#### Travis Air Force Base Environmental Management Building 570, Travis AFB, California Environmental Restoration Program Remedial Program Manager's Meeting Minutes

#### 3 December 2008, 0930 Hours

Mr. Mark Smith, Travis Air Force Base (AFB), conducted the Remedial Program Manager's (RPM) meeting on 3 December 2008 at 0930 in the Environmental Flight Conference Room, Building 570, Travis AFB, California. Attendees included:

• Mark Smith **Travis AFB** • Lonnie Duke **Travis AFB** • Glenn Anderson **Travis AFB**  Mary Snow TechLaw • James Chang U.S. Environmental Protection Agency (USEPA) • Alan Friedman California Regional Water Quality Control Board (CRWQCB) • Jose Salcedo Department of Toxic Substances Control (DTSC) • Rich Freitas U.S. Environmental Protection Agency (USEPA) • Dezso Linbrunner USACE, Omaha District • Mike Wray CH2M Hill • Chuck Elliott CH2M Hill • Rachel Hess Innovative Technical Solutions, Inc. (ITSI)

Handouts distributed at the meeting and presentations included:

- Attachment 1 Meeting Agenda
- Attachment 2 Master Meeting, Teleconference, and Document Schedules
- Attachment 3 GSAP 2007-2008 Results
- Attachment 4 LF007C RPO Work Plan

#### 1. ADMINISTRATIVE

#### A. Previous Meeting Minutes

The 10 November 2008 RPM meeting minutes were approved and finalized with no change.

#### B. Action Item Review

None.

#### C. Meeting Dates and Master Document Schedule Review

The new 2009 Travis AFB Master Meeting, Teleconference, and Document Schedules were discussed during this meeting (see Attachment 2).

#### Travis AFB Annual Meeting and Teleconference Schedule

— The next RPM meeting will be 28 January at Travis. No RPM teleconferences are scheduled except for 16 November; one can be added to the schedule if needed.

#### Travis AFB Master Document Schedule

- Basewide GW ROD: All dates have been changed to TBD; dates will be filled when Action Plan is completed. The Action Plan is a more detailed description of the technical proposal from CH2M Hill; based on review of that document, it will be the foundation for the ROD and schedule. The Air Force's requirement of Remedy in Place (RIP) by 2012 demands having a signed ROD by 2010. Mr. Smith was concerned that EPA upper management will question the TBD dates. Mr. Chang mentioned that the EPA HQ won't accept 'TBD'; he asked to have a soft date put in, even a later date, by the next meeting. Mr. Smith stated to put in a realistic date; ERP can make explanations to AF rather than have EPA explain delays.
- All other Primary Documents: No change.
- LF008 Rebound Study WP: Draft Tech Memo sent electronically. TAFB appreciates all comments and concerns with the document be sent as soon as possible. EPA and DTSC have no comments. Wells will be turned off when comments are resolved.
- Action Plan: This document will contain a description of the strategy for achieving the objectives of the Restoration Program over the next five years. Existing remediation infrastructure will be evaluated when optimizing cleanup projects.
- Site ST027B: The Gore-Sorbers have been collected and sent in for analysis.

- Quarterly Newsletter (Guardian): Mr. Anderson mentioned he is waiting on a Viewpoint article from Mr. Cooper, EPA.
- GSAP: The draft GSAP was out for agency review on 1 December. The group will see a presentation of the key points today, presented by CH2M Hill.

Mr. Salcedo asked if there were any dates to put into the schedule regarding the soil Removal Actions. Ms. Hess replied that work needs to be done in the dry season, and plan is to take advantage of the dry summer. The Work Plan and site closure documents need to be added to the document schedule. One work plan will cover both sites (SD001 and SD033), and will be an addendum to the plan that has been reviewed and approved. Mr. Linbrunner added that funding for this work is anticipated for the third quarter; hoping possibly for it in the second quarter.

Mr. Salcedo also asked about why dates for work being done at DP039 are not in the schedule. Mr. Smith answered that it's not in the schedule as it's not part of the PBC but funded separately. The work plan is nearly final.

Mr. Chang suggested that the final soil Removal Action dates be put in the schedule, even if they are soft dates. Mr. Smith pointed out that the RA will be two reports; FT005 will be separate from the sediment sites. Further investigation of the fuel sites is needed at FT005.

Mr. Anderson handed out the final electronic version of the final Soil RA Report, with a special disk for DTSC that contained files that were 10 Mb or less.

#### 2. CURRENT PROJECTS

#### A. DP039 Solar Powered Bio-Reactor

Mr. Anderson reported on the work progress at DP039. The construction is complete. Infrastructure for the solar panels needs to put in. Shipment of the solar equipment was found to be incomplete. The monitoring wells are going in today. No more than twenty feet deep; no water was encountered. The rebound evaluation needs to be completed. Mr. Duke added that acceptable mulch was identified on base and it was used as fill; no need to bring any in.

Response to agency comments on the work plan will be discussed after the meeting today. No comments received to date are holding up the work.

