KELLY AFB
TEXAS

ADMINISTRATIVE RECORD
COVER SHEET

AR File Number 3337

Kelly Restoration Advisory Board (RAB)

Meeting Agenda

17 July 2007
Port Authority of San Antonio
143 Billy Mitchell Blvd., Bldg. 43, Suite 6
San Antonio, TX 78226

6:30 – 6:40	**Welcome and Overview**	**Mr. Jose Martinez**
6:40 – 6:50	**Installation Cochair Comments**	**Installation Cochair Representative**
6:50 – 7:10	**Nomination and Election of Community Cochair**	**Mr. Jose Martinez**
7:10 – 7:20	**BRAC Cleanup Team (BCT) Update**	**Ms. Norma Landez**
7:20 – 7:45	**Off-Base Cleanup Briefing**	**Mr. Don Buelter**
7:45 – 8:00	**Questions & Answers**	**RAB Members**
8:00 – 8:15	**Public Comment Period**	**Mr. Jose Martinez**
8:15 – 8:30	**RAB Open Discussion/Upcoming Agenda**	**Ms. Sonja Coderre**
8:30	**Adjournment**	

Notes: **Next RAB Meeting**: 9 October 2007, 6:30 p.m. : Port Authority of San Antonio, 143 Billy Mitchell Blvd., Bldg. 43, Suite 6, San Antonio, TX 78226

July 17, 2007
Kelly Restoration Advisory Board (RAB)
Port Authority of San Antonio
143 Billy Mitchell Blvd., Bldg. 43, Ste. 6
San Antonio, Texas 78226

DRAFT Meeting Minutes

RAB Community Members:
Beverly Abbott
James Betus
Rodrigo Garcia, Jr.
Nazirite Perez
Brian Skrobarcek

RAB Government Members:
Sal Aguinaga, Port Authority of San Antonio
Sonja Coderre, Air Force Real Property Agency (AFRPA), Installation Cochair (Alternate)
Kyle Cunningham, San Antonio Metropolitan Health District (SAMHD) (Alternate)
Gary Miller, US Environmental Protection Agency (USEPA)
Mark Weegar, Texas Commission on Environmental Quality (TCEQ)

AFRPA Staff:
Don Buelter, AFRPA
Todd Colburn, AFRPA Contractor
Cynthia Hernandez, AFRPA, Contractor
Norma Landez, AFRPA
Jose Martinez, Facilitator
Patricia Wilson, AFRPA, Contractor

AFRPA Partner Agencies:
Kristen Bettis, SAMHD-PCEH
Monica Martinez, TCEQ
Abigail Power, TCEQ
Jorge Salazar, TCEQ

Elected Officials:
David Rodriguez, Office of U.S. Rep. Charles A. Gonzalez

Public Participants:
Lara Cushing
Armando Quintanilla
Robert Silvas

The meeting began at 6:30 p.m.

I. Welcome and Overview – Mr. Jose Martinez

Mr. Martinez began the meeting by welcoming everyone to the July 2007 Kelly Restoration Advisory Board meeting. Mr. Martinez conducted a roll call of all RAB community members and later acknowledged all others in attendance of the meeting.

Mr. Martinez indicated meeting minutes from the 10 April 2007 Kelly RAB meeting were previously provided for review in read-ahead packets, and asked if anyone had corrections. No corrections were provided, and minutes were approved.

Mr. Martinez then reviewed the meeting agenda and contents of the meeting packets.

II. Installation Cochair Comments

Ms. Coderre, Mr. Antwine's alternate, addressed the community members regarding three new items of interest. Ms. Coderre demonstrated how to locate administrative records for the former Kelly AFB on the AFRPA public website. She also stated the most recent RAB information, including minutes, transcripts, and action items, were now available online. The website currently includes RAB information from 2000 through the present and will continue to be updated with additional RAB information.

Ms. Coderre informed the RAB the current logistics planner for the RAB meetings, Mr. Todd Colburn, would be leaving AFRPA and his replacement would be Ms. Wilson.

The final item discussed by Ms. Coderre was the RAB Environmental Handbook. She explained that this product was a result of Mr. Garcia's suggestion at a previous RAB meeting. This handbook was distributed to the RAB members and includes: Zones 2-5 Environmental Updates, Citizen's Guide to *Semiannual Compliance Plan Reports*, fact sheets, and Environmental Terms Dictionary.

III. Nomination and Election of Community Cochair

Mr. Martinez asked Ms. Coderre if the RAB had reached the quorum necessary to conduct business and appoint a cochair. Ms. Coderre read section 3.2.5 of the RAB Charter, which states the presence of nine members in addition to the installation cochair shall constitute a quorum at any regular or special meetings provided there are at least six community members present. Mr. Martinez acknowledged that based on meeting attendance of five RAB members, the process to appoint a community cochair could not take place because the quorum was not met. The appointment would be rescheduled for the October 2007 RAB meeting.

IV. BRAC Cleanup Team (BCT) Update – Ms. Norma Landez

Ms. Landez indicated final minutes from the 10 April 2007 Kelly BCT meeting were provided in the meeting packets. Additionally, Ms. Landez stated a more recent BCT took place on 17 July 2007. Minutes would be available at the next RAB meeting in October 2007.

The following topics were discussed during the July 2007 BCT:

1 Review status of IRP Zone 1 Corrective Measure Study (CMS) and Corrective Measures Implementation (CMI) Plan
2 Review status of Zone 1 Group 1 site interim remedial actions
3 Review of major project status for IRP Zones 2, 3, 4 and 5
- Electric Resistance Heat for Bldg 301 awaiting funds to complete project
- Site E3 awaiting a contract
4 Review FY08 property transfer goal, schedule, and action items
5 Review of documents to be submitted for regulatory review within the next 90 days

Ms. Landez then reviewed a list of reports and letters exchanged with regulators, which would be placed in the library located at the Environmental Health and Wellness Center. Both a listing and description of the following documents were provided in the meeting packets:

1 Revised Corrective Action Observation Wells for Site E-3 and Site S-8, 27 February 2007
2 Acceptance of Deed Certification for Building 1586 Oil/Water Separator, 9 March 2007
3 Acceptance of Deed Certification for Industrial Wastewater Collection System Pipeline, 9 March 07
4 Acceptance of Deed Certification for Environmental Process Control Facility, 24 April 2007
5 Acceptance of Deed Certification for Facility 3041 Former Wash Rack, 24 April 07
6 Review of Zone 1 Draft Final Corrective Measures Study Remedial Alternative Evaluation Report, 17 May 07
7 Conditional Approval of Zone 1 DF Corrective Measures Study Remedial Alternative Evaluation Report, 18 May 07

Ms. Landez informed the RAB an ad regarding Site D10 closure ran in the Express-News Monday, 23 July 2007.

Lackland will hold its Community Council on Restoration (CCR) meeting 24 July 2007 from 6:00-7:00 p.m. at Chapel Hill United Methodist Church located on SW Loop 410. They will discuss sites SS043, SS035 and landfills 11, 13 located within Zone 1.

Mr. Garcia asked if the Zone 1 final CMS was available and would the RAB be provided copies of it. Ms. Landez stated the report should be available in both the library and the online Administrative Record.

V. Off-Base Cleanup Briefing

Mr. Buelter provided an update to the ongoing remedial cleanup actions at the former Kelly AFB. His briefing included slides depicting TCE/PCE plumes with data derived from the Basewide Compliance Plan (Well Sample Data) from 1998 through 2007. Mr. Buelter also provided an in depth review of cleanup systems installed at different locations and explained how these systems were contributing to the reduction of size and concentrations of the off-base plumes. The presentation handouts were included in all meeting packets.

At the end of the briefing Mr. Buelter was asked the following questions by RAB members:

Ms. Abbott asked if there was any correlation between rain fall and the levels of TCE found in the well sample data and how would the current rain fall affect the levels? Mr. Buelter stated that with 43 days of rain, the results may show some type of correlation in the next sampling.

Ms. Abbot also asked, why the numbers fluctuate between odd and even years? Mr. Buelter stated the sampling is completed from the end of April through June so it is more consistent year to year.

Mr. Garcia asked if AFRPA could identify where the contamination of Leon Creek is coming from, why doesn't the Air Force try to locate the original source, and could there be a study conducted on the contamination. Mr. Buelter stated this plume comes from an industrial area of Kelly and migrates across the flight line. Mr. Weeger stated there has already been an ecological risk assessment conducted on Leon Creek which took approximately eight years to complete. The Texas Department of Health determined that as long as the Air Force continued to operate remediation systems on both sides of the creek there was no risk to ecological receptors with the fish or other things in the creek.

Mr. Skrobarcek asked what the comparison standard was for PCE and TCE. Mr. Buelter stated the acceptable level was five micrograms per liter for both PCE and TCE.

VI. Public Comment Period

Mr. Rodriguez asked what the criteria is for a RAB adjournment. He also asked if the Kelly RAB may be adjourned in the near future, and if so, could his office be notified regarding adjournment.

Ms. Coderre read paragraph 202.10 of the RAB Final Rule dated 12 May 2006, which discusses the conditions an installation commander may consider when considering adjourning a RAB.

Ms. Coderre stated the Air Force is not currently discussing the adjournment of the Kelly RAB. Mr. Weeger stated it could be several more years before adjournment.

Mr. Garcia asked if the next set of meeting minutes could include page numbers. Ms. Coderre said this would be accomplished.

Mr. Perez was concerned about the eligibility of Mr. James Betus as a RAB member. He did not feel Mr. Betus could be a community RAB member as a military member. He felt this could be a conflict of interest. Ms. Coderre stated the Air Force would be happy to discuss community RAB member eligibility during the next RAB meeting October 07.

Mr. Garcia asked about air pollution emitted from aircraft at Kelly and wanted to know if a study could be conducted regarding air pollution at the former Kelly AFB. Mr. Garcia also stated the Air Force dumped fuel on the runway in the past and this should be reviewed as a possible source of contamination. Mr. Weeger addressed this request by stating ATSDR produced a report regarding the aircraft emissions and stated this is no longer an issue for the RAB. He reminded everyone the RAB should not request reports for items that have already been

addressed in past RAB meetings.

VII. RAB Open Discussion/Upcoming Agenda

Recommended agenda topics for the next RAB meeting included soil vapor intrusion and RAB member eligibility.

VIII. Meeting Adjournment

The meeting adjourned at 8:30 p.m.

Upcoming Meetings:

Next RAB Meeting: 9 October 2007, 6:30 p.m. – Port Authority of San Antonio – Boardroom

Attachments:

1 Agenda- 17 July 2007 RAB
2 Presentation slides for July 2007 RAB meeting
3 Meeting Minutes – 10 April 2007 BCT meeting
4 List of Kelly RAB Community Cochair Library Documents, July 2007
5 Memo to Kelly RAB, 4 April 2007, Re: Appointment of Cochair and Charter Review
6 Meeting Minutes – 10 April 2007 Kelly RAB
7 Action Item Report – 10 April 2007 Kelly RAB

Air Force Real Property Agency

Integrity - Service - Excellence

Kelly Restoration Advisory Board

17 July 2007

Port Authority of San Antonio
143 Billy Mitchell Blvd., Bldg. 43, Ste. 6
San Antonio, TX 78226
6:30 p.m.

U.S. AIR FORCE

U.S. AIR FORCE

Introduction

6:30pm – 6:40pm

- Welcome and Overview

U.S. AIR FORCE

Introduction

6:40 pm – 6:50 pm

- Installation Cochair Comments

Integrity - Service - Excellence

U.S. AIR FORCE

Installation Cochair Comments

- Kelly RAB documents are currently being placed in the online Administrative Record (AR)
  - https://afrpaar.afrpa.pentagon.af.mil/ar/docsearch.aspx
  - By selecting "Kelly" as the base, and entering "RAB" in the key word search, all RAB documents currently available will appear and can be sorted by date. You can also search by the AR #.
  - For example, the draft meeting minutes and meeting materials from the 10 April 2007 Kelly RAB meeting can be found under AR number 3220, the official transcript is located under AR # 3220.10 and the action item report is located under AR # 3220.20.
- The AFRPA public website is currently making progress. Please visit http://www.safie.hq.af.mil/afrpa/index.asp to see the latest updates available.

