

**FINAL TECHNICAL INTERCHANGE MEETING NO. 6 MEETING MINUTES
 QUARTERLY PROGRESS MEETING WITH TCEQ AND US EPA
 CAMP STANLEY STORAGE ACTIVITY, BOERNE, TEXAS
 FA8903-04-D-8675/DELIVERY ORDER 0006
 PARSONS 744223.01000**

Date: Tuesday, July 10, 2007
 Time: 9:30 A.M. - 12:00 P.M.
 Place: Camp Stanley Storage Activity (CSSA)
 Subject: SWMU B-3 Bioreactor Status, Update on Investigations, Site Management Plan beta testing, and miscellaneous topics

Attendees:

Attendee	Organization	Phone
Glaré Sanchez	CSSA	(210) 295-7453
Chris Beal	CSSA/Portage	(210) 336-1171
Greg Lyssy	U.S. Environmental Protection Agency (USEPA)	(214) 665-8317
Sonny Rayos	TCEQ	(512) 239-2371
Wayne Elliott	U.S. Army Corps of Engineers (USACE)	(817) 886-1666
Kent Rohlof	Air Force Center for Environmental Excellence (AFCEE)	(210) 536-2543
Krista Schnepf	AFCEE/Portage	(210) 536-4331
Steve Mitchell	Weston Solutions, Inc. (Weston)	(512) 651-7104
Mike Chapa	Weston	(210) 248-2428
Fred Price	Noblis	(210) 845-0401
Brian Vanderglas	Parsons	(512) 719-6059
Julie Burdey	Parsons	(512) 719-6062
Ken Rice	Parsons	(512) 719-6050

*Minutes prepared by Ken Rice, Julie Burdey, and Brian Vanderglas, Parsons.

The meeting was directed by Brian Vanderglas with presentations made jointly by Mike Chapa (Weston sampling and disposal plan), Fred Price (Site Management Plan), **Julie Burdey** (Parsons upcoming investigations) and Ken Rice (SWMU B-3 Bioreactor). The meeting discussions

were conducted per the meeting agenda attached to these minutes. All attendees were present for all portions of the meeting.

The goals of the meeting were to:

Discuss status of action items from prior progress meetings with TCEQ and US EPA;

Discuss sampling and disposal plan for AOC-64 and SWMU B-71;

Discuss status of Site Management Plan Beta Test Review;

Update status of investigations at I-1, AOC-67, AOC-68, SWMU B-2, SWMU B-8, SWMU B-20/21, and SWMU B-24;

Discuss SWMU B-3 bioreactor status and monthly/quarterly reporting formats; and

Cover other topics of interest to meeting attendees related to the Administrative Order or related projects.

INTRODUCTION

All meeting attendees met in the CSSA Building 98 conference room and Brian Vanderglas introduced the meeting and meeting agenda.

ACTION ITEMS FROM PREVIOUS MEETINGS

Action items were discussed as follows:

- With the recent contract award for an ecological risk assessment (ERA), a meeting with EPA and TCEQ will now be held to discuss how the ERA will be conducted. Sonny Rayos indicated that TCEQ's John Wilder handled the ERA for Camp Bullis, and would likely be assigned for CSSA, while Greg Lyssy indicated that Cheryl Oversteet would handle the ERA for the US EPA. Julie Burdey agreed to schedule a meeting in Austin in August 2007 to discuss the ERA. Greg Lyssy requested that the meeting not be scheduled for the last week in August.
- Julie Burdey will be sending Sonny Rayos an e-mail requesting closure of outstanding TCEQ/CSSA written correspondence regarding requested delisting of SWMU B-14 and closure of AOC-55 and SWMU B-29.
- Discussions with the Edwards Aquifer Authority (EAA) regarding a planned tracer study in the SWMU B-3 bioreactor have been delayed pending the issuance of a pending award that includes the bioaugmentation plan. The tracer study will be included in that plan, and EAA can be contacted during its preparation to ensure that they are adequately notified of the planned study and so that they have an opportunity to provide input.

SAMPLING AND DISPOSAL PLAN FOR WESTON SITES

Mike Chapa presented the portion of slides covering the sampling and disposal plan for the sites being investigated by Weston (AOC-63, AOC-64 and SWMU B-71). Mr. Chapa first covered an action item from a prior meeting regarding benzene detected at AOC-63. To fulfill the action, Weston resampled the site in the past month, and the resampling confirmed the presence of benzene, although synthetic precipitation leaching procedure (SPLP) data showed that no

benzene leached from the soil. Therefore, Weston would like to close the site using Tier 3 criteria under the Texas Risk Reduction Program (TRRP). Greg Lyssy expressed concern that benzene was still present given the period of time since any waste management or contamination would have occurred.

Sonny Rayos indicated that Tier 3 submittals require pre-approval from the agency, and he suggested that the pre-approval should be obtained before submitting the NFA Closure Report. He indicated that the request for pre-approval can be a simple letter stating how the Tier 3 numbers were derived. Weston indicated that they would consider submitting a pre-approval request as a separate submittal to TCEQ.

Mike Chapa moved the discussion to sites SWMU B-71 and AOC-64. He reported that both of the sites appear to share similar contaminants of concern (COCs) and similar response actions. COCs that exceeded the TRRP standards included barium, cadmium, copper, lead, mercury, benzene, and 2,4-dinitrotoluene (DNT). Removal actions are the planned response actions at both sites with post response action confirmation data used to demonstrate "no impact". Weston indicated that if necessary, post removal COC conditions would be evaluated through soil attenuation models (SAMs) to establish Tier 3 values, or other options may be considered. Mr. Chapa indicated that this approach was discussed at a prior meeting held in May 2007.

Mr. Chapa indicated that if any munitions debris encountered during the removal action is inert, it will be managed with the rest of the waste, but if it can not be determined, then management of the munitions will be deferred to the USACE. Mr. Chapa and Ken Rice of Parsons agreed to get together to discuss recycling procedures and key contacts that are followed at CSSA.