#### B. Treatment Plant Operation and Maintenance Update

Mr. Duke reported on the water treatment plant status. As the meeting was moved up a week the monthly reports aren't ready. However, the plants are running smoothly. The UV lamp system at the Central Groundwater Treatment Plant has not been switched off yet.

#### C. LF008 Rebound Tech Memo

Mr. Duke covered the update on the rebound study at LF008 in the above discussion (1C).

#### D. ST027B Gore-Sorber Installation

Mr. Duke gave an update on the Gore-Sorber installation at ST027B, and passed around a Gore-Sorber for everyone to see. Installation went very well. All 40 locations were installed in one day. A direct push rig was used to advance borings to about four feet. Then a Gore-Sorber was inserted into each boring that was then capped off. They were removed after two weeks and sent in for analysis. The Teflon sock allows vapors in but not moisture; this method is a screening tool. Mr. Salcedo added that it gives a relative idea of hot spots and aids in choosing sites for wells.

#### E. Vapor Intrusion Assessment Status

Mr. Anderson gave an update on the VI Assessment status. The pre-draft report for completed work is done and in internal review. This document will be added to the document schedule. The next phase of work will be determined based on these results. Mr. Chang asked the Mr. Eidelberg and Mr. Stralka review the report also.

#### F. CAMU Maintenance

Mr. Duke reported on the CAMU maintenance. Shaw has performed additional soil compacting and re-hydroseeded over the top of CAMU. This activity was conducted to address some dead vegetation and settling within the cap.

#### 3. NEW ACTION ITEM REVIEW

Coordinate site visit of sediment excavations with RAB members.

Update document schedule to include dates for GW ROD; and SD001, SD033 Work Plan; interim plans for FT005; and Vapor Intrusion Assessment.

#### 4. PROGRAM/ISSUES/UPDATE

#### A. Upcoming Document Review Periods (RAB and Agencies)

Mr. Smith reviewed upcoming document review periods.

- (2). 10 Dec 08 10 Feb 09: HSP UPDATE
- (3). 10 DEC 08 10 FEB 09: LF007C WORK PLAN
- (4). 21 Jan 09 04 Mar 09: GW action plan
- (5). 10 Dec 08 16 Jan 09: ST027B delineation work plan

- (6). 15 Dec 08 06 Jan 09: Jan Newsletter
- (7). 16 Jan 09 24 Mar 09: Qapp update
- (8). 13 Nov 08 20 Jan 09: LF008

#### 1. GSAP 2007-2008 Results

Mr. Elliott gave a presentation of an overview of the GSAP document (see Attachment 3). There is a lot of data and conclusions; the report was written by Leslie Royer. Slides were presented with summaries of results found for each area. A total of 310 wells were sampled in this effort.

The laboratory used was Applied Analytical Services (AAS). In the future, PEL and Empirical laboratories will also be used to fulfill the small business requirements of this contract.

Mr. Freitas commented that optimization may be recommended to cut down on the number of wells being sampled. Mr. Wray pointed out that wells recommended for sampling come from the previous year's report. Mr. Elliott added by saying some wells are required to be sampled based on O & M or are specified in other reports.

The semi-annual event for next year is underway. There are suggestions in the report for optimization (slides).

2. HSP Update

Mr. Anderson spoke on the update to the health and safety plan. This update is required by the FFA. It is not the highest priority document but will be done. It is available for review to the agencies for input.

3. LF007C RPO Work Plan

Mr. Wray gave a presentation (see Attachment 4) of the draft LF007C RPOwork plan, which will be submitted on 10 Dec 2008. This is the off-base plume in the area north west of the CAMU near the large vernal pool. Protection of the vernal pool is critical and precautions are taken when installing and maintaining wells in that area. Wells can only operate during the dry season; once the rainy season starts wells are turned off.

Going forward, optimization is the goal. Data gaps will be filled following a triad approach of collecting samples, getting the results and meeting with the team to discuss and step out if needed. Plan may be to cleave off from NGWTP and install a local GAC treatment unit.

#### 5. Action Items

| ITEM | RESPONSIBLE | ACTION ITEM   | DUE DATE | STATUS |
|------|-------------|---|----------|--------|
| 1.   | Air Force   | Update document schedule to include dates for GW ROD                          | Jan 2009 | Open   |
| 2.   | Air Force   | Update document schedule to include dates<br>for Work Plan for Sediment Sites | Jan 2009 | Open   |
| 3.   | Air Force   | Update document schedule to include dates for interim plans for FT005         | Jan 2009 | Open   |
| 4.   | Air Force   | Update document schedule to include dates<br>for Vapor Intrusion Assessment   | Jan 2009 | Open   |
| 5.   | Air Force   | Coordinate site visit of sediment excavations with RAB members                | TBD      | Open   |

#### TRAVIS AIR FORCE BASE ENVIRONMENTAL RESTORATION PROGRAM REMEDIAL PROGRAM MANAGER'S MEETING 3 Dec 2008, 9:30 A.M. <u>AGENDA</u>

#### 1. ADMINISTRATIVE

- A. NOV TELECONFERENCE MEETING MINUTES
- B. ACTION ITEM REVIEW
- C. MEETING DATES AND MASTER DOCUMENT SCHEDULE AND FORMAT REVIEW