Integrity - Service - Excellence

U.S. AIR FORCE

Nomination and Election of Community Cochair

6:50pm – 7:10pm

- Nomination and Election of Kelly RAB Community Cochair

Integrity - Service - Excellence

5

U.S. AIR FORCE

BRAC Environmental Coordinator (BEC) Update

7:10pm – 7:20pm

- BRAC Cleanup Team (BCT) Update
- Library Documents

Integrity - Service - Excellence

6

U.S. AIR FORCE

BRAC Cleanup Team (BCT) Update

BCT Update

- 10 April 2007 BCT
  - Copies of final BCT meeting minutes are included in RAB meeting packets
- 17 July 2007 BCT
  - Copies of final BCT meeting minutes to be included in RAB meeting packets when complete

Integrity - Service - Excellence

U.S. AIR FORCE

Library Documents

- AFRPA documents below will be placed in the Kelly RAB Community Cochair Library following this meeting
  - **TCEQ letter to AFRPA, 02/27/07** – Re: TCEQ's review and approval of the *Revised Corrective Action Observation Wells for Site E-3 and Site S-8*, with requirement to update the Semiannual Compliance Plan Report accordingly
  - **TCEQ letter to AFRPA, 03/09/07** – Re: TCEQ's acceptance of deed certification and release from post-closure care responsibilities for the Industrial Wastewater Collection System (IWCS) Pipeline (IRP Site IWCS). The certification states that contaminants remaining at the site have been remediated to meet non-residential soil criteria under Risk Reduction Standard (RRS) No. 2. Three IWCS line segments are not covered by this release from post-closure care responsibilities.
  - **TCEQ letter to AFRPA, 03/09/07** – Re: TCEQ's acceptance of deed certification and release from post-closure care responsibilities for Building 1586 Oil/Water Separator (Including NOR SWMU 046 and NOR SWMU 055). The certification states that contaminants remaining at the site have been remediated to meet non-residential soil criteria under Risk Reduction Standard (RRS) No. 2. Building 1586 interior drainage trough and exterior wash racks are not covered by this release from post-closure care responsibilities.
  - **TCEQ letter to AFRPA, 04/24/07** – Re: TCEQ's acceptance of deed certification and release from post-closure care responsibilities for Facility 3041 Former Wash Rack. The certification states that contaminants remaining at the site have been remediated to meet residential soil criteria under Risk Reduction Standard (RRS) No. 2.

Integrity - Service - Excellence

U.S. AIR FORCE

Library Documents

- AFRPA documents below will be placed in the Kelly RAB Community Cochair Library following this meeting (Continued)
  - **TCEQ letter to AFRPA, 04/24/07** – Re: TCEQ's acceptance of deed certification and release from post-closure care responsibilities for the Environmental Process Control Facility (EPCF). The certification states that contaminants remaining at the site have been remediated to meet non-residential soil criteria under Risk Reduction Standard (RRS) No. 2.
  - **EPA letter to TCEQ, 05/17/07** – Re: EPA's review of the *Zone 1 Draft Final Corrective Measures Study (CMS) Remedial Alternative Evaluation Report, Environmental Restoration of Zone 1 Sites, Lackland AFB, Vol. 3.* EPA generally agreed with the suggested alternatives, but provided several comments regarding SS043 and groundwater issues identified in the same general area.
  - **TCEQ letter to AFRPA, 05/18/07** – Re: TCEQ's conditional approval with comment to AFRPA's submittal of the Zone 1 Corrective Measures Study (CMS) Volume III. At the time of this letter, TCEQ was currently reviewing AFRPA's response to TCEQ comments regarding two previously submitted reports which require resolution prior to the approval of the Zone 1 CMS Vol. III. This letter also requested SWMUs addressed in the report no longer be referred to as municipal landfills.

Integrity - Service - Excellence

U.S. AIR FORCE

Off-Base Cleanup Briefing

7:20pm – 8:00pm

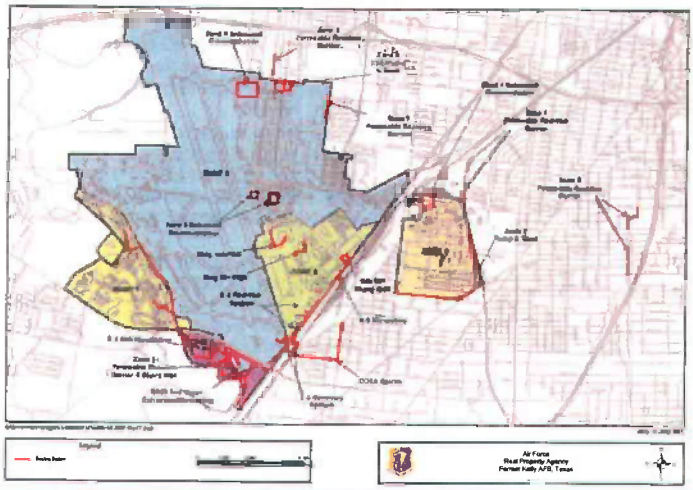
- Off-Base Cleanup Briefing
- Questions & Answers

Integrity - Service - Excellence

U.S. AIR FORCE

Remediation Systems/Processes

Remediation Systems/Processess June 2007

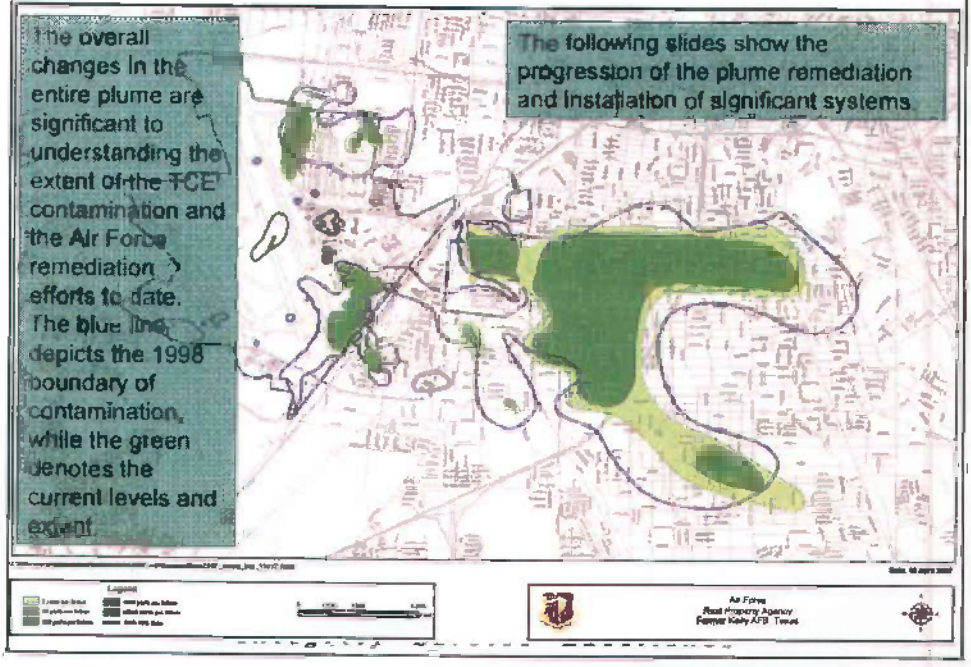


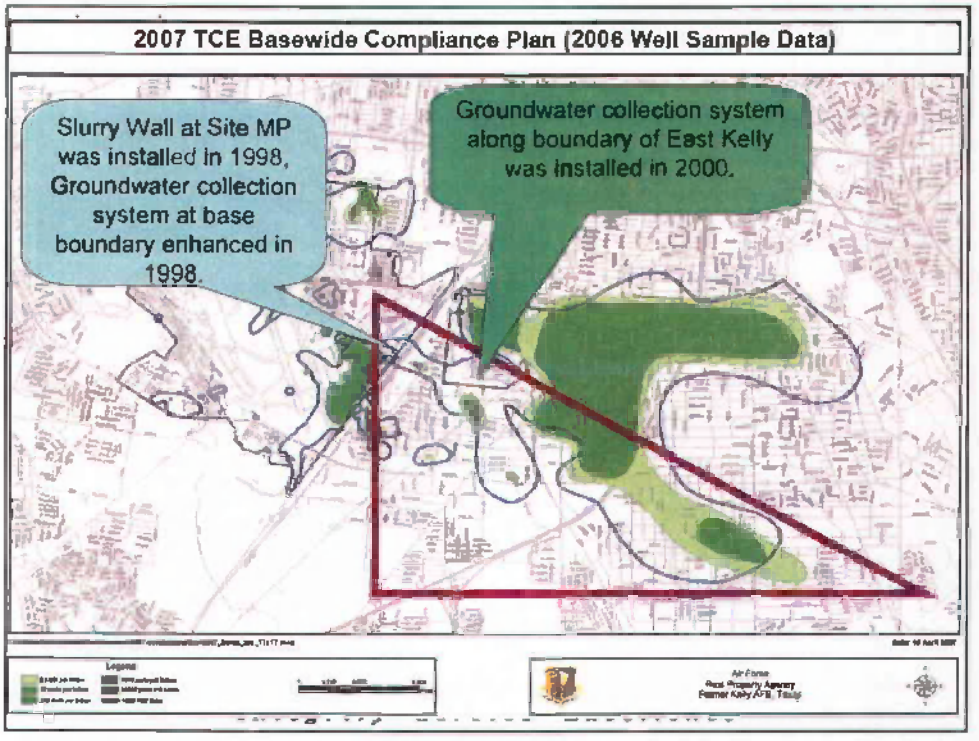
Integrity - Service - Excellence

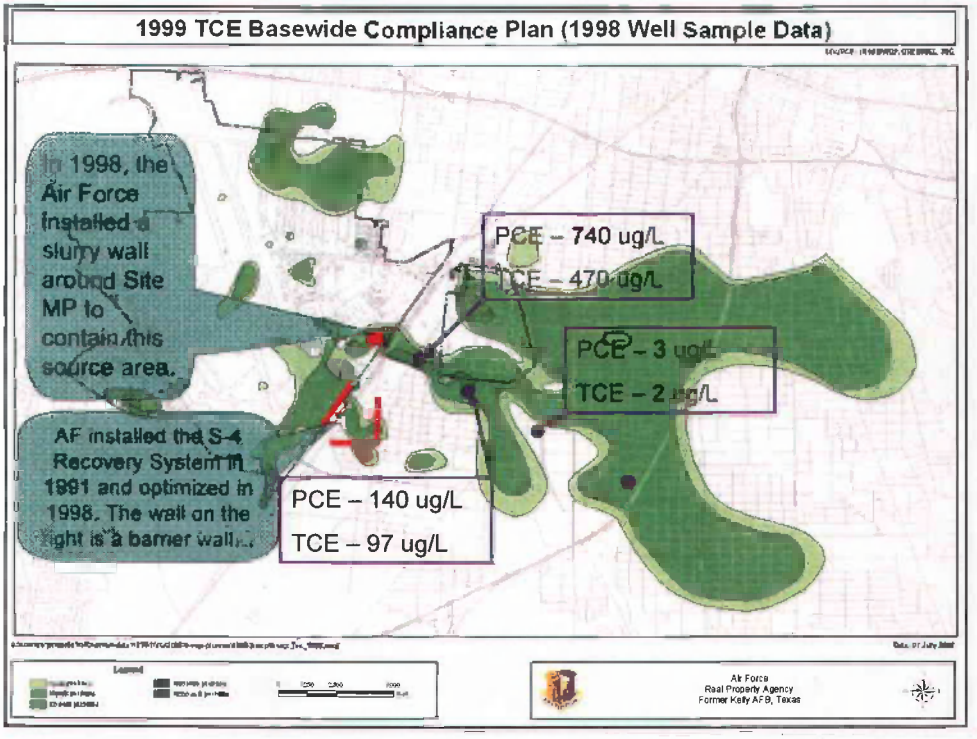
2007 TCE Basewide Compliance Plan (2006 Well Sample Data)

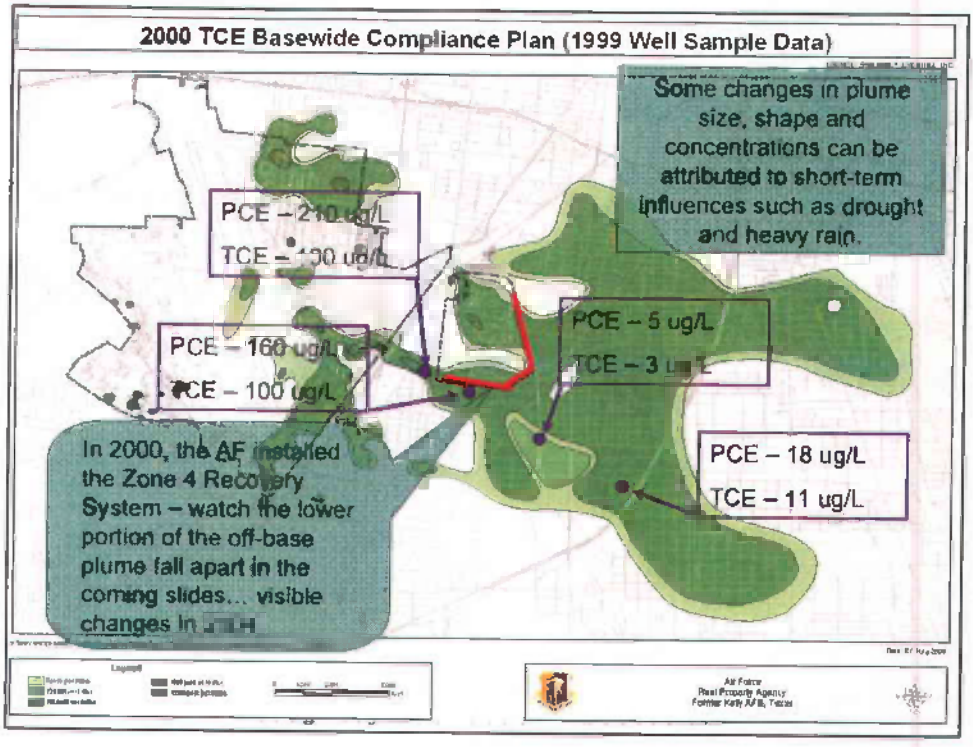
The overall changes in the entire plume are significant to understanding the extent of the TCE contamination and the Air Force remediation efforts to date. The blue line depicts the 1998 boundary of contamination, while the green denotes the current levels and extent.