Mr. Rayos asked how large the kickout area was at AOC-64. Mike Chapa indicated that the limits shown on the map likely encompass the entire kickout area. Mr. Rayos also asked if there were any copper bullets found, and Mr. Chapa indicated that none were encountered during the investigations.

Rather than handling these response actions under the TRRP program, Sonny Rayos suggested that Weston review a TCEQ guidance document regarding "Remediation not subject to TRRP".

SITE MANAGEMENT PLAN BETA TEST REVIEW STATUS

Fred Price indicated that the beta test version of the Site Management Plan was posted on a website and links to that website were e-mailed to potential end users of the plan. Fred Price requested that all comments be submitted to him at Noblis or Glaré Sanchez at CSSA. Julie Burdey indicated that she would send out an update with the password and link to all plan reviewers.

INVESTIGATION STATUS FOR PARSONS SITES

Julie Burdey presented a brief overview of the SWMU and AOC investigations that Parsons will conduct. Draft work plans have been submitted to CSSA for sites I-1, AOC-67, AOC-68, and one combined work plan for sites SWMU B-2, SWMU B-8, SWMU B-20/21, and SWMU B-24, and are currently under review. Ms. Burdey then discussed sites and additional work added to Parsons contract through modification including (1) investigations at AOC-69 and AOC-73, (2) ecological risk assessment, (3) bird survey, and (4) bioaugmentation study at SWUM B-3.

SWMU B-3 BIOREACTOR STATUS UPDATE

Ken Rice began the presentation for the SWMU B-3 bioreactor treatability study by reiterating the primary objectives of the bioreactor, which are to gather sufficient data to determine the effectiveness of this treatment and to evaluate whether a similar treatment technology might be a possible application for the plume near AOC-65.

Mr. Rice reported that operations of the bioreactor were initiated during the last week of April 2007. The installed bioreactor injection system is currently being operated manually, but addition of automated controls is planned under a pending modification to the bioreactor task order (TO-06). During the initial two months of operation, the area has experienced much more rainfall than normal, so most of the data presented focused on the hydraulic data collected to date.

Response of water levels within the trench to rainfall events was presented in graphs, and the difficulty of calculating a water balance within the system was discussed. The biggest obstacle is assessing the contribution from rainfall and the apparent subsurface recharge that occurs up to 3-5 days following the rainfall event(s) from interflow. The inability to access the rate of inflows from the formation will limit the ability to quantify the rate of infiltration. Once the area experiences a typical prolonged dry period, the amount of water being applied to the trenches can be measured from the flows from CS-Well 16 and a more reliable assessment of the percolation rates can be assessed.

Mr. Rice indicated one interesting observation regarding trench 6, which is the trench located farthest to the east and upslope of the others. Following an approximate 5.8-inch daily rainfall event, the trench contained 8.3 feet of water. By the next day, all but a few inches of the water had drained out suggesting a possible geologic feature in contact with trench 6 that facilitates a much more rapid recharge than observed in Trench 1, the most western trench.

A second observation discussed involved the influence of CS-Well 16 LGR on the aquifer. With daily pumping being performed at CS-Well 16 LGR, water level drops were observed in WB07-LGR and WB05-LGR but minimal measurable responses were observed in WB06-LGR and WB08-LGR. The two wells that exhibit responses to pumping at CS-Well 16 LGR are located on the southern and western boundaries of SWMU B-3 (closest to CS-Well 16-LGR).

With regard to contaminant concentrations in the bioreactor, Mr. Rice reported that prior to applying groundwater from CS-Well 16 to the bioreactor, a baseline round of data was collected following a series of rainfall events in early April. This data indicated levels of *cis*-1,2-dichloroethene (DCE) at levels generally greater than 500 parts per billion (ppb), but trichloroethene (TCE) and tetrachloroethene (PCE) at levels less than 10 ppb. It was also noted that vinyl chloride was detected in the baseline data indicating that the microbial population needed to degrade PCE and TCE to vinyl chloride is present in or around the bioreactor. Preliminary data from the first month of data collection indicated that concentrations of *cis*-1,2-DCE are much lower, and concentrations of PCE and TCE appear to remain fairly consistent.

Following the discussion of data collected during the first months of operation, the discussion turned to the formats of the monthly reports requested by CSSA and US EPA. It was agreed that the monthly performance reports will be more of a compilation of data collected to date with

observations noted, if appropriate, but not an in-depth interpretation of the data, whereas the quarterly performance monitoring report will evaluate trends and provide some general and basic interpretations of the data and data trends. CSSA, TCEQ, and US EPA agreed to this approach. Mr. Rice reported that the first monthly report is scheduled to be ready for CSSA review by mid-July, and issued to US EPA and TCEQ by August 1, 2007. The first report will cover the first two months of data collected from system operations.

The last items discussed related to the bioreactor were the planned future data collection. Chris Beal suggested that a 3-dimensional view of the trenches and trench 1 in particular might be helpful to understand fluid dynamics within the trench. Brian Vanderglas agreed and mentioned that one thought for future consideration might be the installation of one or two additional shallow wells (less than 30 feet deep) on the upper and lower sides of SWMU B-3 to gain a better understanding of shallow formation flows and to assess the effective horizontal treatment influence of the bioreactor into the surrounding formation.

Ken Rice indicated that he would like to obtain a temperature vertical profile of the bioreactor within Trench 1. He has seen temperatures near the surface remain fairly consistent at 35° C, but he wants to confirm that those high temperatures are being maintained throughout the profile.

Glaré Sanchez stated that one of her primary objectives is to be able to come up with a rate of water delivery from recovery wells that is needed to keep the water levels in the bioreactor stable. As discussed previously, Mr. Rice reiterated that until we get into a prolonged dry period with no rain contributing to the water volumes in the bioreactor, we will not likely be able to make an accurate rate determination, but that rate should be fairly easy to calculate once sufficient data is collected over a period with known volume additions of water from the water wells only.