#### 2. CURRENT PROJECTS

- A. DP039 SOLAR POWERED BIO-REACTOR (GLENN)
- B. TREATMENT PLANT OPERATION AND MAINTENANCE UPDATE (LONNIE)
- C. LF008 REBOUND TECH MEMO (LONNIE)
- D. ST027B GORE-SORBER INSTALLATION (LONNIE)
- E. VAPOR INTRUSION ASSESSMENT STATUS (GLENN)
- F. CAMU MAINTENANCE (LONNIE)
- 3. New Action Item Review

#### 4. PROGRAM/ISSUES/UPDATE

- A. UPCOMING DOCUMENT REVIEW PERIODS (RAB AND AGENCIES)
  - (1). 19 NOV 08 16 JAN 09: 2007-2008 GSAP ANNUAL REPORT
  - (2). 10 dec 08 10 feb 09: HSP UPDATE
  - (3). 10 DEC 08 10 FEB 09: LF007C WORK PLAN
  - (4). 10 DEC 08 16 JAN 09: GW ACTION PLAN
  - (5). 10 dec 08 16 Jan 09: ST027B delineation work plan
  - (6). 15 Dec 08 06 Jan 09: Jan Newsletter
  - (7). 16 JAN 09 24 MAR 09: QAPP UPDATE

#### **Travis AFB Master Meeting and Document Schedule**

| Suppliers Teleconference<br>(8:30 a.m 10:00 a.m.) | Monthly RPM Meeting<br>(Begins at 9:30 a.m.) | RPM Teleconference<br>(Begins at 9:30 a.m.) | Restoration Advisory Board<br>Meeting<br>(Begins at 7:00 p.m.)<br>(Poster Session at 6:30 p.m.) |
|---|--|---|---|
| 1-22-08   | 1-23-08                                      | 1-7-08*                                     |   |
| 2-26-08   | 2-27-08                                      | 2-4-08                                      | _   |
| 3-18-08   | 3-19-08 #                                    | _   | _   |
| 4-22-08   | 4-23-08                                      | 4-7-08                                      | 4-24-08   |
| 5-20-08   | <del>5 21 08 ##</del>                        | 5-5-08                                      | _   |
| 6-17-08   | 6-18-08                                      | _   | _   |
| <del>7 29 08</del>                                | 7 30 08 ##                                   | _   | _   |
| <del>8 26 08</del>                                | <del>8 27 08 ##</del>                        | 8-13-08                                     | _   |
| 9-23-08   | 9-24-08                                      | _   | _   |
| 10-21-08  | 10-22-08                                     | 10-6-08                                     | 10-23-08  |
| _   | _  | 11-10-08                                    | _   |
| 12-09-08  | 12-3-08                                      | —   | _   |

#### Annual Meeting and Teleconference Schedule

\*During the 7 Jan teleconference an additional meeting with EPA was scheduled for 9-10 Jan to discuss past GSAP issues in preparation for moving ahead with the current GSAP and the upcoming Groundwater Performance Based Contract (PBC).

\*\*Holiday Weekend

<sup>#</sup> Teleconference for the 3/19/08 meeting at **0800** 

<sup>##</sup> The 21 May, 30 July and 27 August Remedial Program Manager's Meeting were cancelled.

#### Travis AFB Master Document Schedule (continued)

|                                    | PRIMARY DOCUMENTS                              |   |                                   |  |                                       |
|------------------------------------|--|---|-----------------------------------|--|---------------------------------------|
|                                    | Basewide Groundwater<br>Travis, Glenn Anderson | Potrero Hills Annex<br>Travis, Glenn Anderson | HSP Update<br>Travis, Lonnie Duke | LF007C Groundwater<br>Travis, Glenn Anderson | QAPP Update<br>Travis, Glenn Anderson |
| Life Cycle                         | ROD  | ROD   |                                   | Work Plan                                    |                                       |
| Scoping Meeting                    | 1-24-07  | 180 days after Water<br>Board Order Rescinded | NA                                | NA   | NA                                    |
| Predraft to AF/Service<br>Center   | 2-01-09  | + 360 days                                    | 11-12-08                          | 11-28-08                                     | 12-18-08                              |
| AF/Service Center<br>Comments Due  | 4-01-09  | + 420 days                                    | 11-26-08                          | 12-05-08                                     | 1-09-09                               |
| Draft to Agencies                  | 6-15-09  | + 480 days                                    | 12-10-08                          | 12-10-08                                     | 1-16-09                               |
| Draft to RAB                       | 6-15-09  | + 480 days                                    | 12-10-08                          | 12-10-08                                     | 1-16-09                               |
| Agency Comments Due                | 8-15-09  | + 540 days                                    | 2-10-09                           | 2-10-09                                      | 3-24-09                               |
| Response to Comments<br>Meeting    | 9-01-09  | + 555 days                                    | 2-24-09                           | 2-24-09                                      | 4-07-09                               |
| Agency Concurrence with Remedy     | 9-15-09  | + 570 days                                    | NA                                | NA   | NA                                    |
| Draft Proposed Plan to<br>Agencies | 12-01-09                                       | + 600 days                                    | NA                                | NA   | NA                                    |
| Issue Proposed Plan                | 1-15-10  | + 615 days                                    | NA                                | NA   | NA                                    |
| Public Comment Period              | 1-15-10 to 2-15-10                             | + 615 to 645 days                             | NA                                | NA   | NA                                    |
| Public Meeting                     | 1-28-10  | + 625 days                                    | NA                                | NA   | NA                                    |
| Response to Comments Due           | 3-01-10  | + 640 days                                    | 3-10-09                           | 3-10-09                                      | 4-21-09                               |
| Draft Final Due                    | 3-01-10  | + 640 days                                    | NA                                | NA   | NA                                    |
| Final Due                          | 5-01-10  | + 700 days                                    | 3-10-09                           | 3-10-09                                      | 4-21-09                               |