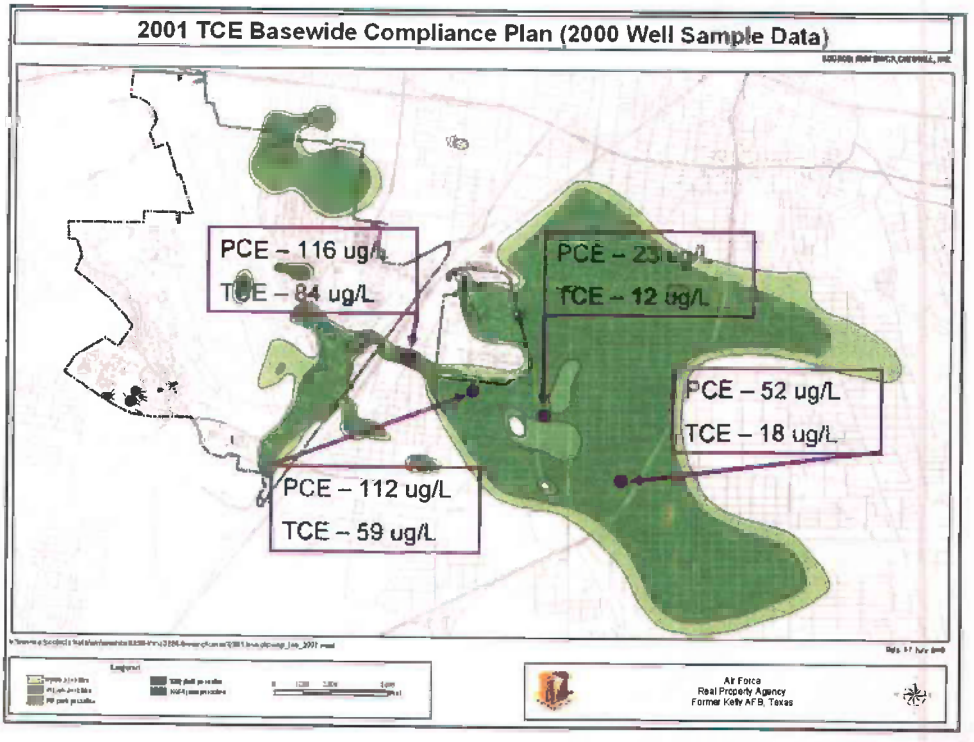
The following slides show the progression of the plume remediation and installation of significant systems.

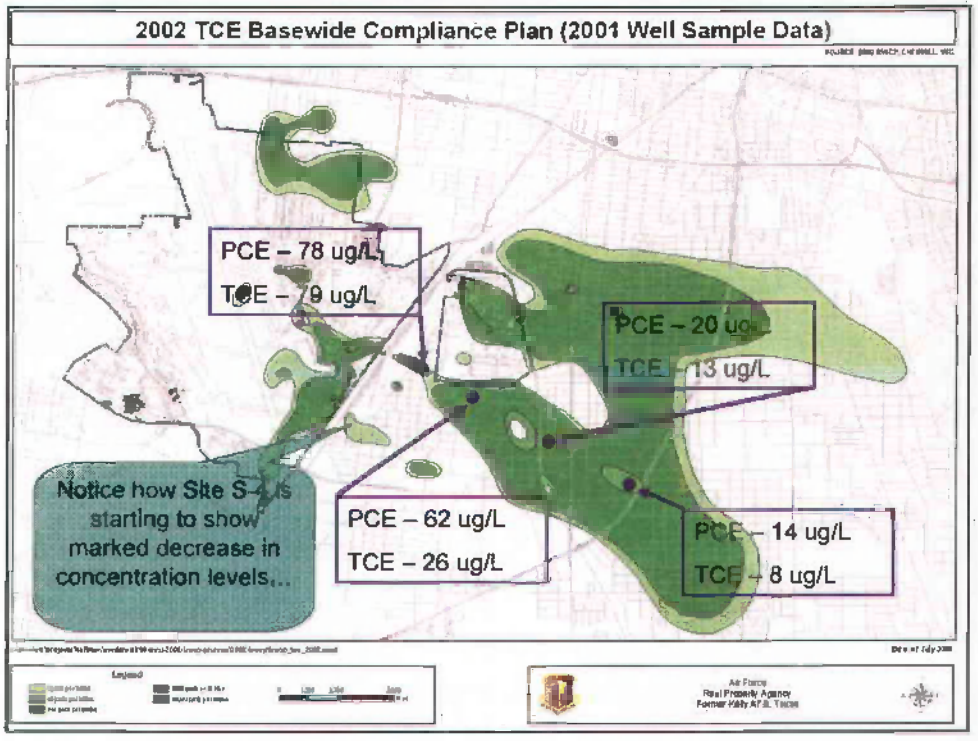


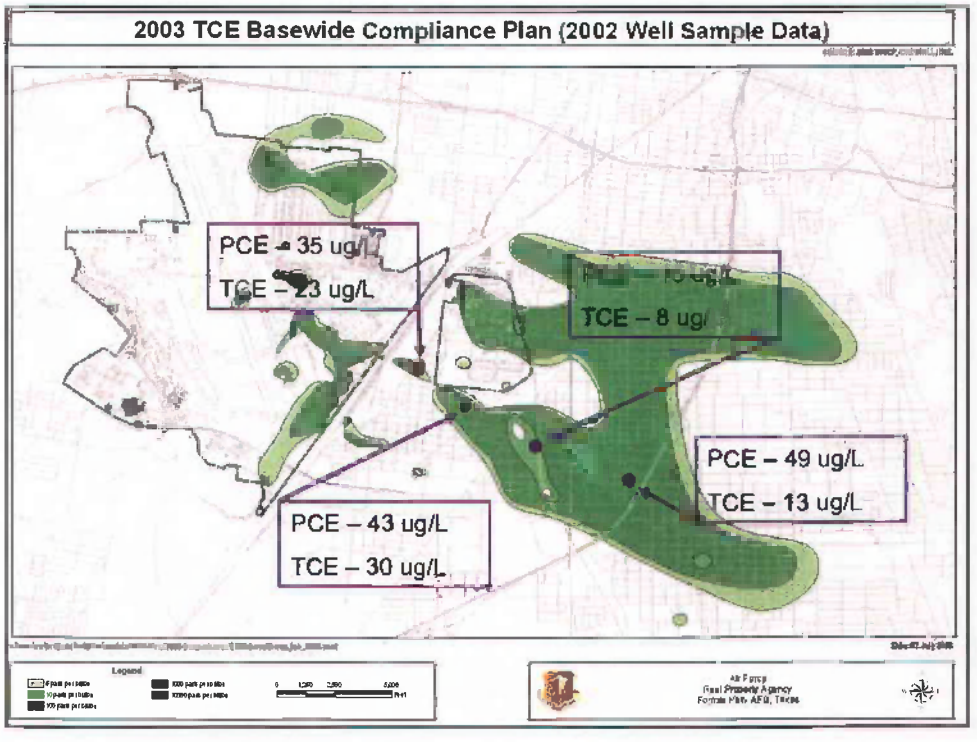

2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
Slurry Wall at Site MP was installed in 1998. Groundwater collection system at base boundary enhanced in 1998.
Groundwater collection system along boundary of East Kelly was installed in 2000.
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

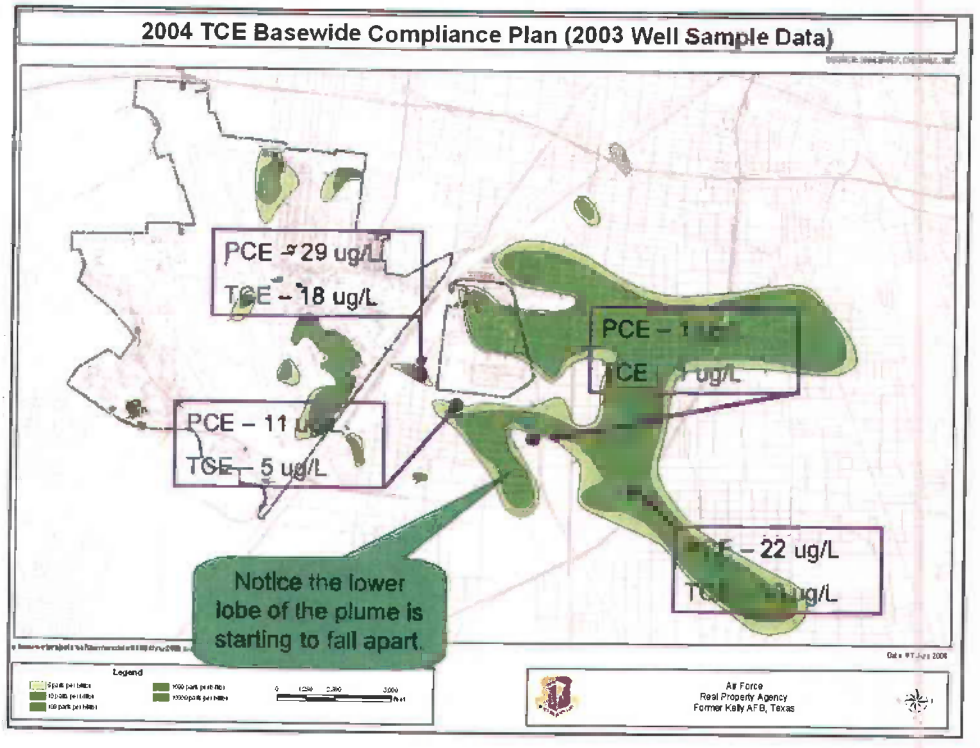

1999 TCE Basewide Compliance Plan (1998 Well Sample Data)
In 1998, the Air Force installed a slurry wall around Site MP to contain this source area.
PCE – 740 ug/L
TCE – 470 ug/L
PCE – 3 ug/L
TCE – 2 ug/L
AF installed the S-4 Recovery System in 1991 and optimized in 1998. The wall on the right is a barrier wall.
PCE – 140 ug/L
TCE – 97 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

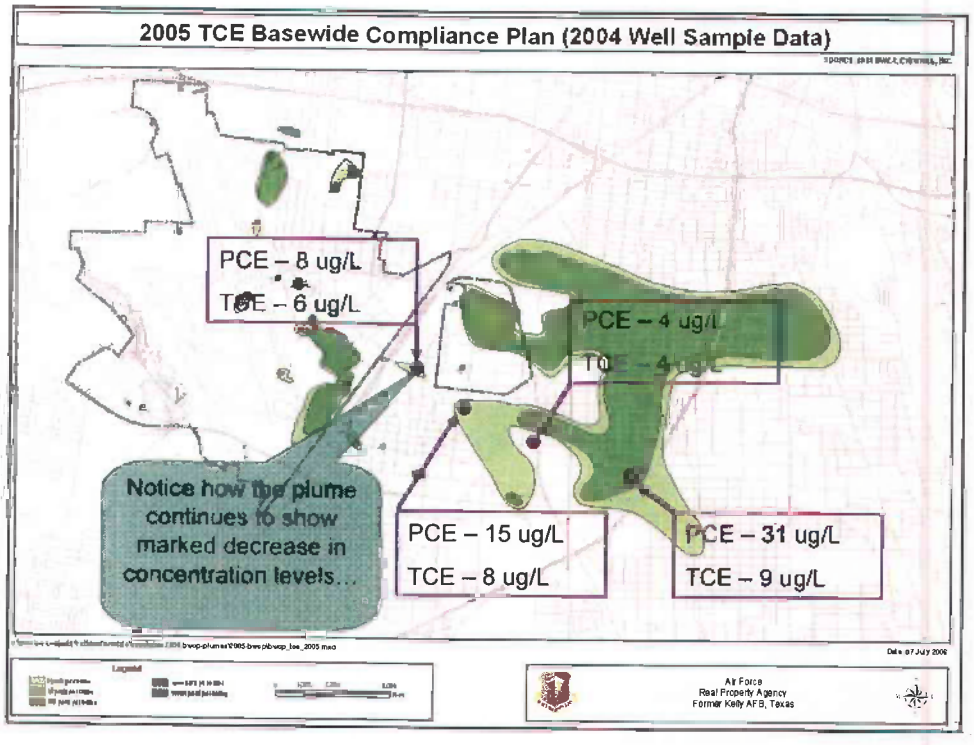

2000 TCE Basewide Compliance Plan (1999 Well Sample Data)
Some changes in plume size, shape and concentrations can be attributed to short-term influences such as drought and heavy rain.
PCE – 210 ug/L
TCE – 100 ug/L
PCE – 160 ug/L
PCE – 100 ug/L
PCE – 5 ug/L
TCE – 3 ug/L
PCE – 18 ug/L
TCE – 11 ug/L
In 2000, the AF installed the Zone 4 Recovery System – watch the lower portion of the off-base plume fall apart in the coming slides… visible changes in
Air Force
Real Property Agency
Former Kelly AFB, Texas