OTHER TOPICS DISCUSSED AT THE MEETING

There were several miscellaneous topics discussed at the meeting, including discussions on off-post wells, paper abstract topics for Battelle's Remediation of Recalcitrant Compounds conference in Monterey, California scheduled for next year, and the status of the AOC-65 SVE blower enclosure construction.

With regard to the off-post wells, Chris Beal reported that SAWS intends to discontinue using the Leon Springs wells, and may need to abandon them. CSSA wants to continue monitoring those wells, and Greg Lyssy and Sonny Rayos agreed that the data from those wells should provide valuable information with regard to plume migration after the pumping of those wells is discontinued. Ms. Sanchez indicated that she would like CSSA to consider offering the GAC to Bexar Met to allow CSSA access to continue monitoring these wells instead of plugging them.

Chris Beal indicated that another well from the off-post network has also been lost (Well I-10). It was a well that would show concentrations of contaminants up to 2.5 ppb following rainfall events. CSSA has attempted to obtain a copy of the well plugging report, but has been unsuccessful. Sonny Rayos said the TCEQ would try to track down that report if CSSA could provide him with the State well number.

With regard to the paper abstracts, the topics planned include one on bioaugmentation to be prepared by Bob Edwards, one on effectiveness of treatment in the formation underlying the

bioreactor to be prepared by Brian Vanderglas, and one on the complex hydraulics of the bioreactor and the challenge in maintaining the saturated conditions needed to optimize the bioreactor treatment performance.

CSSA indicated that the construction of the SVE blower enclosure was not scheduled to be started until mid-August at the earliest. Expansion of the SVE system (wbs 06000 under TO-06) is temporarily delayed pending the construction of this enclosure.

SITE TOURS

It was agreed that there was time to tour SWMU B-3 to observe the system in operation and to witness the water ponding in the northwestern portion of Trench 1 of the bioreactor. Not all attendees took this tour.

FOLLOW-UP ISSUES AND ACTION ITEMS

Parsons will schedule a meeting in Austin in August with TCEQ and US EPA to discuss the ERA.

Parsons will send an e-mail to TCEQ regarding outstanding correspondence.

Weston will consider requesting use of Tier 3 PCLs in separate submittal before submitting a NFA closure report.

Parsons will forward information for accessing the Site Management Plan, along with a request for comments, to meeting participants.

CSSA will send information on well I-10 owner to Sonny Rayos.

Parsons will prepare the initial SWMU B-3 bioreactor performance report (to include 2 months) for submittal to CSSA by mid-July and US EPA and TCEQ by August 1, 2007.

Ken Rice will prepare a cost estimate for decommissioning and disposing of the Bexar Met GAC unit.

July 10 Meeting, Camp Stanley Storage Activity

<u>Name</u>	<u>Organization</u>	<u>Phone</u>
Julie Burdey	Parsons	512-719-6062
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Glare Sanchez	CSSA	(210) 295-7453
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DEPARTMENT OF THE ARMY
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***Agenda for Technical Progress Meeting Number 06
CDRL B006
AFCEE WERC, Task Order 06
Camp Stanley Environmental Program Review Meeting***

Time: Tuesday , July 10, 2007; 09:30 am to 12:00 pm

Place: Building 98, Camp Stanley Storage Activity

Proposed Order of Discussion

Date & Time	Topic
9:30 am- 10:00 am	Introduction & Status of Action Items from TIM #5 -Schedule meeting with EPA and TCEQ to discuss Ecological Risk Assessment -TCEQ will check into status of letter delisting SWMU 14 (coal bins) -Conduct Beta Testing of Site Management Plan -Parsons to notify Edwards Aquifer Authority before injecting tracer in bioreactor
10:00 am – 10:30 am	Sampling and Disposal Plan for AOC-64 & SWMU B71 (Weston)
10:30 am–10:50 am	Site Management Plan Status and Beta Test Review & Comments (Noblis)
10:50 am–11:20 am	SWMU B-3 Bioreactor Status Update (Parsons) -Results from initial 2 months of data collection -Plans for future data collection (under TO-06 & new TOs) -Format of Monthly and Quarterly Performance Assessment Reports
11:20 am–11:40 am	Status for Parsons Upcoming Investigations (Parsons)
11:40 am - noon	Other (Parsons) -Coordination of Abstracts for Papers at Battelle Monterey conference -Status of Mod 04 award (WWTP & AST upgrades) -AOC-65 SVE System expansion construction status -Tour of SWMU B-3, if appropriate

Technical Interchange Meeting

July 10, 2007

Camp Stanley Storage Activity
Boerne, TX

Agenda

- Introductions & Status of Action Items from Prior Meetings
- Sampling & Disposal Plan for AOC-64 & SWMU B71 (Weston)
- 10:00 am John Wilder Eco Risk Assessment Telecon, if appropriate(TCEQ)
- Site Management Plan Beta Test Review (Noblis)
- Status of Upcoming Investigations (Parsons)
- SWMU B-3 Bioreactor Status Update (Parsons)
- Other: Paper, mod 4 status, AOC-65 SVE status

Action Items from Previous Meetings

- Schedule meeting with EPA & TCEQ to discuss Ecological Risk Assessment.
- Parsons to follow up with TCEQ regarding letter delisting SWMU B-14, AOC 55, and SWMU B-29 closure reports.
- Conduct Beta testing of Site Mgmt Plan.
- Parsons to notify EAA before injecting tracer.