#### Travis AFB Master Document Schedule (Continued)

| SECONDARY DOCUMENTS            |   |   |   |  |
|--------------------------------|---|---|---|--|
| Life Cycle                     | LF008 Rebound Study Work Plan<br>Travis, Lonnie Duke;<br>CH2M Hill, Mike Wray | Action Plan<br>Travis, Glenn Anderson<br>CH2M HILL, Chuck Elliott | Site ST027 Plume Delineation<br>Work Plan<br>Travis, Lonnie Duke<br>CH2M HILL, Gavin Heinrich |  |
| Scoping Meeting                | NA  | NA  | NA  |  |
| Predraft to AF/Service Center  | 10-24-08  | 11-14-08  | 11-21-08  |  |
| AF/Service Center Comments Due | 10-31-08  | 12-05-08  | 11-28-08  |  |
| Draft to Agencies              | 11-13-08  | 12-10-08  | 12-10-08  |  |
| Draft to RAB                   | 11-13-08  | 12-10-08  | 12-10-08  |  |
| Agency Comments Due            | 12-17-08  | 1-16-09   | 1-16-09   |  |
| Response to Comments Meeting   | 1-06-09   | 1-22-09   | 1-22-09   |  |
| Response to Comments Due       | 1-20-09   | 2-05-09   | 2-05-09   |  |
| Draft Final Due                | NA  | NA  | NA  |  |
| Final Due                      | 1-20-09   | 2-05-09   | 2-05-09   |  |
| Public Comment Period          | NA  | NA  | NA  |  |
| Public Meeting                 | NA  | NA  | NA  |  |

#### Travis AFB Master Document Schedule (Continued)

| INFORMATIONAL DOCUMENTS             |   |  |  |  |
|-------------------------------------|---|--|--|--|
| Life Cycle                          | Quarterly Newsletters<br>(Jan 2009)<br>Travis, Glenn Anderson | 2007/2008 GSAP Annual Report<br>Travis, Lonnie Duke<br>CH2M HILL, Leslie Royer |  |  |
| Scoping Meeting                     | NA  | NA   |  |  |
| Predraft to AF/Service Center       | NA  | 10-22-08   |  |  |
| AF/Service Center Comments Due      | NA  | 11-05-08   |  |  |
| Draft to Agencies                   | 12-15-2008  | <mark>11-26-08</mark>  |  |  |
| Draft to RAB                        | NA  | 11-26-08   |  |  |
| Agency Comments Due                 | 01-06-2008  | 1-16-09  |  |  |
| <b>Response to Comments Meeting</b> | TBD   | 2-16-09  |  |  |
| Response to Comments Due            | 01-08-2008  | 3-16-09  |  |  |
| Draft Final Due                     | NA  | NA   |  |  |
| Final Due                           | 01-14-2008  | 3-16-09  |  |  |
| Public Comment Period               | NA  | NA   |  |  |
| Public Meeting                      | NA  | NA   |  |  |

### GSAP 2007-2008 Results

Travis AFB December 3, 2008

# Introduction

- The 2007-2008 GSAP included 3 sampling events
- 3Q07 Quarterly Event (8 wells)
- 4Q07 Semiannual Event (117 wells)
- 2Q08 Annual Event (310 wells, 7 surface water)

# FT004/SD031/LF007

- FT004: former Fire Training Area-3 (GET/MNA Assessment)
- SD031: Facility 1205 (GET/MNA Assessment)
- LF007: former Landfill 2 (GET/MNA Assessment)



### FT004/SD031/LF007 Conclusions

- SD031 VOC concentrations declined below target concentrations; GET shut down in December 2007 for rebound study. VOC concentrations remain below target concentrations. No rebound evident in 2Q08 results (both MWs and EWs).
- Similarly, at FT004, extraction wells EW578x04, EW579x04, and EW580x04 were shut down for rebound study (area of plume with low VOC concentrations). No rebound was evident in 2Q08 results.
- FT004 source area EWs continue to operate. FT004 target area is captured, and VOC concentrations in source area wells continue to decline.

### FT004/SD031/LF007 Conclusions, Cont.

- Effectiveness of FT004/SD031 GET demonstrated by the declining VOC concentrations observed in most wells.
- Downgradient portion of SD031 and FT004 selected for MNA. MNA continues to be viable remedy.
- No VOCs were detected at concentrations exceeding IRGs; COC concentrations are stable or declining in MNA wells.