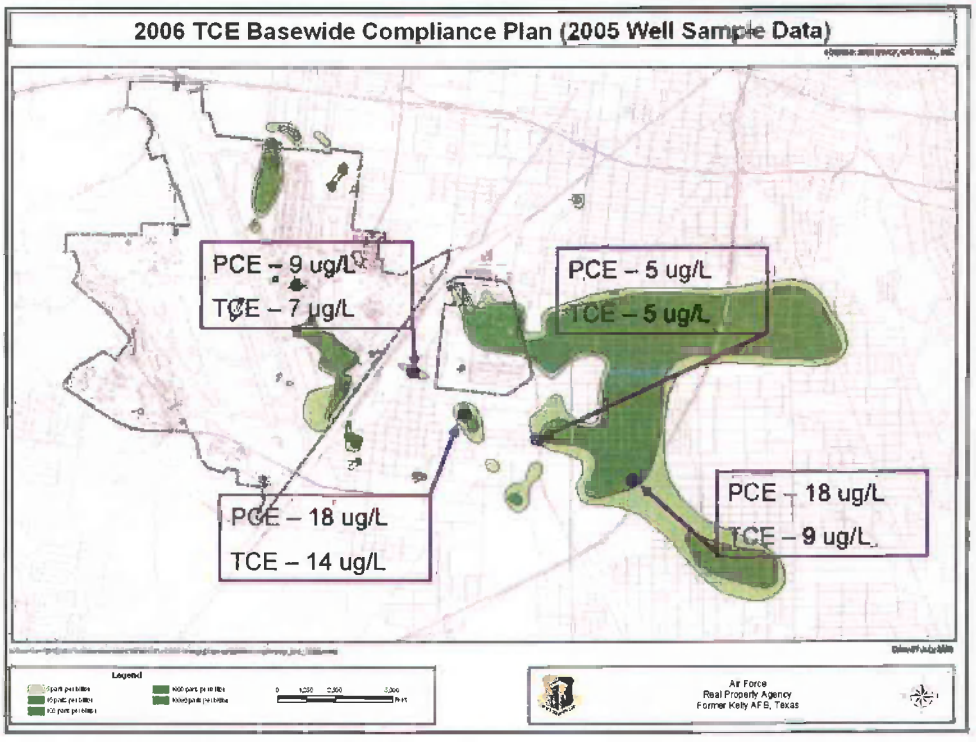

2001 TCE Basewide Compliance Plan (2000 Well Sample Data)
PCE – 116 ug/L
TCE – 84 ug/L
PCE – 23 ug/L
TCE – 12 ug/L
PCE – 52 ug/L
TCE – 18 ug/L
PCE – 112 ug/L
TCE – 59 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas

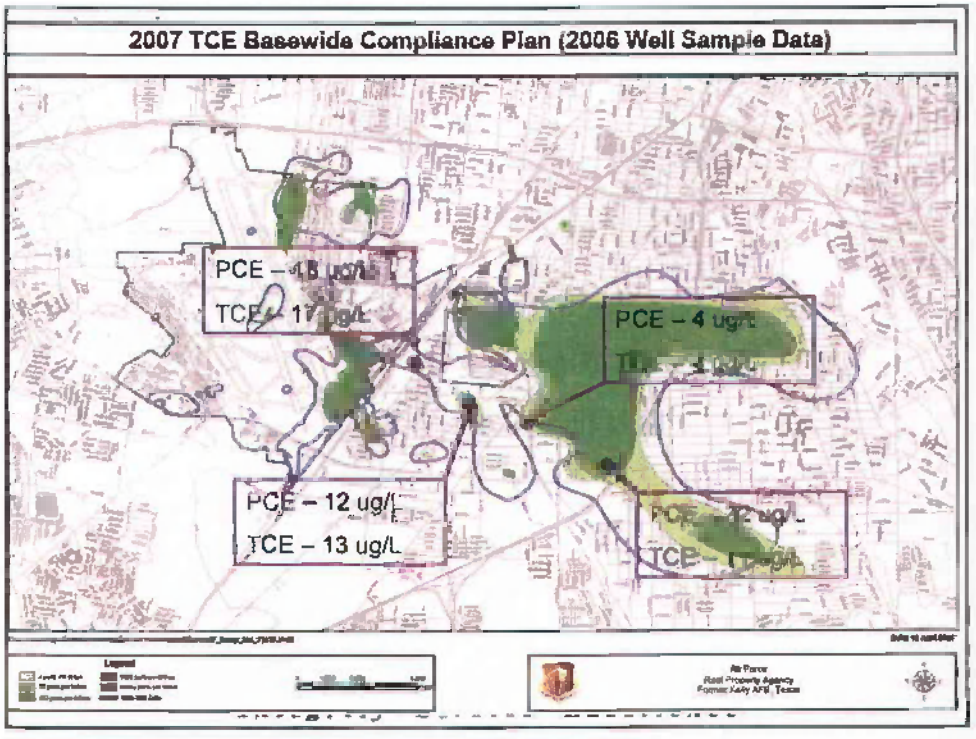

2002 TCE Basewide Compliance Plan (2001 Well Sample Data)
PCE – 78 ug/L
TCE – 9 ug/L
PCE – 20 ug/L
TCE – 13 ug/L
Notice how Site S-4 is starting to show marked decrease in concentration levels...
PCE – 62 ug/L
TCE – 26 ug/L
PCE – 14 ug/L
TCE – 8 ug/L

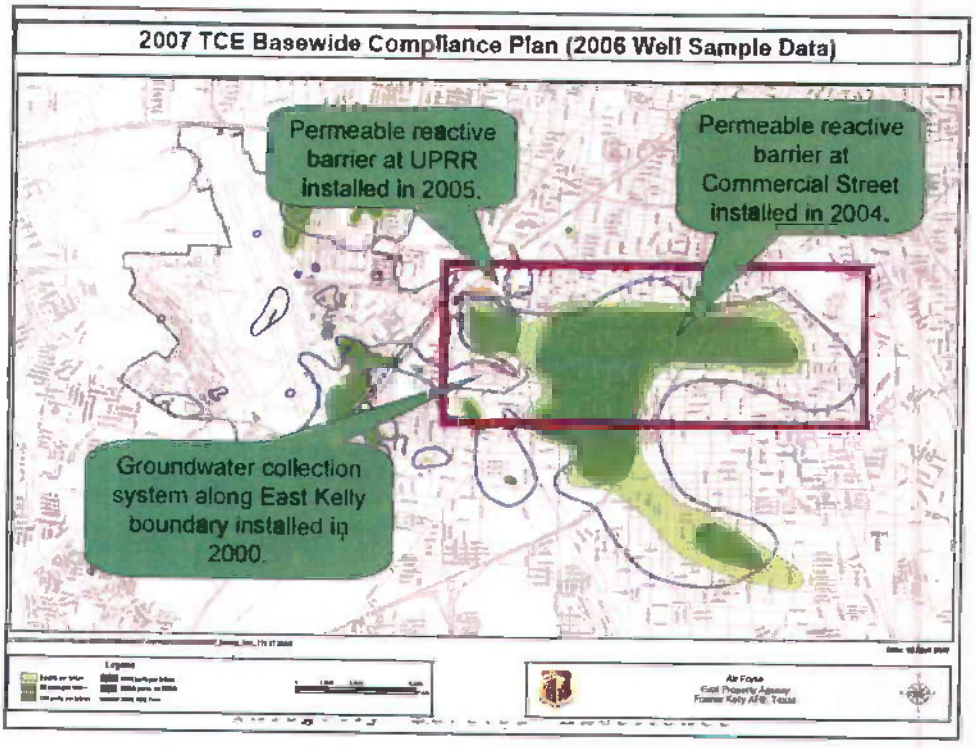

2003 TCE Basewide Compliance Plan (2002 Well Sample Data)
PCE – 35 ug/L
TCE – 23 ug/L
TCE – 8 ug/L
PCE – 49 ug/L
TCE – 13 ug/L
PCE – 43 ug/L
TCE – 30 ug/L

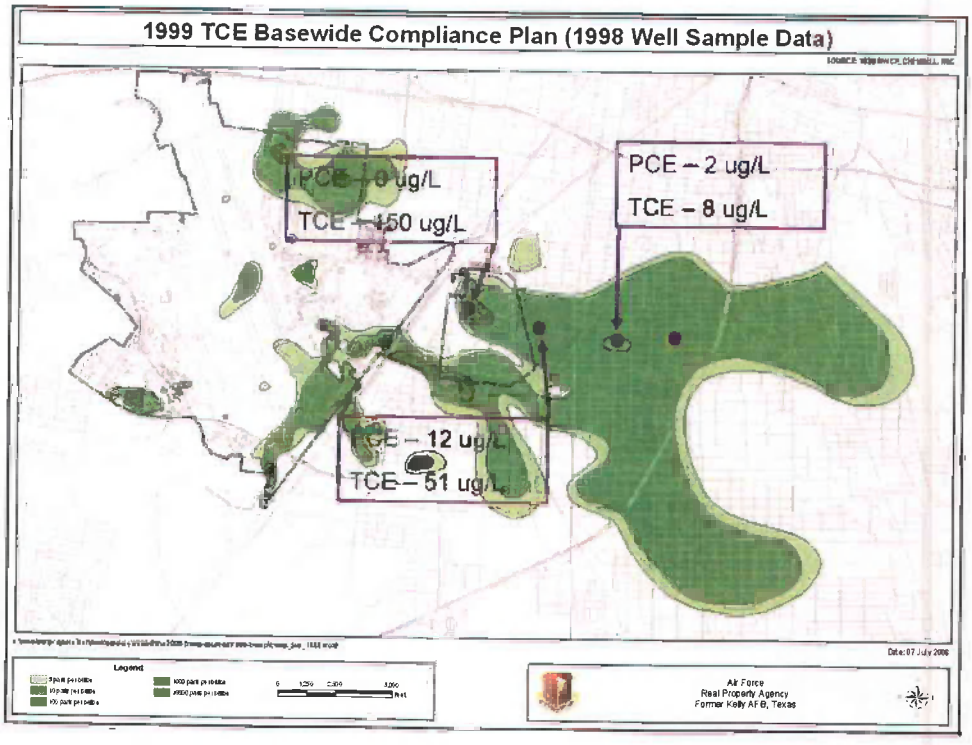

2004 TCE Basewide Compliance Plan (2003 Well Sample Data)
PCE – 29 ug/L
TCE – 18 ug/L
PCE – 11 ug/L
TCE – 5 ug/L
PCE – 1 ug/L
TCE – 1 ug/L
TCE – 22 ug/L
Notice the lower lobe of the plume is starting to fall apart.
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