Sampling and Disposal Plan for AOC-64 & SWMU B-71

- Presented by Weston

Preliminary Sampling, Treatment, and
Disposal Plan
for
Interim Removal Actions (IRAs)
AOC 63, AOC 64, and SWMU B-71
Camp Stanley Storage Activity (CSSA), Texas

Prepared by:
WESTON
SOLUTIONS
10 July 2007

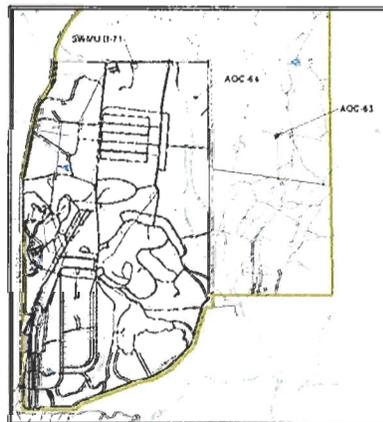
Overview

Investigation Results - AOC 63,
SWMU B-71, AOC 64

Discuss Objectives of IRAs

Outline Site-specific Strategies and Key
Assumptions

Reporting



Camp Stanley Storage Area

Background: AOC 63

Soil/Rubble Pile with Drums

Bedrock Outcrop at Northeast Area Investigated

Evidence of Surface Water Flow and Ponding to the South

Investigation Area less than 0.5 Acres



Investigation Data: AOC 63

March 2007

Benzene Concentrations Exceed Texas Risk Reduction Program (TRRP) (30 TAC 350) Tier 1 Groundwater Protective (GWP) Concentration Levels (Residential land use, 30-acre Source Area)

May 2007

Data review with Texas Commission on Environmental Quality (TCEQ) and United States Environmental Protection Agency (EPA)

Consensus to re-sample for benzene, with contingency follow-on analysis by Synthetic Precipitation Leaching Procedure (SPLP)

June 2007

Re-sampling Confirmed Presence of Benzene

Follow-on Analysis by SPLP: No Detectable Benzene

Next Step

Complete Site Investigation Report (SIR)



Site Background: SWMU B-71

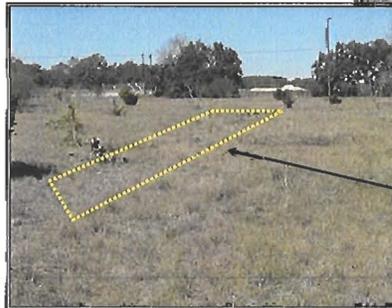
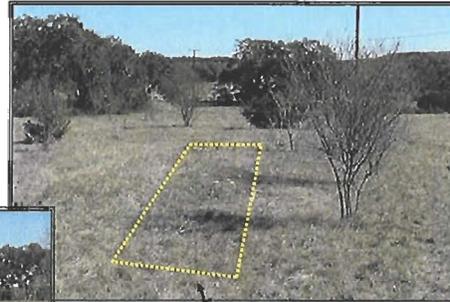
Munitions Debris (MD) Disposal Area: Spent Small Arms Casings and Bullets Identified Circa 1990

Surface Litter and Depressed Areas

Bordered on three sides by AOC 38
(Closed Sep 2004)

Located Within Floodplain of Salado Creek

Investigation Area Approximately 2.5 Acres



Surface Depressions with
MD Litter

Investigation Data: SWMU B-71

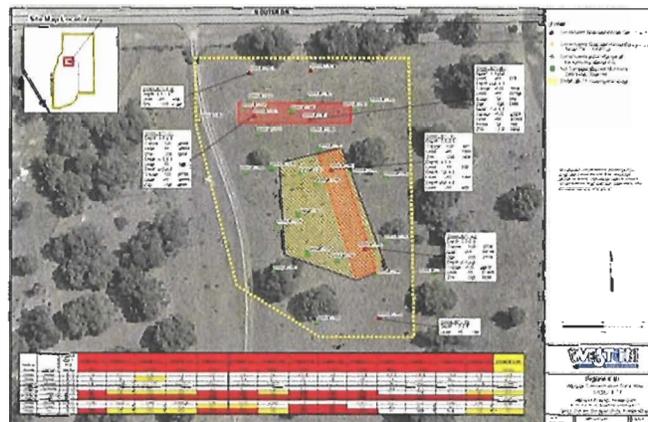
March 2007

•Chemicals of Concern (COCs) exceeding Tier 1 GWP concentrations: Copper, Lead, Nickel, Zinc, Benzene, and N-Nitrosodiphenylamine

•Impacted Media:
Buried MD to Depth of Bedrock (seven to ten feet below ground surface [bgs]); Shallow Peripheral Area Soil

•Preliminary Ecological Risk Screening:
Benchmark Values Exceeded in Buried Debris and Limited Peripheral Areas

•No Unexploded Ordnance (UXO) Observed



Investigation Data: SWMU B-71 (continued)

March 2007									
Analysis Group	Parameter Name	TRRP Residential 30 Acres $\mu\text{g}/\text{Soil}_{\text{Corb}}$	TRRP Residential 30 Acres $\mu\text{g}/\text{Soil}_{\text{Bg}}$	Camp Stanley Background	Critical Tier 1 PCL	Max Value	Min Value	Number of Detections	Number of Detections > Tier 1 PCL
SVOCs	N-Nitrosodiphenylamine	5.7E+02	1.4E+00	N/A	1.4E+00	2.30E+00	6.54E-02	11	2
VOCs	Benzene	1.9E+01	1.3E-02	N/A	1.3E-02	2.99E-02	1.90E-03	36	8
Metals	Copper	5.5E+02	5.2E+02	2.3E+01	5.2E+02	6.41E+03	1.71E+00	51	7
Metals	Lead	5.0E+02	1.5E+00	8.5E+01	8.5E+01	5.14E+04	1.58E+00	51	14
Metals	Nickel	8.3E+02	7.9E+01	3.8E+01	7.9E+01	3.84E+02	5.60E+00	51	2
Metals	Zinc	9.9E+03	1.2E+03	7.3E+01	1.2E+03	5.40E+03	4.07E+00	51	8