### FT004/SD031/LF007 Conclusions, Cont.

- LF007C GET continues to operate seasonally; storage batteries now allow 24 hour operation
- Extent of LF007C capture uncertain (flat gradient, few data points)
- Extent of LF007C offbase contamination uncertain (TCE detections at MW620x07 ranged from 19 µg/L to 28 µg/L over reporting period)
- TCE concentrations at MW125x07 (historical rising trend) have stabilized in recent years (approximately 50 µg/L); TCE concentrations offbase are variable (no trend evident)

### FT004/SD031/LF007 Conclusions, Cont.

- LF007B and LF007D selected for MNA
- Sample results continue to indicate MNA is a viable remedy at these sites
- LF007B COCs were not detected in Area B
- Groundwater contamination in LF007D restricted to small area near MW261x07 (only location where LF007D COCs 1,4-DCB and benzene detected at concentrations exceeding IRGs)

### FT004/SD031/LF007 Optimization Measures

- Assess results of rebound study at FT004 and SD031 when 4Q08 data are available
- Sampling to support MNA assessment at Sites SD031, FT004, LF007B and LF007D being performed in 4Q08 GSAP event; the results will be presented in a Natural Attenuation Assessment Report (NAAR)
- Additional investigation will be performed at LF007 to define the extent of offbase contamination and evaluate GET performance

# LF006: Former Landfill No. 1 (MNA)

- TCE and TPH-G only COCs detected above IRGs
- TCE decreasing or stable; maximum concentration detected was 5.9 µg/L.
- Maximum TPH-G concentration detected was 10 µg/L. TPH-G detections low and sporadic at site
- TPH-D was not detected in any wells, and has not been detected in the last four sampling events



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# **LF006 Optimization Measure**

 Sampling to support MNA assessment is being performed in 4Q08 GSAP event; the results will be presented in a Natural Attenuation Assessment Report (NAAR)

# FT005/SS029/SS030

- FT005: former FireTraining Area-4 (GET)
- SS029: MW329x29 Area (GET)
- SS030: MW-269 Area (GET)



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### FT005/SS029/SS030 Conclusions

- SS029 GET achieved design capture (TCE > 5 µg/L)
- SS029 southernmost extraction well EW07x29 brought back online February 2008 (TCE had increased to 8.1 µg/L, previously below MCL); operation continues
- SS029 Base boundary wells below MCLs
- TCE concentrations in SS029 upgradient well MW1031x29 continues to increase (migration from SS016)

### FT005/SS029/SS030 Conclusions, Cont.

- FT005 GET achieved design capture (1,2-DCA > 0.5 μg/L)
- A large portion of the offbase FT005 plume is below the detection limit—9 offbase extraction wells shut down in December 2007 for one-year rebound study
- No rebound in FT005 study area was evident in 2Q08 results (both EWs and MWs); plume continues to decrease in size
- 1,2-DCA concentrations in extraction wells along base boundary (1.8 to 2.9 µg/L) consistent with historical data

# FT005/SS029/SS030 Conclusions, Cont.

- SS030 plume captured on south and west; extent of eastern capture remains uncertain but seems to have improved with reduction in FT005 pumping (several FT005 extraction wells taken offline for rebound study)
- 2Q08 groundwater elevation contours indicate SS030 is capturing groundwater near MW05x30 and perhaps MW03x30 (wells with historicallyincreasing TCE concentrations)



### FT005/SS029/SS030 Optimization Measures

- Assess results of rebound study at FT005 when 4Q08 data are available
- Additional investigation will be performed at SS030, east of MW03x30 and MW05x30, to define extent of TCE contamination and refine understanding of groundwater flow directions
- Additional extraction wells may be installed if data assessment indicates the current system cannot achieve capture of this portion of the plume

# SS016/ST032

- SS016: Oil Spill Area (OSA), Facility 18, Base control Tower (Facility 20), and Facilities 11, 13/14, 42/1941, 139/144, storm sewers (GET)
- ST032: MW246x32 Area—leakage from jet-fuel line (free product removal)



# SS016/ST032 Conclusions

- Design source capture has been achieved in the TARA; VOC concentrations are below the 1,000 µg/L target.
- TCE concentrations in the TARA continue to decline in most monitoring wells
- TCE concentrations in the OSA also continue to decline; although EW03x16 was intermittently operational in 2007-2008
- VOC concentrations in a small area of the OSA continue to exceed 1,000 µg/L

### SS016/ST032 Conclusions, Cont.

- SS016 plume extends south to SS029. Southernmost SS016 well is MW1022x16. TCE concentrations declining at this well (160 µg/L in 1999, 44 µg/L in 2Q08)
- TCE concentrations continue to increase in upgradient SS029 well (MW1031x29); indicating migration in this area.
- Southern portion of SS016 plume captured by SS029 GET


