F	0.53F
I10-4	3/7/12	4.47	1.9
	6/4/12	**5.20**	2.54
	8/30/12	4.49	2.23
	12/3/12	4.13	1.92
I10-5	3/5/12	ND	ND
	12/4/12	ND	ND
I10-7	3/5/12	ND	ND
	12/5/12	ND	ND
I10-8	3/6/12	ND	ND
Duplicate	3/6/12	ND	ND
	12/5/12	ND	ND
I10-9	3/20/12	ND	1.04
	6/4/12	ND	1.42
JW-5	3/7/12	ND	ND
Duplicate	3/8/12	ND	ND
	12/5/12	ND	ND
JW-6	3/6/12	ND	ND
Duplicate	3/6/12	ND	ND
	12/4/12	ND	ND
Duplicate	12/4/12	ND	ND
JW-7	3/7/12	0.33F	ND
	12/5/12	0.32F	ND
JW-8	3/7/12	0.32F	ND
	12/5/12	0.32F	ND
JW-9	3/16/12	ND	ND
	12/13/12	ND	ND
	12/13/12	ND	ND
JW-13	3/8/12	ND	ND
	12/7/12	ND	ND
JW-14	3/8/12	ND	ND
	12/6/12	ND	ND
Duplicate	12/6/12	ND	ND
JW-15	3/7/12	ND	ND
	12/5/12	ND	ND
JW-26	3/6/12	ND	ND
	12/6/12	ND	ND
JW-27	3/6/12	ND	ND
	12/4/12	ND	ND
JW-28	3/12/12	ND	ND
	12/6/12	ND	ND
JW-29	3/6/12	ND	ND
	12/6/12	ND	ND
JW-30	3/6/12	ND	ND
	12/13/12	ND	ND
JW-31	3/7/12	ND	ND
	12/4/12	ND	ND
LS-1	3/5/12	0.70F	ND
	12/5/12	0.63F	ND
LS-4	3/5/12	ND	ND
	12/5/12	ND	ND
LS-5	3/7/12	0.81F	2.46
	6/4/12	1.16F	3.33
Duplicate	6/4/12	1.14F	3.22
	8/30/12	0.84F	3.01
	12/3/12	0.84F	2.66
LS-6	3/7/12	0.81F	1.85
	6/4/12	1.10F	3.37
	8/30/12	0.55F	1.83
Duplicate	8/30/12	0.52F	2.04
	12/3/12	0.85F	2.25
LS-7	3/7/12	2.45	0.36F
	6/4/12	3.1	0.42F
	8/30/12	2.57	0.66F
	12/3/12	2.05	0.43F
OFR-1	3/7/12	0.28F	ND
	12/5/12	0.19F	ND
OFR-3	3/8/12	**5.19**	3.32
	6/4/12	**6.51**	**6.61**
	8/30/12	**7.92**	**5.78**
	12/6/12	3.41	3.06
OFR-4	3/7/12	ND	ND
	12/5/12	ND	ND
OW-BARNOWL	3/9/12	ND	ND
	6/19/12	ND	ND
	9/5/12	ND	ND
	12/4/12	ND	ND
OW-CE1	3/9/12	ND	ND
	12/4/12	ND	ND
OW-CE2	3/9/12	ND	ND
	12/4/12	ND	ND
OW-DAIRYWELL	3/9/12	ND	ND
	12/4/12	ND	ND
OW-HH1	3/9/12	ND	ND
	12/4/12	ND	ND
OW-HH2	3/9/12	ND	ND
	6/19/12	ND	ND
	9/5/12	ND	ND
	12/4/12	ND	ND
Duplicate	12/4/12	ND	ND
OW-HH3	3/9/12	ND	ND
	12/4/12	ND	ND
OW-HH2	3/9/12	ND	ND
	12/4/12	ND	ND
RFR-3	3/12/12	ND	ND
	12/5/12	ND	ND
RFR-4	3/12/12	ND	ND
	12/5/12	ND	ND
RFR-5	3/12/12	ND	ND
Duplicate	3/12/12	ND	ND
	12/5/12	ND	ND
Duplicate	12/5/12	ND	ND
RFR-8	3/6/12	ND	ND
	12/7/12	ND	ND
RFR-9	3/20/12	ND	ND
	12/27/12	ND	ND
RFR-10	3/8/12	**15.95**	**10.15**
Duplicate	3/8/12	**17.6**	**9.88**
	6/4/12	**25.80M**	**14.24**
	8/30/12	**11.91**	4.78
	12/3/12	**18.48**	**7.7**
RFR-11	3/8/12	0.47F	1.74
	6/4/12	1.23F	1.99
	8/30/12	0.54F	2.92
	12/3/12	0.67F	2.05
RFR-12	3/5/12	ND	0.35F
	12/4/12	0.15F	0.60F
RFR-13	3/7/12	ND	ND
	12/4/12	ND	ND
RFR-14	3/6/12	ND	ND
	12/7/12	ND	ND
SLD-01	3/6/12	ND	ND
SLD-02	3/6/12	ND	ND

Table 2 Off-Post GAC System Sampling Results

Well ID	Sample Date	PCE (ppb)	TCE (ppb)
LS-5-A2	3/7/12	ND	ND
	8/30/12	ND	ND
LS-6-A2	3/7/12	ND	ND
	8/30/12	ND	ND
LS-7-A2	3/7/12	ND	ND
	8/30/12	ND	ND
OFR-3-A2	3/8/12	ND	ND
Duplicate	3/8/12	ND	ND
	8/30/12	ND	ND
RFR-10-A2	3/8/12	ND	ND
	8/30/12	ND	ND
RFR-10-B2	3/8/12	ND	ND
	8/30/12	ND	ND
RFR-11-A2	3/8/12	ND	ND
	8/30/12	ND	ND

Notes:

ppb = parts per billion.