Site Background: AOC 64

Explosive Ordnance Disposal (EOD) Burn Area

Buried MD and Surface Litter

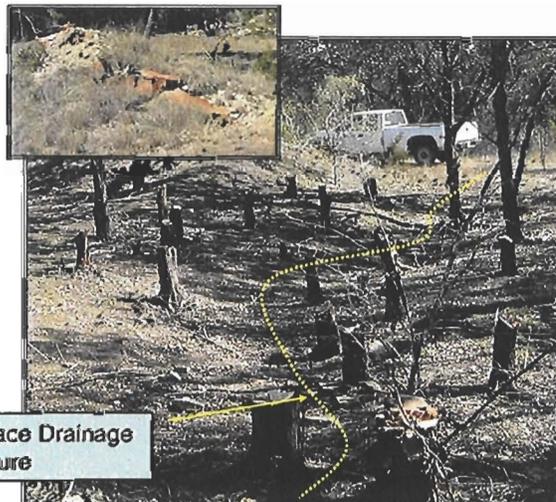
Soil Mounds with Rubble and Refuse

Large "Kick-Out" Area with Shrapnel and Other Debris

Surface Water Drainage Feature through South End of Site

Bedrock Outcrop at North Side of Site

Investigation Area Approximately 1.5 Acres



Surface Drainage Feature

Investigation Data: AOC 64

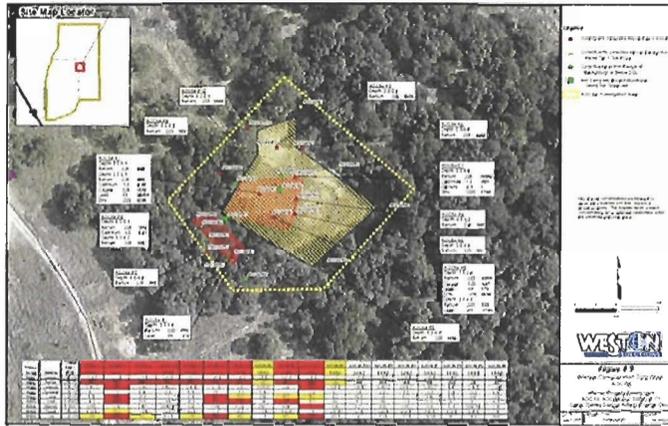
March 2007

•COCs exceeding Tier 1 GWP concentrations : Barium, Cadmium, Copper, Lead, Mercury, Benzene, and 2,4-Dinitrotoluene

•Impacted Media: Buried Munitions Debris to Depth of Bedrock (four to seven feet bgs); Shallow Peripheral Area Soils

•Preliminary Ecological Risk Screening: Benchmark Values Exceeded in Buried Debris and Peripheral Areas

•No UXO Observed



Investigation Data: AOC 64 (continued)

March 2007									
Analysis Group	Parameter Name	TRRP Residential 30 Acres $\mu\text{g}/\text{Soil}_{\text{Comb}}$	TRRP Residential 30 Acres $\text{mg}/\text{Soil}_{\text{mg}}$	Camp Stanley Background	Critical Tier 1 PCL	Max Value (mg/kg)	Min Value (mg/kg)	Number of Detections	Number of Detections > Tier 1 PCL
SVOCs	2,4-Dinitrotoluene	6.9E+00	2.7E-03	N/A	2.7E-03	1.19E+00	1.19E+00	1	1
VOCs	Benzene	1.9E+01	1.3E-02	N/A	1.3E-02	1.98E-02	1.48E-03	29	11
Metals	Barium	7.8E+03	2.2E+02	1.9E+02	2.2E+02	1.68E+04	1.21E+01	31	16
Metals	Cadmium	5.2E+01	7.5E-01	3.0E+00	3.0E+00	4.81E+00	8.50E-02	14	3
Metals	Copper	5.5E+02	5.2E+02	2.3E+01	5.2E+02	1.93E+03	1.10E+00	31	2
Metals	Lead	5.0E+02	1.5E+00	8.5E+01	8.5E+01	3.80E+04	1.40E+00	30	4
Metals	Mercury	2.1E+00	3.9E-03	8.0E-01	8.0E-01	1.00E+00	7.50E-03	26	1
Metals	Zinc	9.9E+03	1.2E+03	7.3E+01	1.2E+03	4.20E+03	2.50E+00	31	3

May 2007 Technical Progress Meeting

- TCEQ/EPA/United State (US) Army Consensus to Conduct IRAs Addressing Areas with Munitions Debris and Affected Soil
- Post-Removal COC conditions to be Evaluated through TRRP Tier 2 Soil Attenuation Model (SAM) or Tier 3 SPLP Processes

IRA General Technical Approach (AOC 64 and SWMU B-71)

Remove Munitions Debris and Impacted Soil

- Delineations from geophysical survey and trenching Investigations
- Final excavations defined by depth to bedrock, visual observations, and confirmation sampling

Excavation, On-Site Stabilization of Metals Debris and Impacted Soil, Interim Staging

- Segregation during removal; clean overburden, visually non-impacted soils, MD and visually impacted soil
- Waste characterization sampling*, one grab sample per 200 cubic yards (cy): volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, explosives, Toxicity Characteristic Leaching Procedure (TCLP) Metals, TPH
- Additional treatment if results exceed TCLP non-hazardous threshold for any COC

Large Munitions Debris Demilitarization

- Large MD (e.g., Rocket Motors at AOC 64) manually dismantled and certified safe for disposal by UXO technicians prior to transport for disposal or recycling

Disposal/Recycling

- All impacted materials disposed as non-hazardous Class 1 Industrial or Special Waste at Subtitle D landfill
- Recycling options to be evaluated prior to implementation of IRAs