#### SS016/ST032 Conclusions, Cont.

- Benzene concentrations continue to exceed 100 µg/L at ST032 well MW246x32, but concentrations have declined over the last 3 years
- Benzene was not detected at any other ST032 well
- TPH-G continues to be detected sporadically at concentrations exceeding the IRG (5 µg/L)
- Floating product was not observed at ST032

#### SS016/ST032 Optimization Measures

- Extent of hydraulic capture in the OSA is hampered by low discharge at extraction well EW003x16 (recently refurbished). A small area of the OSA plume continues to have TCE concentrations above 1,000 µg/L
- The Base will enhance the OSA source area treatment by injecting emulsified oil to biodegrade the COCs

# WIOU

 ERP Sites SS014, SD033, SS035, SD036, SD037 and WABOU Sites SS041 and SD043 (GET/MNA Assessment)



# WIOU Conclusions

- WIOU GET achieved design capture (VOCs > 100 µg/L)
- TCE concentrations declining in most monitoring wells
- Three WIOU monitoring wells have increasing TCE trends (MW524x37, MW533x37, MW539x37). All three are within the hydraulic capture zone
- A few extraction wells (EW501x33, EW593x36, EW594x36, and EW706x37) exhibit increasing TCE concentrations—i.e, contamination being drawn towards the extraction wells

## WIOU Conclusions, Cont.

- MNA continues to be a viable remedy for the downgradient portion of WIOU plume. COC concentrations are stable or declining in WIOU MNA wells.
- SD034 continues to have measurable amounts of floating product. In 2Q08, product was detected at only SD034 well MW02x34 (0.22 foot). Free product removal is ongoing at this site.

## **WIOU Optimization Measures**

- Some groundwater and SVE extraction wells may be evaluated for a rebound study
- VOC concentrations continue to exceed 1,000 µg/L in the vicinity of MW524x37 and PZ07Sx36. The Air Force is considering emulsified oil injection to enhance reductive dechlorination in these areas
- Sampling to support MNA assessment is being performed in the 4Q08 GSAP event; the results will be presented in a Natural Attenuation Assessment Report (NAAR)

#### SS015

 Solvent spill area and Facilities 550 and 552 (MNA Assessment)



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## SS015 Conclusions

- VOC concentrations in plume well MW216x15 increasing; both parent (PCE and TCE) and daughter products (cis-1,2-DCE, and vinyl chloride)
- No COCs detected in downgradient wells at concentrations exceeding IRGs; no increasing trends identified in downgradient wells
- MNA appears to successfully contain VOC contamination

### **SS015** Optimization Measures

 Sampling to support MNA assessment is being performed in 4Q08 GSAP event; the results will be presented in a Natural Attenuation Assessment Report (NAAR)

#### DP039

 Building 755—Former acid neutralization sump (GET/MNA Assessment)



RDD\_WLOKKPROJECTS/RDDGIS/TRAVIS/03/892\_2008ANNUALG SAP WAP FILES/FIG4\_7-3\_TC E\_DP039.0XD\_K0000010.0200815:56.07

## **DP039** Conclusions

- VOC concentrations declined below 1,000 µg/L in source area (ongoing dual phase extraction). Upgrade to DPE system (addition of one DPE well) has been effective in source area.
- VOC contamination exceeding 1,000 µg/L extends beyond the source capture zone
- Within the high concentration area, older wells MW751x39 and MW777x39 show decreasing TCE trends, indicating source removal is reducing mass loading & preventing additional contamination from migrating downgradient of the source

### DP039 Conclusions, Cont.

- Increasing TCE trends identified in distal (MW02x39 and MW785x39) and downgradient (MW758x39 and MW760x39) wells
- Increasing trends indicate MNA alone may not be an effective remedy for migration control

### **DP039 Optimization Measures**

- A bioreactor is being installed in the source area as an AFCEE technical demonstration project
- Phytoremediation study is ongoing
- The Base is considering enhancing MNA by installing a biobarrier using emulsified oil substrate downgradient of the phytoremediation area

### LF008

• Landfill No. 3 (GET)



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### LF008 Conclusions

- Based on the distribution of pesticide contamination and contaminant trend analysis, LF008 GET is achieving designed capture and preventing downgradient migration of COCs
- No pesticides detected in crossgradient well MW716x08 or downgradient wells MW115x08, MW714x08, and MW715x08
- COCs exceeded the IRG at only one downgradient well MW713x08, heptachlor epoxide detected at 0.016 J µg/L (IRG is 0.01 µg/L); no increasing COC trends identified at this well

### LF008 Conclusions, Cont.

- No long-term increasing or decreasing trends have been identified in the extraction well data—little change since GET started in 2001.
- Stability likely due to the combination of low-permeability sediments and tendency of pesticides to adhere to clay particles.