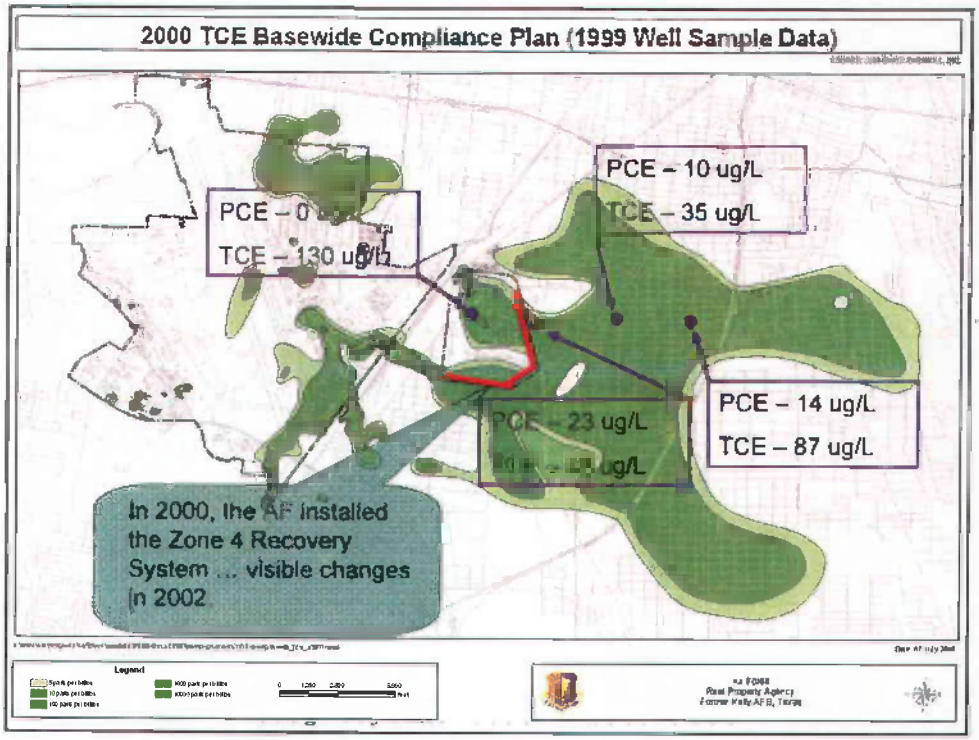

2005 TCE Basewide Compliance Plan (2004 Well Sample Data)
PCE – 8 ug/L
TCE – 6 ug/L
PCE – 4 ug/L
TCE – 4 ug/L
Notice how the plume continues to show marked decrease in concentration levels…
PCE – 15 ug/L
TCE – 8 ug/L
PCE – 31 ug/L
TCE – 9 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas

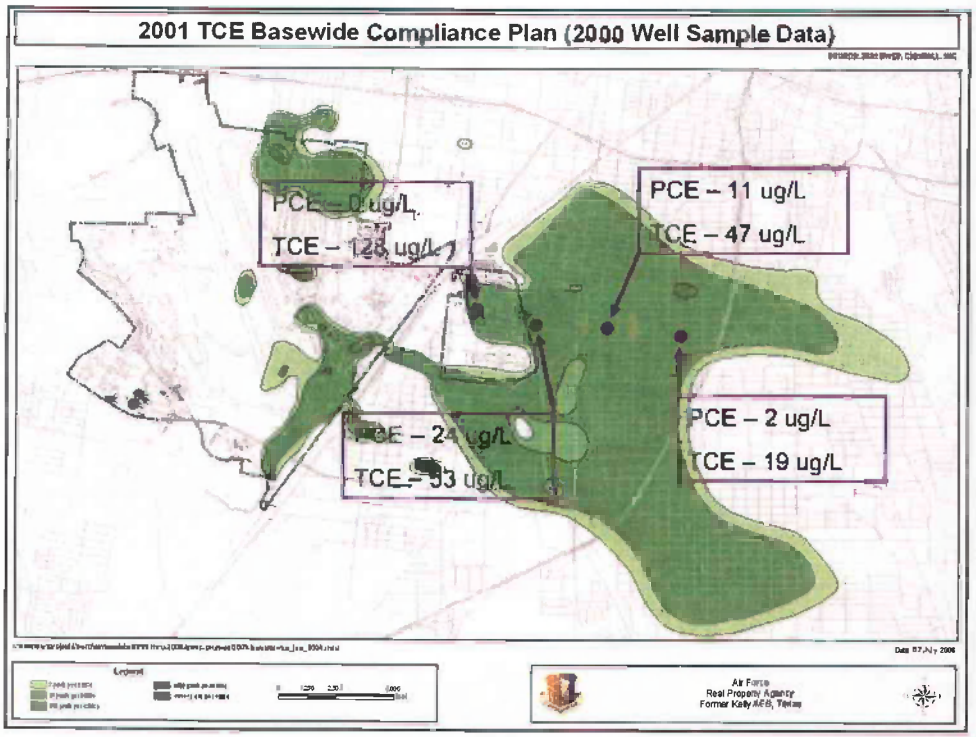

2006 TCE Basewide Compliance Plan (2005 Well Sample Data)
PCE – 9 ug/L
TCE – 7 ug/L
PCE – 5 ug/L
TCE – 5 ug/L
PCE – 18 ug/L
TCE – 14 ug/L
PCE – 18 ug/L
TCE – 9 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas

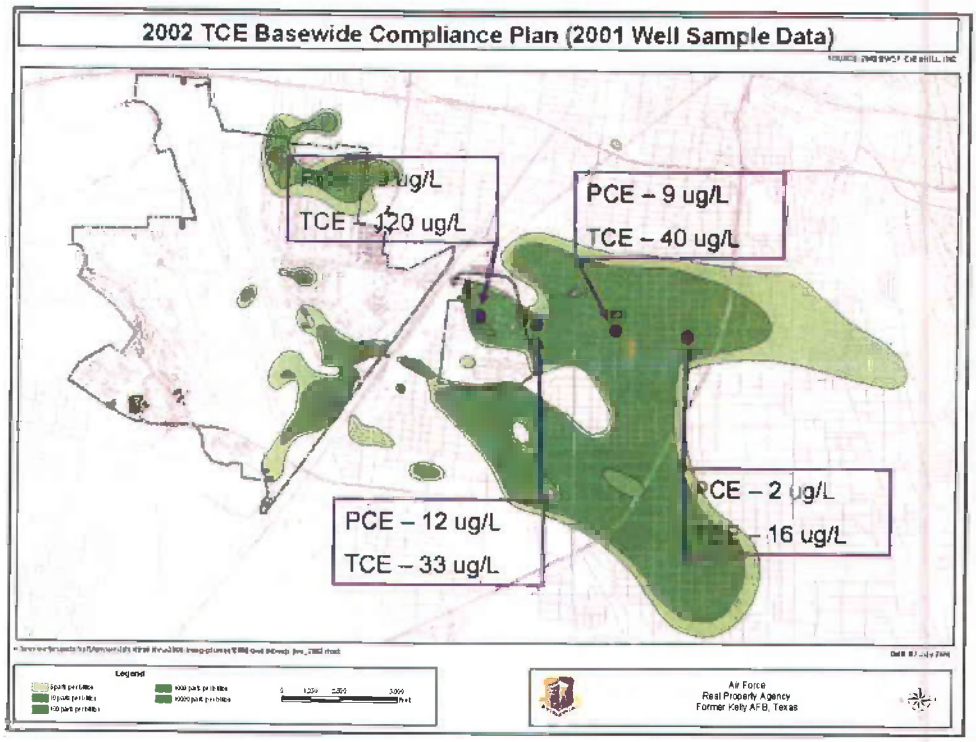

2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
PCE – 4 ug/L
PCE – 12 ug/L
TCE – 13 ug/L

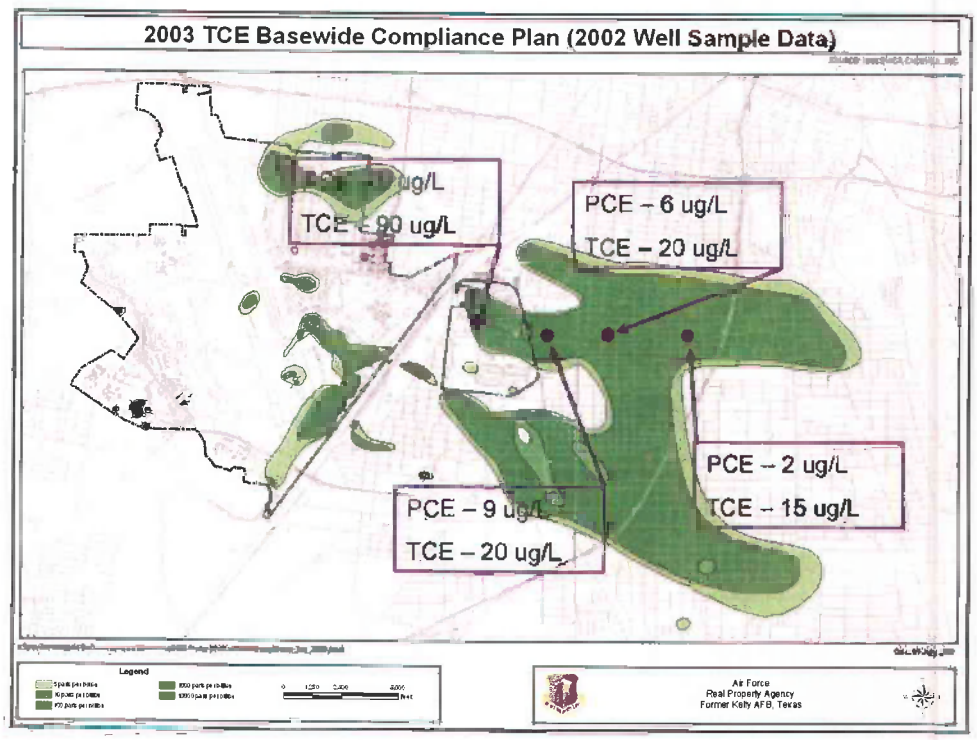

2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
Permeable reactive barrier at UPRR installed in 2005.
Permeable reactive barrier at Commercial Street installed in 2004.
Groundwater collection system along East Kelly boundary installed in 2000.
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

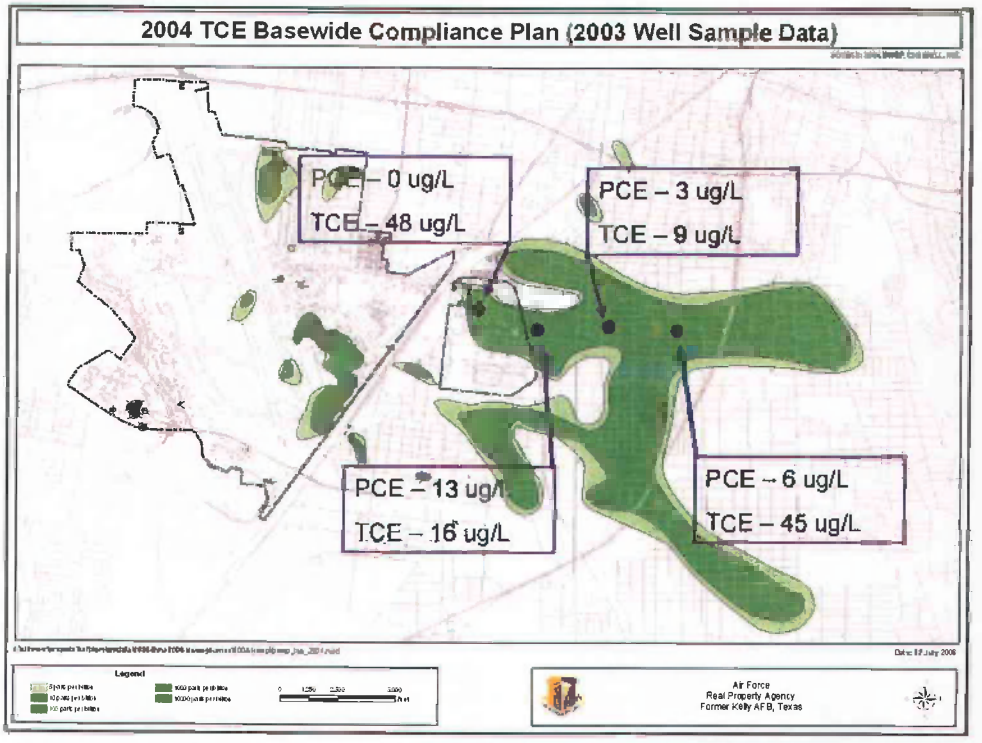

1999 TCE Basewide Compliance Plan (1998 Well Sample Data)
PCE – 0 ug/L
TCE – 150 ug/L
PCE – 2 ug/L
TCE – 8 ug/L
TCE – 12 ug/L
TCE – 51 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