**May include pre-removal characterization utilizing assessment data*

Estimated Areas and Volumes to be Addressed

Site Identification	Affected Areas to be Addressed by IRA	Estimated Area (square feet)	Estimated Average Depth (feet)	Estimated <i>In-Situ</i> Soil & Debris Volume (cubic yards)
AOC 64	Anomaly Area A	5,500	6	1222
	Anomaly Area B	2,100	6	467
	Surface Litter Area	22,500	1	833
	AOC 64 Total			2522
SWMU B-71	Anomaly Area A	5,200	9	1733
	Anomaly Area B	6,600	7	1711
	Surface Litter Area	22,500	1	833
	SWMU B-71			4677

Confirmation Sampling

Excavation Bottom

- One grab sample per 2,500 square feet (sf) for unconsolidated soil
- Bedrock not sampled
- Additional excavation if GWP standard not achieved for all COCs

Sidewalls

- Only for excavations ≥ 2 feet below ground surface (bgs)
- One grab sample per 33 linear feet (lf)
- Additional excavation if GWP standards not achieved for all COCs

Analytical Suite

- VOC, SVOC, CSSA metals suite, and explosives concentrations by applicable EPA methodology

MD Affected Soil Treatment

Stabilization Process

- Munitions debris affected soil mixed with water and approximately five to seven percent by weight of Portland Cement
- Mixed to a homogenous consistency and allowed to cure

Containment

- Treatment conducted within open excavations
- Stabilized material stockpiled with precipitation, surface water run-on/run-off control
- Site access controls to prevent exposure

Characterization Sampling

- One per 200 cy, additional treatment if non-hazardous TCLP thresholds exceeded.

Disposal and Recycling

Overburden and Other Visually Non-Impacted Soils

- Waste characterization: one grab sample per 200 cy for TCLP metals, TPH (pre-removal assessment sample results for VOCs, SVOCs, and explosives)
- Results below Tier 1 protective concentrations utilized as backfill and site restoration material
- Otherwise disposal as Special Waste at authorized facility

Treated Debris and Affected Soils

- Pre-removal characterization of VOCs, SVOCs, and explosives from assessment data set
- One grab sample per 200 cy for TCLP metals, TPH

Transport and Disposal

- Transport to non-hazardous landfill facility for disposal as Class 1 Industrial or Special Waste

Recycling

- Potential for recycling metal debris will be evaluated prior to mobilization and development of final IRA scope

Reporting

Confirmation Sampling Results and Locations,
Volumes Removed, and Final Excavation Dimensions
Presented in Affected Property Assessment Reports
(APARs)

Site Management Plan Status & Beta Test Review

- Presented by Noblis
 - Status
- Review
 - Parsons review comments submitted to CSSA
 - Any other comments?

Status of Parsons' 2007 SWMU and AOC Project

I-1, AOC-67 & AOC-68	Work Plans submitted and currently under review Pressure-wash I-1 and collect concrete samples Prepare RIR.
B-2, B-8, B-20/21, B-24	Work Plan submitted and currently under review (one combined effort for 4 sites).

Sites & Scope added to 2007 (by Mod) SWMU and AOC Project

AOC-69 & AOC-73	Investigation funded through award of modification.
Ecological Risk Assessment	Funded through award of modification
Bird Survey	Funded through award of modification.
Bioaugmentation at SWMU B3	Study funded through award of modification.

SWMU B-3 Bioreactor Monitoring Update

Brian Vanderglas
Ken Rice
Parsons

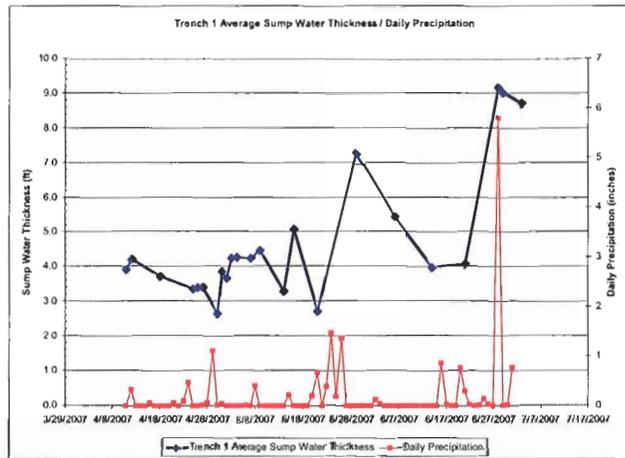
Review of Bioreactor Treatability Study Objectives

- Gather data to determine the efficacy of system to treat VOC contaminated groundwater and the underlying limestone at SWMU B-3.
- Determine potential applicability of treatment system for addressing VOC contamination from AOC-65 (Plume 2).

Purpose & Objective of SWMU B-3 Bioreactor Presentation

- Discuss Status of Bioreactor
 - First two months of operation & data collection
 - General Observations
- Plans for future data collection & activities
 - under TO-06 (1st 6 months of operation)
 - under new USACE contract (6-18 months)
- Obtain regulatory feedback on format & content of status reports
 - monthly reports (UIC & performance)
 - quarterly reports (UIC & performance)

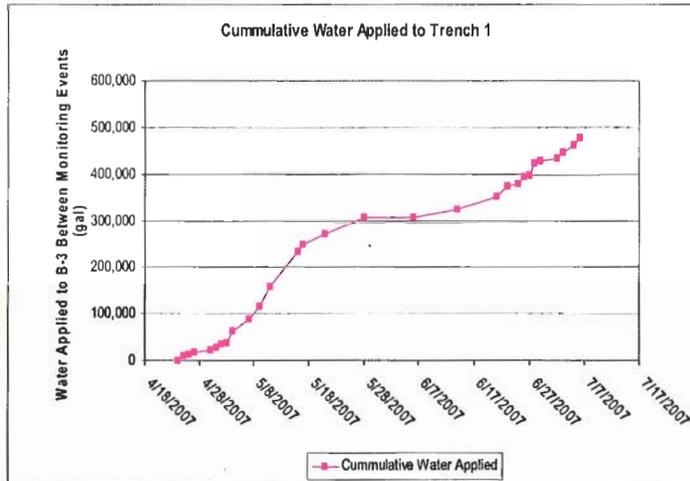
SWMU B-3 Bioreactor Trench 1 Average Water Thickness / Daily Precipitation Data