### **LF008 Optimization Measures**

 The Air Force will perform a rebound study at LF008

### SD001

• Union Creek (no action)



CH2MHILL

## **SD001** Conclusions

- TCE concentrations in Union Creek have decreased considerably since 1997 (GET systems reducing discharge of contaminated groundwater to surface water)
- No VOCs were detected at concentrations exceeding IRGs in surface water in 2Q08
- Piezometer pair PZ01Sx29 and PZ01Dx29, adjacent to creek, have TCE concentrations exceeding 100 µg/L; TCE concentration detected in surface water was 0.64 µg/L. Surface water quality not significantly impacted

### SS014

- Site 1 (Fuel Storage Area G) (MNA Assessment)
- Site 4 (Former AVGAS Pipeline) (MNA Assessment)



RDD\_WLOK/NPROJECTS/RDDGIS/TRAVIS/03/892\_2008A NNUA LG SA PWAP FILES/FIG4\_1D-3\_8 ENZ\_SS014\_MXD\_KWINO\_10/3/2008 15 59 52

## SS014 Conclusions

- MW02x14, located in Area G source area, contained fuel hydrocarbons at concentrations above IRGs (benzene = 4,500 µg/L; TPH-D = 3,300 µg/L, TPH-G = 32,000 µg/L)
- Elevated benzene and TPH concentrations at Area G are restricted to the vicinity of MW02x14 concentrations are much lower (1 to 3 orders of magnitude) in downgradient well pair MW116x37 and MW310x37
- Benzene and TPH concentrations are decreasing at Site 4
- Floating product not detected at SS014 wells during reporting period
- Limited extent of contamination and decreasing trends indicate MNA is a viable remedy at SS014

## **SS014 Optimization Measures**

- Perform a Tier 1 POCO Evaluation
  - Work plan
  - Field Investigation
- Evaluate MNA as a remedy

### ST018

• North and South Gas Stations (GET)



RDD NLO KIVPROJECTS/RDDGIS/TRAVIS/334892\_2008ANNUALGSAPWIAPFILES/FIG4\_11-7\_BENZ\_STD18.00XD\_KWINO\_10/14/2008\_10.54.09



HUD NO KIVROJECTORIDDOGITRAVEGUERO, JEES MANALDSAF MAPHUED/C 4\_114\_MTRE\_0101LACD HIMMO 1014-0388 10:52 st



RDD %LO KIVPROJECTS\RDDGIS\TRAVIS/334892\_2008ANNUALGSAP/MAPFILES\FIG 4\_11-6\_TPH-G\_STD18.MXD KMINO 10/14/2008 10:51 33

### **ST018** Conclusions

- Benzene was not detected at any site well in 2Q08
- TPH-G concentrations increased slightly in SGS source area and within the plume axis, but decreased at the NGS source area and downgradient edge of the plume
- MTBE concentrations decreased across the site, except at MW210NSx18 (axis of plume)
- The maximum MTBE concentration detected during reporting period was 1,370 µg/L at MW786x18. Concentrations have decreased rapidly in this well; down to 2.2 µg/L in 2Q08
- MTBE concentrations in downgradient portion of the plume (MW786x18 and MW796x18) appear to be decreasing

### **ST018** Optimization Measures

- ST018 CAP concluded MNA would be effective for BTEX and TPH-G, but not for MTBE
- GET has been identified as the final remedy for ST018
- Final remedial design will be based upon all available historical data

### ST027

• Facilities 1918, 1919, 1020, and 1040 (MNA for fuel hydrocarbons)



RDD %LO KVPROJECTS/RDDGIS/TRAV IS/334882\_2008ANNUALGSAP WAPFILES/FIG (\_12-X\_TPHG\_S1027.00XD K00100 10.6/2008 09:16/35


RDD VLOK/NPROJECTS/RDDGIS/TRAVIS/034892\_2008ANNUALG SAP WAP FILES/FIG 4\_12-4\_TCE\_ST027.MXD KMINO 10/5/2008 16:14:49

# ST027 Conclusions

- Concentrations of BTEX and TPH are stable or decreasing
- MNA selected as the remedy for BTEX and TPH under POCO process
- Chlorinated VOCs discovered during 2007 site investigation; source and extent of contamination uncertain
- Maximum concentration of TCE detected was 472 µg/L at MW791x27

# **ST027** Optimization Measures

- Nature and extent of contamination at ST027 is under investigation. Data will be used to support final remedy selection
- Fuel hydrocarbons will continue to be addressed by MNA

## ST028

• Facility 363 and 365 (MNA)



RDD WLDKIPROJECTSIRDDDISTRIAASSSIRKS\_2008AMMUALOSAPMAPPELES/FIG4\_13-3\_BENZ\_STUDE.MI D KMINO 10.02008 (0.05.38)



ROD: %,DKXPR0JECTS/RD0G/6/TRA/S/\$94662\_3000ANNU/ALD5APMAPFILE6#164\_10-#\_TPHD\_FTIGEMXD KM/N0 /0/110000 /0/3701 /

# **ST028** Conclusions

- Extent of BTEX and TPH-D contamination defined by recent site investigation
- Several monitoring wells have decreasing concentration trends of TPH-D and TPH-G and benzene
- Plume is not migrating; MNA selected as the remedy under the POCO process

# **ST028** Optimization Measures

 Continue MNA, adjust monitoring program as needed to reflect changing plume conditions

## 2008-2009 GSAP

- 4Q08 semiannual event- currently underway (through mid-December)
- 2Q09 annual event- April/May 2009