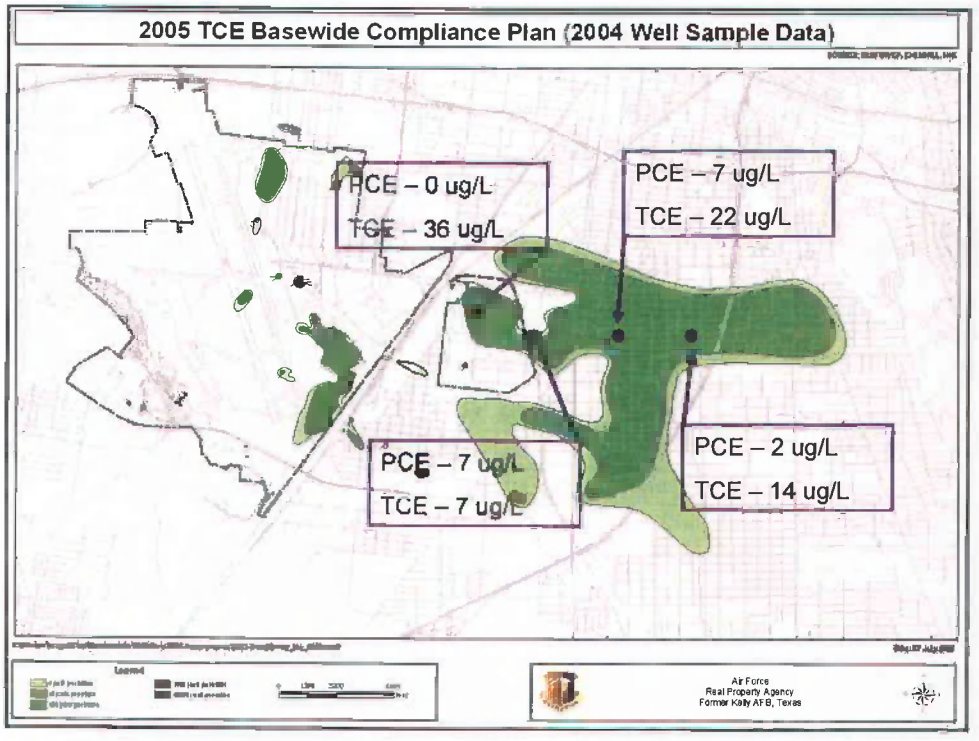

2000 TCE Basewide Compliance Plan (1999 Well Sample Data)
PCE – 10 ug/L
TCE – 35 ug/L
TCE – 130 ug/L
PCE – 14 ug/L
TCE – 87 ug/L
In 2000, the AF installed the Zone 4 Recovery System ... visible changes in 2002

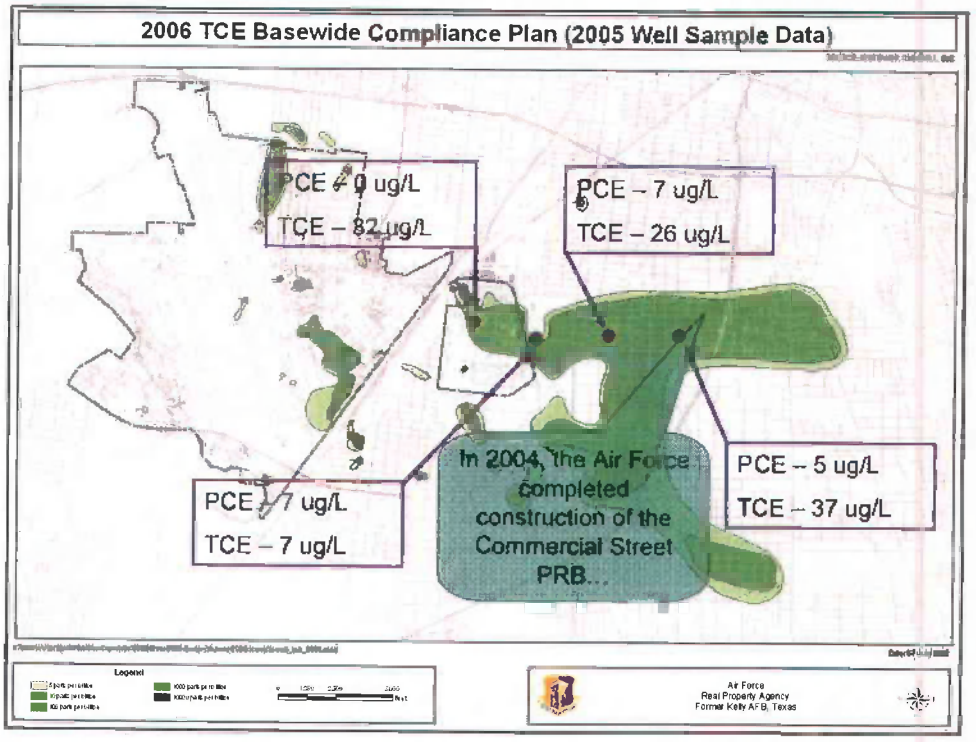

2001 TCE Basewide Compliance Plan (2000 Well Sample Data)
PCE – 11 ug/L
TCE – 47 ug/L
PCE – 2 ug/L
TCE – 19 ug/L

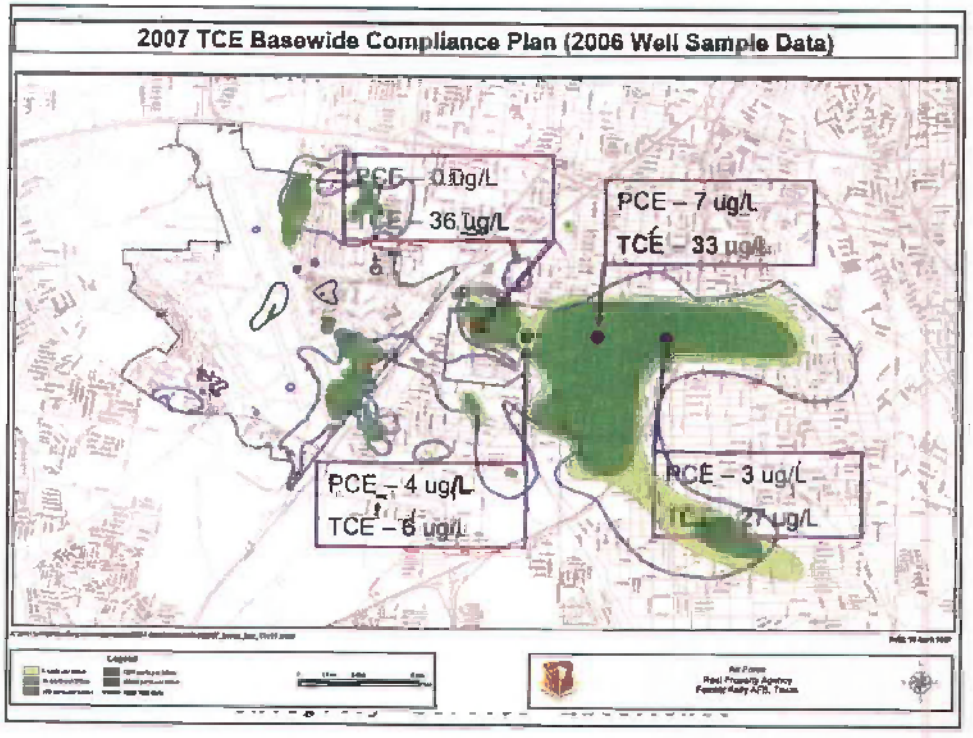

2002 TCE Basewide Compliance Plan (2001 Well Sample Data)
PCE – 9 ug/L
TCE – 40 ug/L
PCE – 12 ug/L
TCE – 33 ug/L
PCE – 2 ug/L
TCE – 16 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

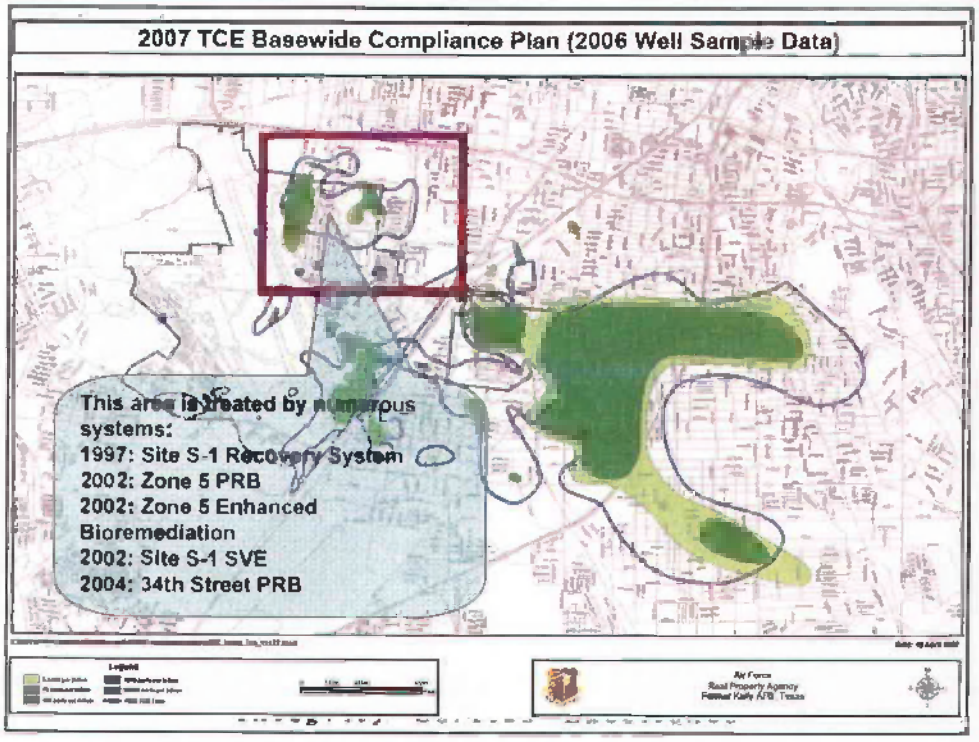

2003 TCE Basewide Compliance Plan (2002 Well Sample Data)
PCE – 6 ug/L
TCE – 20 ug/L
PCE – 2 ug/L
TCE – 15 ug/L
PCE – 9 ug/L
TCE – 20 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

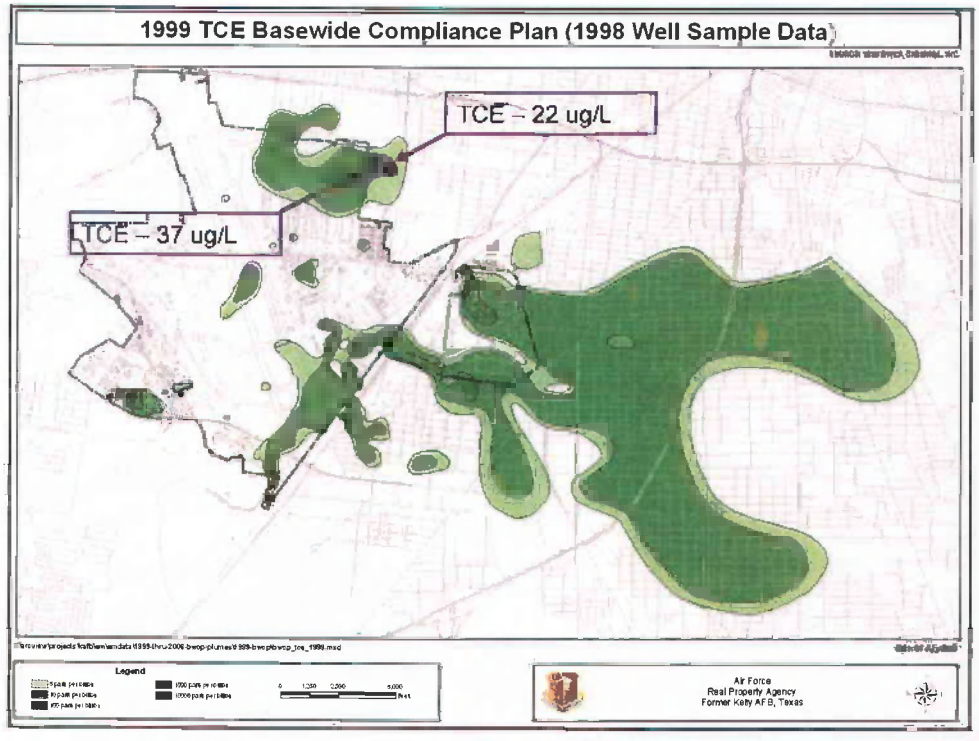

2004 TCE Basewide Compliance Plan (2003 Well Sample Data)
PCE – 0 ug/L
TCE – 48 ug/L
PCE – 3 ug/L
TCE – 9 ug/L
PCE – 13 ug/L
TCE – 16 ug/L
PCE – 6 ug/L
TCE – 45 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas