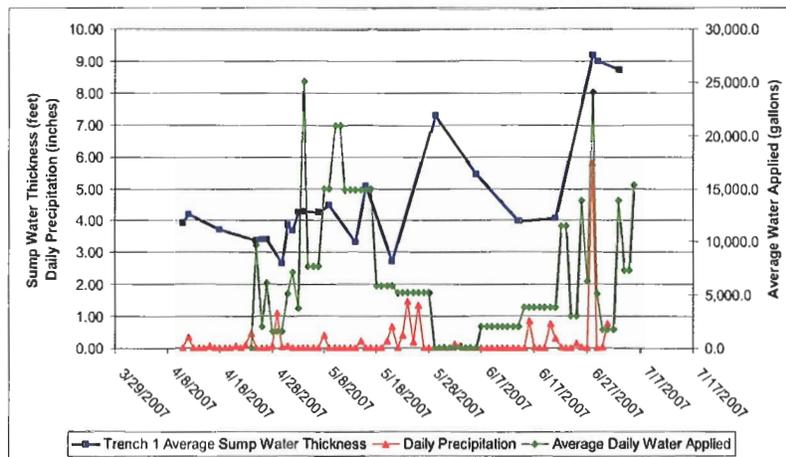
SWMU B-3 Bioreactor Trench 1 Rain Event 6-28-07 (5.8 in)



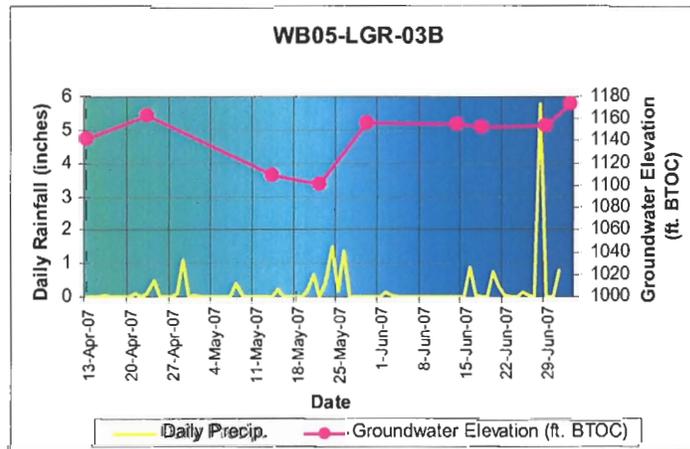
Cumulative CS-MW16 Water Applied to SWMU B-3 Bioreactor Trench 1

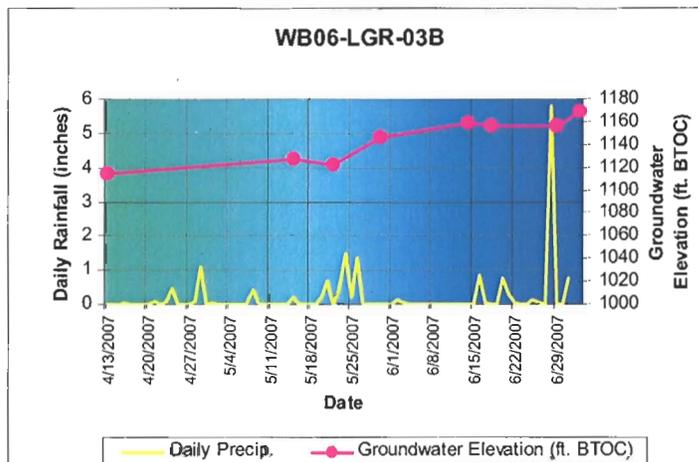
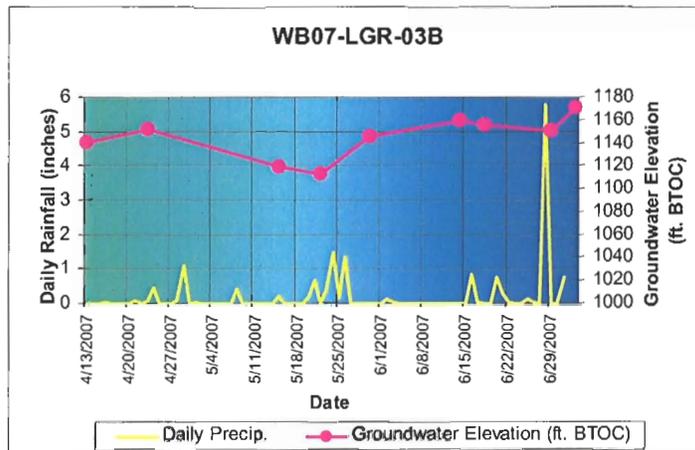