# **GSAP** Optimization Measures

- Reduce basewide groundwater elevation surveys from semiannual to annual frequency (groundwater flow directions consistent from season to season)
  - perform during annual event, when the majority of monitoring and extraction wells are sampled
  - groundwater elevation surveys may continue to be performed more frequently at certain sites, based on site-specific conditions or requirements of ongoing remedial actions

### GSAP Optimization Measures, Cont

- Use of Passive Diffusion Bags
  - widely accepted for collection of VOC samples, particularly for long-term monitoring where concentrations and trends are well established
  - volatile COCs at Travis limited to those that respond well to PDB sampling (based on laboratory and field studies)

#### GSAP Optimization Measures, Cont

#### PDB Pilot Test

- 10 wells selected for pilot test in 4Q08 event
- wells with wide range in VOC concentrations selected
- wells selected from all geographical areas of the Base
- side by side study (comparing low flow purging to PDB samplers)
- the relative percent difference (RPD) of the Travis AFB volatile COCs detected in samples collected by each method will be calculated. If RPD is within acceptable range for field duplicates per the Travis QAPP, the data collection methods will be considered comparable

#### GSAP Optimization Measures, Cont

PDB Pilot Test

 If PDB samplers found to be comparable to low-flow purging, PDB samplers will be deployed during the 2Q09 event at all monitoring wells requiring only VOC analyses

#### Site LF007C RPO Work Plan

### Site LF007C Background

- LF007 is former Landfill No. 2
  - located in northeast corner of Travis AFB along the base boundary
  - trench and fill operations from early 1950s to 1974
  - general debris, and small amounts of industrial waste and fuel sludge
- Currently the location of the CAMU



# LF007C Background, cont'd

- The NOU RI divided the site into four subareas:
  A, B, C, and D
- Groundwater contamination found at B, C, and D
- IRA objectives in the NEWIOU IROD:
  - B and D: MNA Assessment
  - C: Migration Control (prevent further offbase migration) and off-base remediation to below the IRGs (5 µg/L for TCE)
- Second Five-Year Review: current GET system not capturing and remedying the off-base plume

# LF007C Background, cont'd

- LF007C COCs: TCE, 1,1-DCE, 1,2-DCA, 1,2dichloropropane, vinyl chloride
- TCE is the only one of these currently detected above the IRG
- Two solar-powered extraction wells installed in 2004 along the base boundary
  - operate only during the dry season due to vernal pools
  - formerly operated only during the day—now operate
    24/7 thanks to batteries installed in 2008

# Hydrogeology

- Groundwater flows toward the northwest
  - subsurface ridge of Markley Sandstone to the east
  - mounding due to recharge from vernal pools
  - uncertainty on downgradient direction, but probably evenutally flows to south along regional gradient
- Slight downward gradient during the spring, due to recharge from pools
- Fine-grained (clayey) alluvial matrix with thin fine sand beds
- Bedrock at about 40 feet bgs
- Depth to groundwater about 10 feet



# **Groundwater Contamination**

- Historically increasing TCE along the base boundary at MW125x07
  - Indicator of off-base migration
  - Maximum of 87  $\mu g/L$  in 2001
  - 50 µg/L in 2008
- Two off-base wells: MW619x07 and MW620x07
  - TCE at 19  $\mu$ g/L in 2008 at MW620x07
  - TCE not detected at MW619x07 (never detected above the IRG)

#### Groundwater Contamination, cont'd

- Only other monitoring well exceeding IRG is on-base well MW617x07 (TCE at 6.5 µg/L in 2008)
- Of the two extraction wells, TCE only detected in EW614x07 (11 µg/L)
- Never detected in EW615x07



# **RPO** Activities

- Data Gaps Investigation
- Groundwater Modeling
- Optimization
- Performance Monitoring

# **Data Gaps Investigation**

- Phased approach following Triad procedures
- Initial phase: collection of in situ groundwater samples
  - four soil boring locations
  - drill to bedrock using HSA
  - collect minimum of two groundwater samples per hole—one near the water table, another deeper, depending on geology

# Data Gaps Investigation, cont'd

- Consult with the team, then step out as needed until the plume is sufficiently characterized to support optimization
- Construct temporary piezometers in the borings

### Groundwater Modeling—Capture Zone Analysis

- Evaluate groundwater flow conditions
- Determine extraction well locations and rates that will hydraulically contain and remediate the off-base plume
- Determine monitoring well locations/screen intervals that will provide performance monitoring capability
- Micro-Fem Version 3.0: 3-D, finite element, transient groundwater flow model that includes particle tracking capabilities

# **IRA** Optimization

- Install extraction and monitoring wells
- Install solar-powered pumps
- Construct conveyance pipelines
- Install skid-mounted LGAC treatment unit on-base (disconnect from the NGWTP)
- Complete construction in summer 2009

# **Performance Monitoring**

- Startup sampling
- Collect two quarters of groundwater samples (VOCs—November 2009 and February 2010)
- Prepare LF007C RPO Report
- Select GET for off-base plume in the FS/PP/ROD
- Continue ongoing monitoring

# LF007C

• Questions or comments?