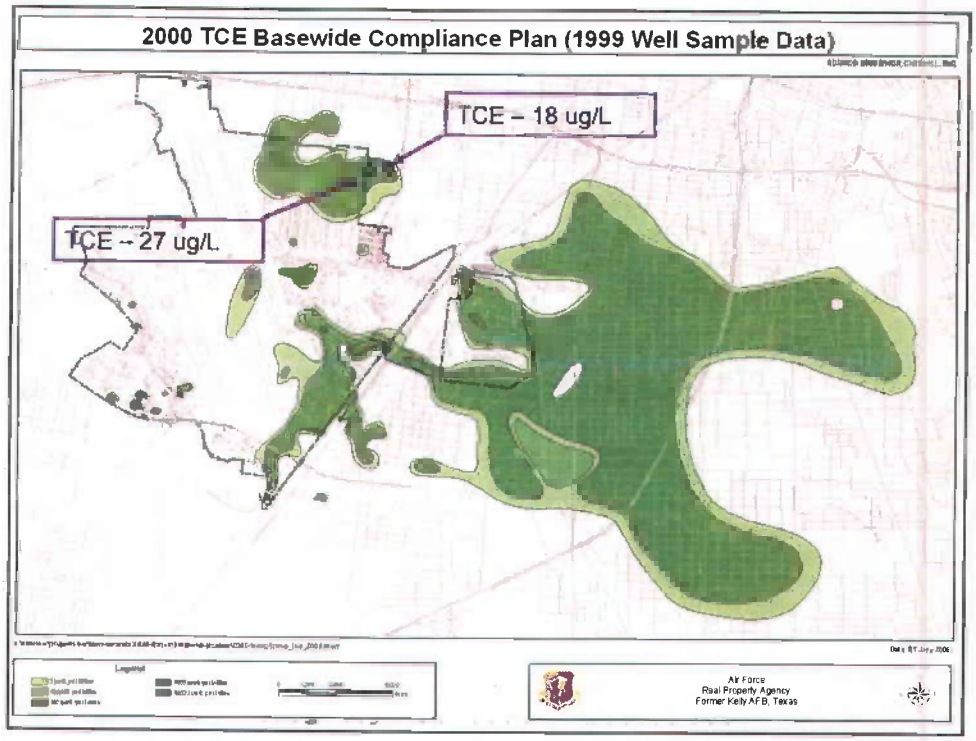

2005 TCE Basewide Compliance Plan (2004 Well Sample Data)
PCE – 0 ug/L
TCE – 36 ug/L
PCE – 7 ug/L
TCE – 22 ug/L
PCE – 7 ug/L
TCE – 7 ug/L
PCE – 2 ug/L
TCE – 14 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas

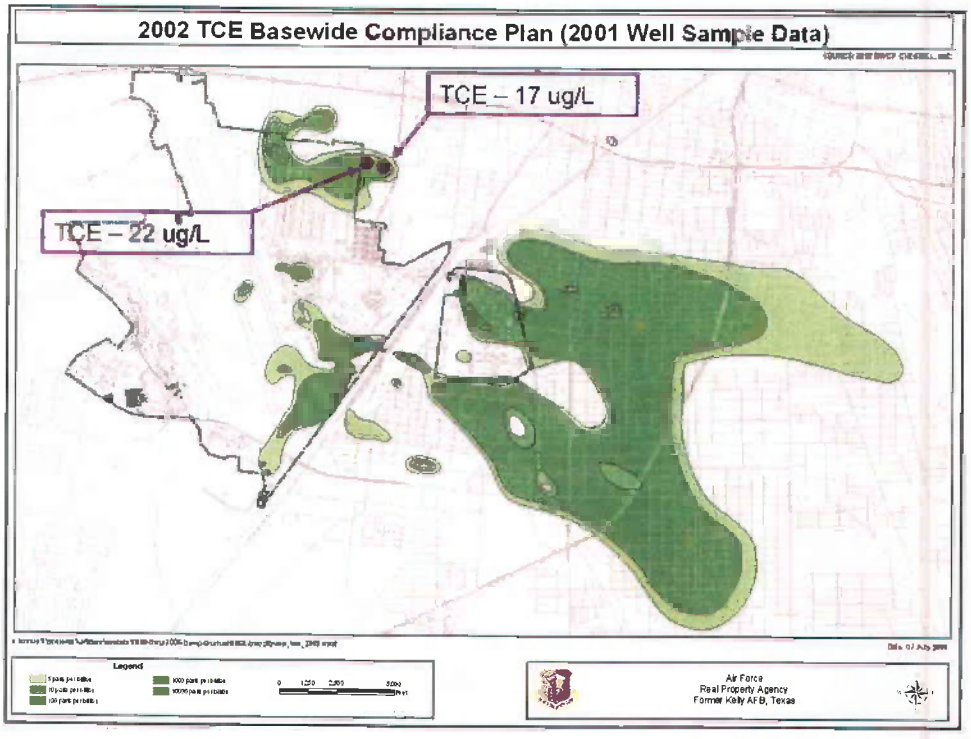

2006 TCE Basewide Compliance Plan (2005 Well Sample Data)
PCE – 0 ug/L
TCE – 82 ug/L
PCE – 7 ug/L
TCE – 26 ug/L
In 2004, the Air Force completed construction of the Commercial Street PRB...
PCE – 5 ug/L
TCE – 37 ug/L
PCE – 7 ug/L
TCE – 7 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

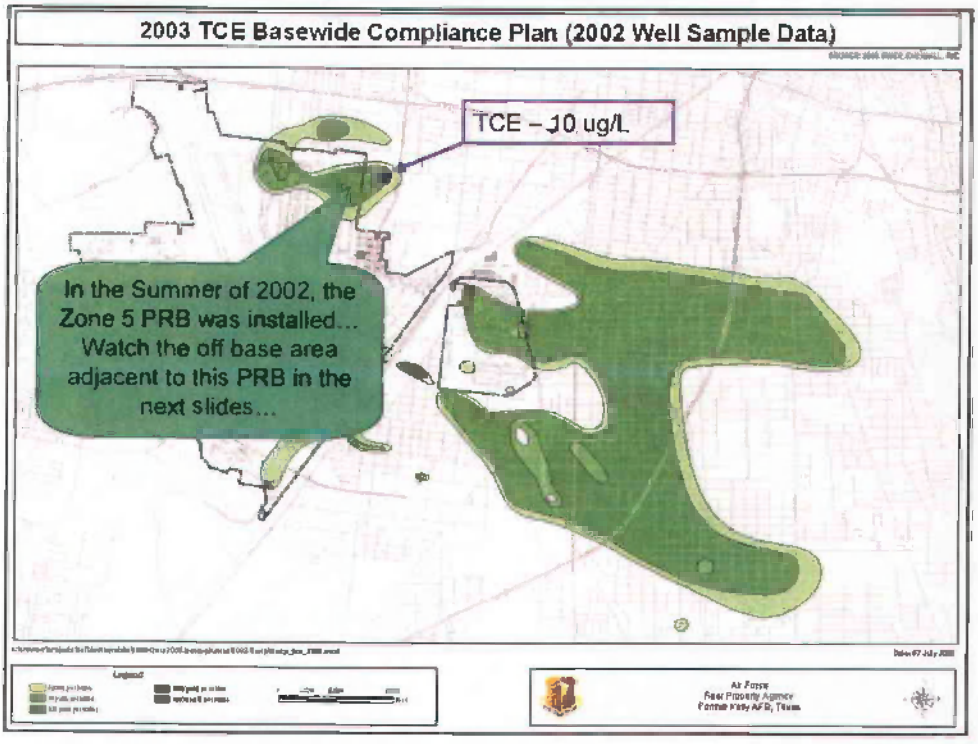

2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
PCE – 0.0g/L
TCE – 36 ug/L
PCE – 7 ug/L
TCE – 33 ug/L
PCE – 4 ug/L
TCE – 6 ug/L
PCE – 3 ug/L
TCE – 27 ug/L

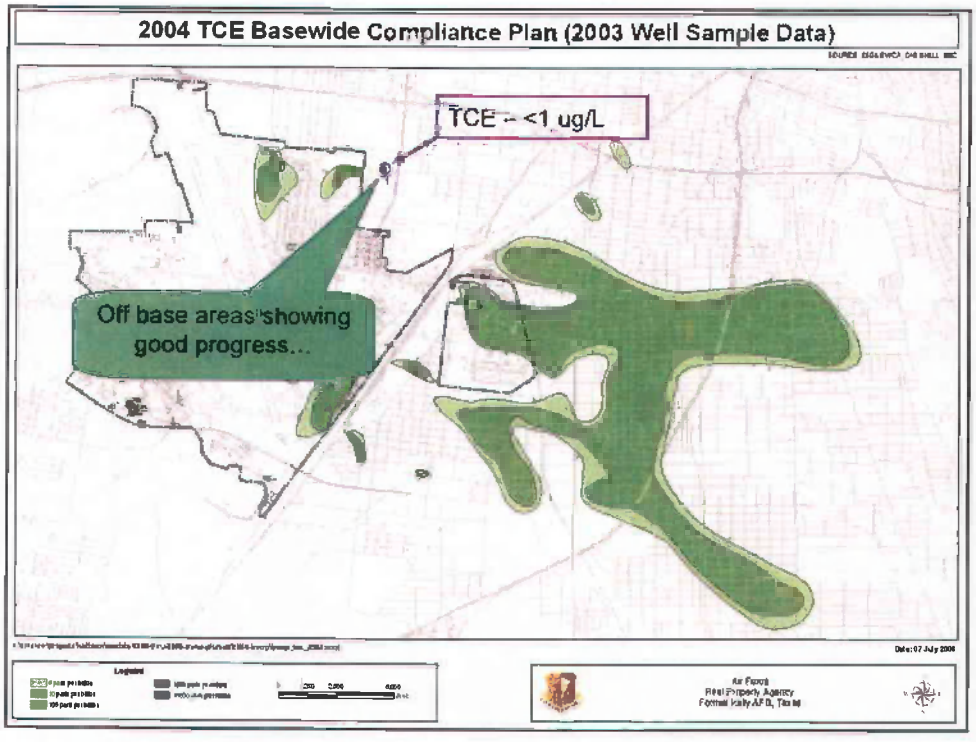

2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
This area is treated by numerous systems:
1997: Site S-1 Recovery System
2002: Zone 5 PRB
2002: Zone 5 Enhanced Bioremediation
2002: Site S-1 SVE
2004: 34th Street PRB
Air Force
Real Property Agency
Former Kelly AFB, Texas

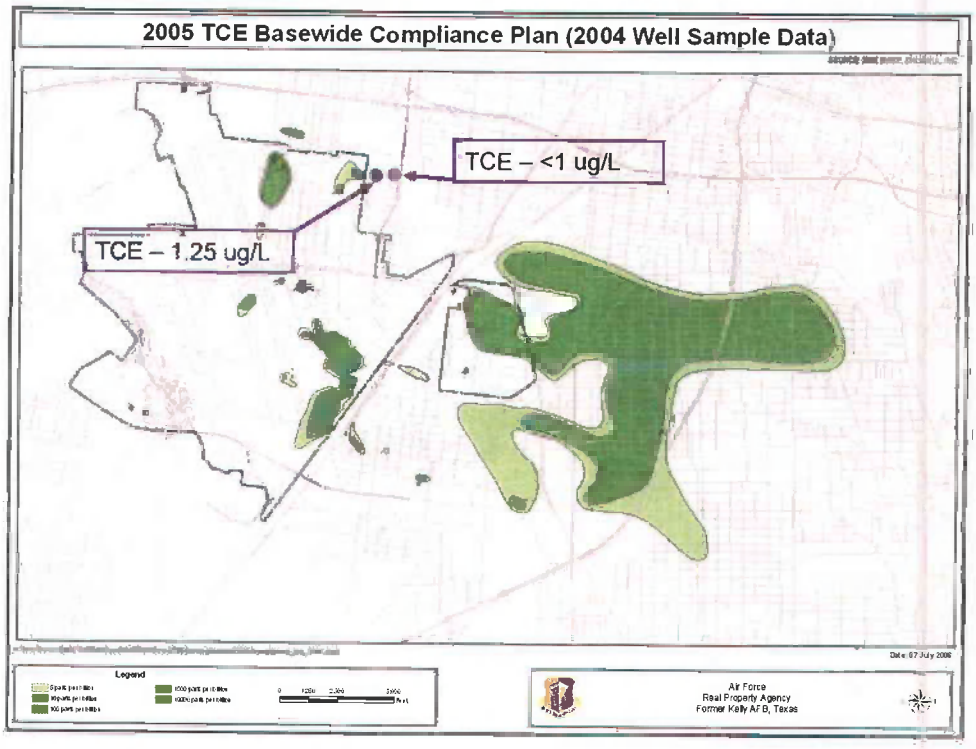

1999 TCE Basewide Compliance Plan (1998 Well Sample Data)
TCE = 22 ug/L
TCE = 37 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