MCL = Maximum Contaminant Level.

PCE = tetrachloroethene.

TCE = trichloroethene.

ND = The analyte was not detected above the method detection limit.

F = The analyte was detected, but the concentration is below the reporting limit.

M = There was possible interference from the sample itself, the M flagged result is usable and defensible.

BOLD = Concentration is greater than the MCL of 5 ppb for PCE or TCE.

tested, VOC levels, where detected, were below the applicable drinking water MCLs for PCE and TCE.

CSSA will continue to sample both on- and off-post groundwater wells at the frequencies approved by USEPA and TCEQ in the LTMO and DQOs documented in the Plan. CSSA will continue to coordinate the groundwater monitoring program with the regulatory agencies and other potentially affected parties, including the USEPA, TCEQ, Fort Sam Houston, City of Fair Oaks, Fair Oaks Water Utilities, SAWS, Bexar County Commissioners' office, The Oaks Water Supply Corporation, local, state, and federal elected officials, private well owners, and others.

GAC-filtered Sampling Results

Because of the previously detected presence of VOCs, six off-post wells in the area are currently equipped with GAC filtration systems to remove VOCs from the water. In March and September 2012 analyses of the GAC-filtered water samples confirmed that no VOCs were present above the laboratory detection levels, and that the GAC units were working properly. Maintenance involving the replacement of carbon canisters for the LS-5, LS-6, LS-7, OFR-3, RFR-10 and RFR-11 GAC filtration systems was performed in January and July 2012 and in January 2013. The next carbon-canister replacement is scheduled for July 2013. Table 2 (Page 3) presents the results for PCE and TCE from GAC-filtered water treatment systems sampled. GAC-filtered samples are collected every six months and will be collected again in March and September 2013.

Source Area Cleanup

Groundwater contamination at CSSA is associated with three VOC source areas: Solid Waste Management Unit (SWMU) B-3, SWMU O-1, and Area of Concern (AOC)-65 as shown on Figure 2.

SWMU B-3 and SWMU O-1 are in the central portion of CSSA. Cleanup activities at SWMU B-3 and SWMU O-1 have included excavation and disposal of the VOC-contaminated soil and removing gases in the remaining fractured rock using soil vapor extraction (SVE). Approximately 1,515 cubic yards of soil were removed from SWMU O-1, and the site was closed in 2002. Approximately 17,000 cubic yards of waste and contaminated soil has been removed from SWMU B-3 since 2003. A bioreactor, designed to eliminate VOCs through accelerating biological activity of microorganisms capable of degrading PCE and TCE, was installed in 2007. Based on the system's success to date in degrading solvents, upgrades have been made to the system in anticipation of its acceptance as the long-term remedy. Wells installed around SWMU B-3 and the bioreactor are closely monitored to confirm that the system is running efficiently and effectively and that degradation of the contamination is continuing.

AOC-65, located in the southwest corner of CSSA, was identified as another source of VOCs found in groundwater around CSSA. While a SVE system was in operation from 2002-2011, a reduction in soil gas concentrations was observed. In 2012, the testing of an in-situ chemical oxidation (ISCO) method to treat underlying contamination remaining in the near surface rock in a former drainage ditch was performed. The ISCO process is an advanced oxidation technology that chemically destroys target contaminants such as PCE and TCE.

The treatability study involved removal of rock through excavation (Figure 3) and injection of the ISCO material within the trench, allowing the treatment material to follow preferential contaminant migration pathways from the former drainage area. This study effort is expected to reduce VOC source material at AOC-65 through removal of contaminated rock by trenching and treatment of residual contamination remaining outside of the trench area through ISCO application.

In August 2012, the initial injection of approximately 15,000 gallons of ISCO material was performed. The laboratory results indicated that the treatment process is capable of dislodging and oxidizing/reducing contaminants present in the surrounding bedrock.

Figure 3. AOC-65 Trench Installation

Activities Planned for 2013

- Vapor intrusion monitoring of the air in selected residences and other buildings in the vicinity of the AOC-65 source area. This sampling has been completed, and results indicate no concentrations above residential air regional screening levels (RSLs) determined to be acceptable in indoor air by USEPA.
- Injection of additional ISCO at AOC-65. Increased monitoring of wells on- and off-post near AOC-65.
- Continued monitoring of the SWMU B-3 Bioreactor treatment system.
- Quarterly Groundwater Monitoring to continue in March, June, September, and December 2013 at on- and off-post wells.
- Public meeting to discuss results of recent remediation activities, preferred long-term groundwater remedies, and potential future closure of the USEPA 3008(H) Order.

Public Comment and Future Fact Sheets

CSSA has been issuing fact sheets similar to this Fact Sheet since 2000. We will continue to mail Fact Sheets annually to provide information on sampling results, ongoing investigations, and cleanup activities. Each well owner involved in the groundwater monitoring program will continue to receive a separate letter concerning laboratory results for their wells after sampling by CSSA. CSSA will continue to inform the public about various aspects of its environmental program, through Fact Sheets, the CSSA website (www.stanley.army.mil), and periodic meetings. The public is welcome to comment on this Fact Sheet and the environmental activities at CSSA by writing or calling:

- CSSA Installation Manager, Mr. Jason D. Shirley, Camp Stanley Storage Activity, 25800 Ralph Fair Road, Boerne, TX 78015-4800 at (210) 295-7416;
- USEPA Regional Program Manager, Mr. Greg Lyssy, at (214) 665-8317;
- TCEQ Regional Program Manager, Mr. Kirk Coulter, at (512) 239-2572; or
- Fort Sam Houston, Public Affairs Office, Mr. Phillip Reidinger, at (210) 221-1151 or (210) 336-0449 (mobile).