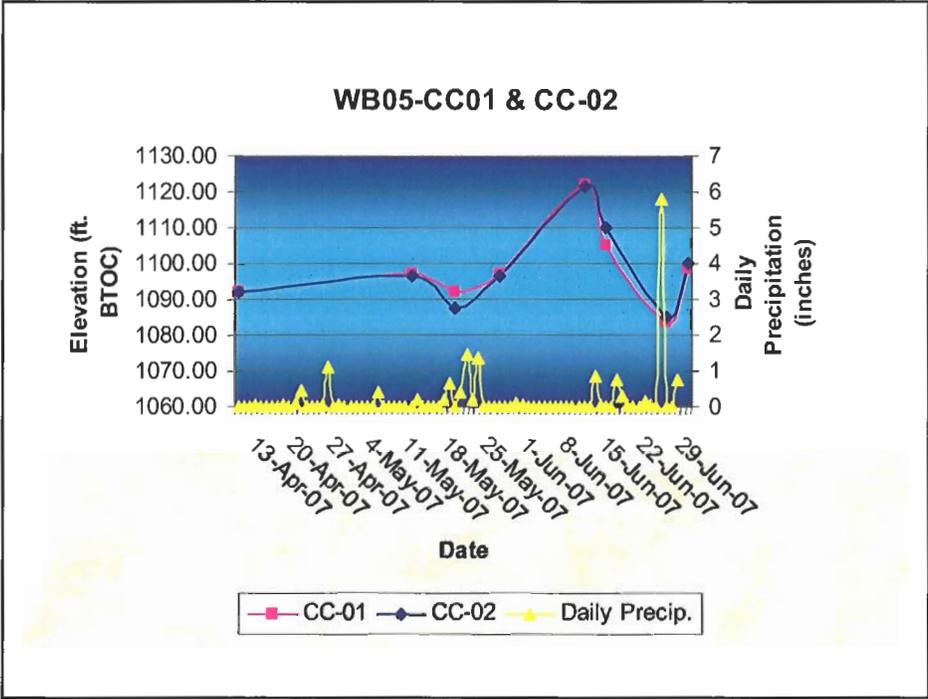
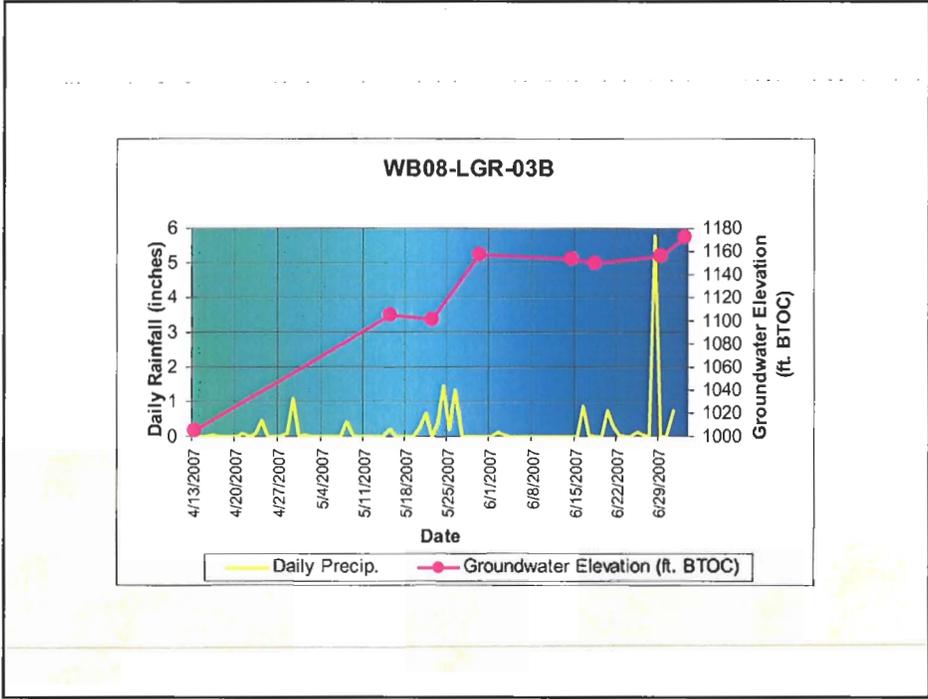
SWMU B-3 Bioreactor Trench 1



Monitoring Wells







SWMU B-3 Bioreactor Monitoring Plan Review

- **Monitoring requirements per UIC authorization.**
 - Monthly monitoring of VOCs, TDS, and pH in surrounding wells & sumps
 - Twice monthly monitoring of injection water volume, pressure, VOCs, TDS, and pH.
- **Monthly and quarterly monitoring of bioreactor and nearby wells for performance parameters.**

Performance Sampling and Analytical Parameters

- | | |
|---|--|
| • - Volatile Organic Compounds (VOCs) | • - Total Organic Carbon (TOC) |
| • - Dissolved Organic Carbon (DOC) | • - Carbon Dioxide |
| • - Methane, Ethane, Ethene | • - Hydrogen Sulfide |
| • - Dissolved Hydrogen | • - Alkalinity |
| • - Temp, pH, SC | • - Nitrogen, Nitrate + Nitrite |
| • - Oxidation Reduction Potential (ORP) | • - Additional ions including Sulfate, |
| • - Dissolved Oxygen (DO) | • - Chloride, Ferrous Iron, Manganese. |
| • - Dehalococoides populations, including vcrA reductase, TCE reductase, BAV1 | • - Soil gas monitoring for PCE, TCE, breakdown products |

SWMU B-3 Bioreactor Monitoring Status Reports

- Performance monitoring reporting
 - Monthly reporting of monthly monitoring data collected for performance parameters which includes operational data and observations.
 - Quarterly reporting of all performance monitoring data (monthly and quarterly), operational data, observations and trends.

Follow-up Topics

- Future Plans
 - Add tracer to bioreactor monitoring.
 - Plan & Initiate a Bioaugmentation Study.
 - Include soil gas monitoring for VOCs, VC, ethenes, & methane for evidence of dechlorination byproducts.
 - Install transducers in select sumps to measure geochemistry, and vertical & horizontal flow dynamics of bioreactor.
 - Add controls to automate recovery well & groundwater recirculation activities.

Other Topics

- Status of Modification 04 Award (AST & WWTP upgrades)
- AOC-65 SVE System Expansion Construction Status
- Battelle Monterey Conference Abstracts
 - Bioaugmentation (Bob Edwards)
 - Bioreactor Hydraulics & Water Dynamics
 - Bioremediation throughout Formation