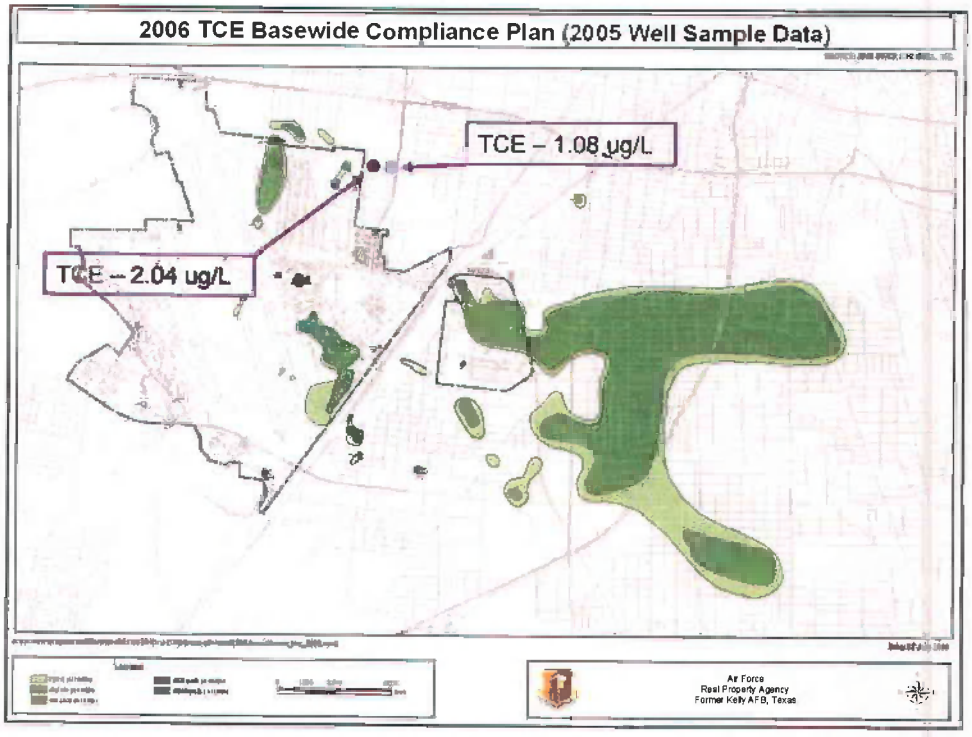

2000 TCE Basewide Compliance Plan (1999 Well Sample Data)
TCE – 18 ug/L
TCE – 27 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas

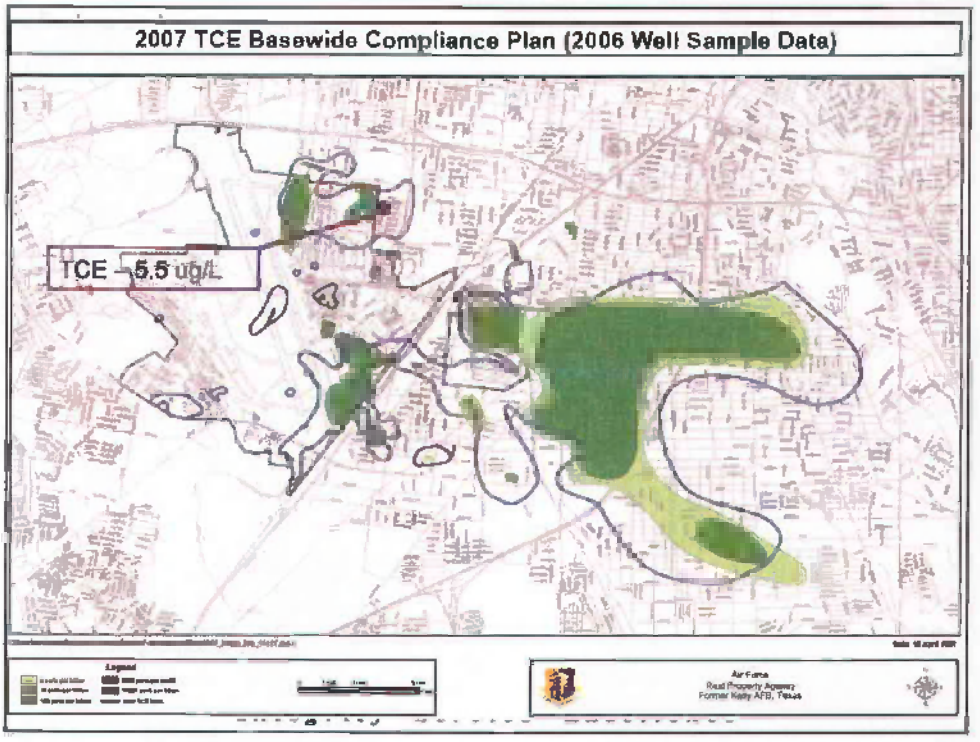

2002 TCE Basewide Compliance Plan (2001 Well Sample Data)
TCE – 17 ug/L
TCE – 22 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas

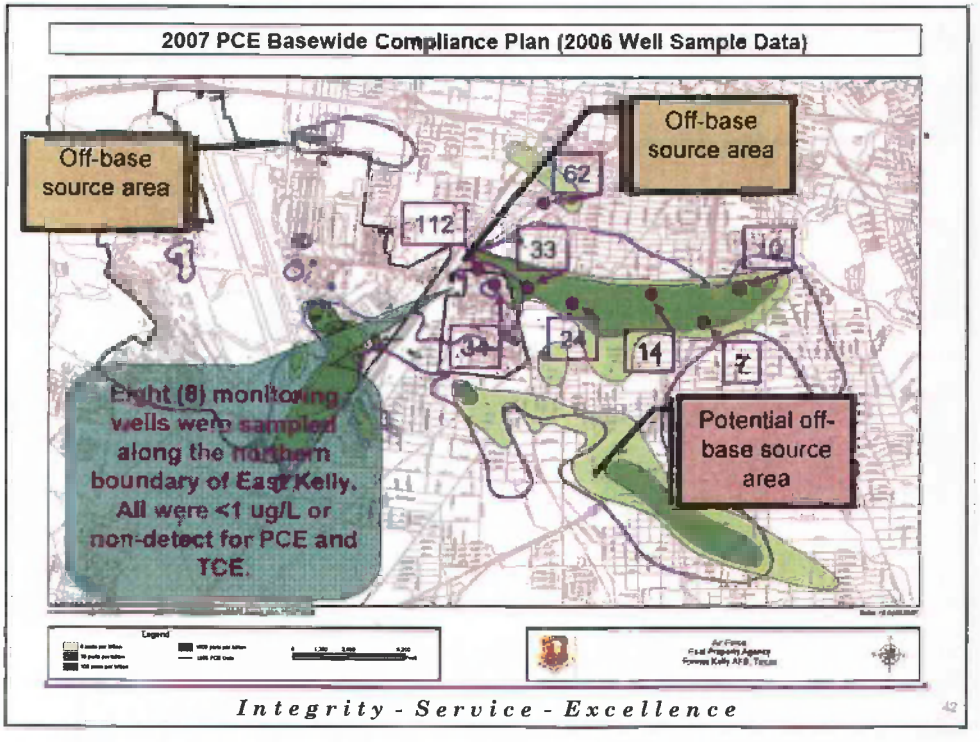

2003 TCE Basewide Compliance Plan (2002 Well Sample Data)
TCE – 10 ug/L
In the Summer of 2002, the Zone 5 PRB was installed… Watch the off base area adjacent to this PRB in the next slides…

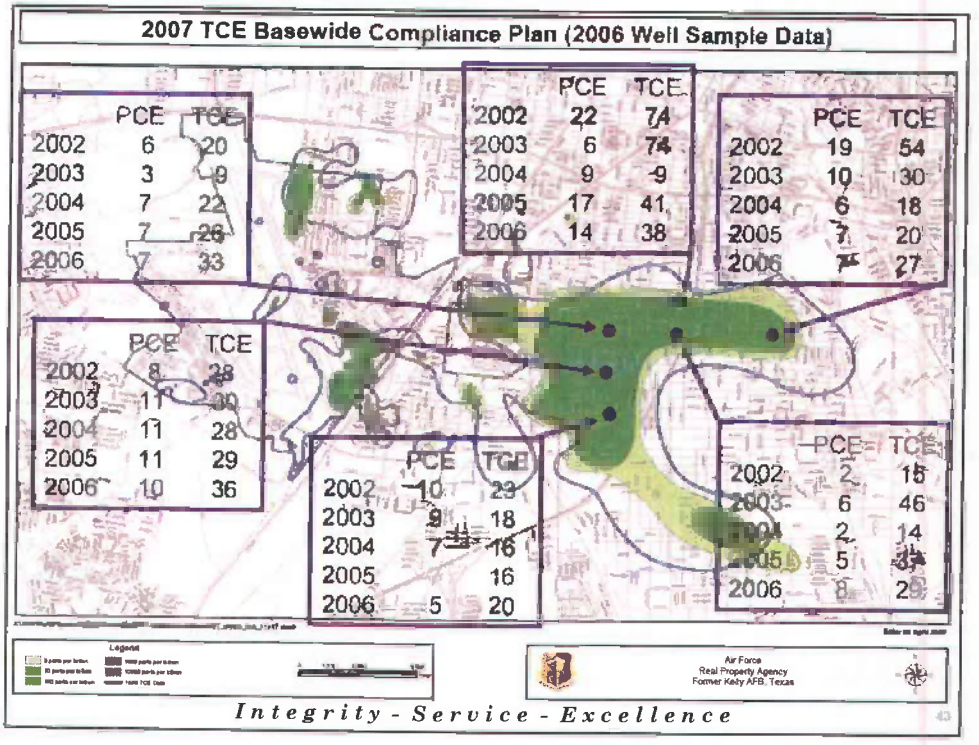

2004 TCE Basewide Compliance Plan (2003 Well Sample Data)
TCE – <1 ug/L
Off base areas showing good progress…

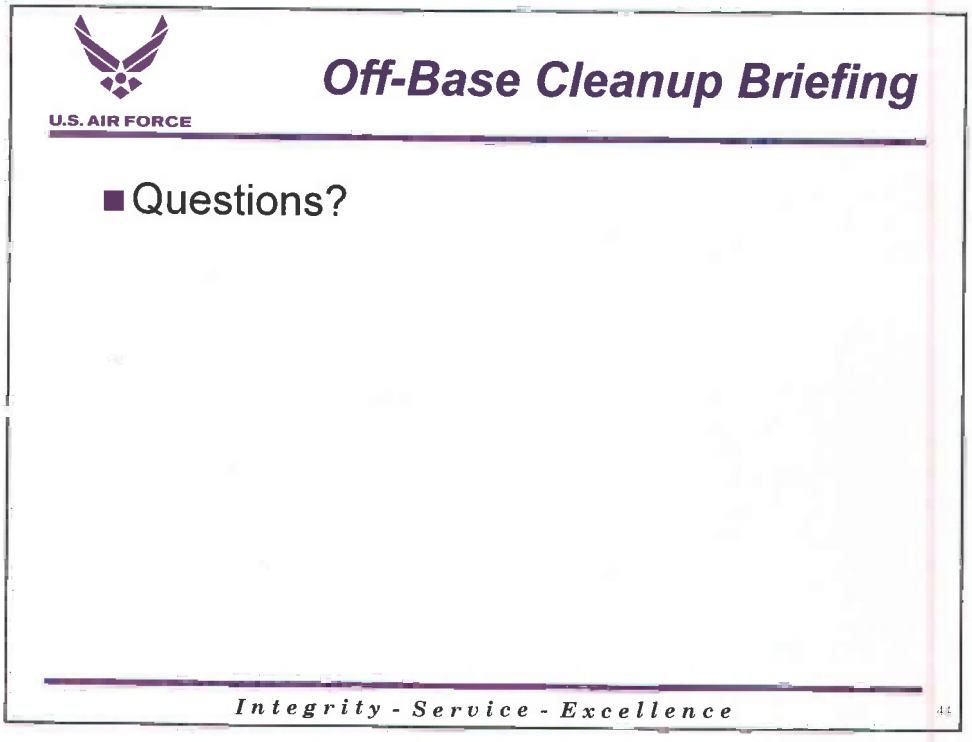

2005 TCE Basewide Compliance Plan (2004 Well Sample Data)
TCE – <1 ug/L
TCE – 1.25 ug/L
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas


2006 TCE Basewide Compliance Plan (2005 Well Sample Data)
TCE – 1.08 ug/L
TCE – 2.04 ug/L
Air Force
Real Property Agency
Former Kelly AFB, Texas


2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
TCE – 5.5 ug/L


2007 PCE Basewide Compliance Plan (2006 Well Sample Data)
Off-base source area
Off-base source area
62
112
33
16
34
24
14
7
Eight (8) monitoring wells were sampled along the northern boundary of East Kelly. All were <1 ug/L or non-detect for PCE and TCE.
Potential off-base source area
Integrity - Service - Excellence


2007 TCE Basewide Compliance Plan (2006 Well Sample Data)
PCE TCE
2002 6 20
2003 3 9
2004 7 22
2005 7 26
2006 7 33
PCE TCE
2002 22 74
2003 6 74
2004 9 9
2005 17 41
2006 14 38
PCE TCE
2002 19 54
2003 10 30
2004 6 18
2005 7 20
2006 7 27
PCE TCE
2002 8 28
2003 11 30
2004 11 28
2005 11 29
2006 10 36
PCE TCE
2002 10 23
2003 9 18
2004 7 16
2005 16
2006 5 20
PCE TCE
2002 2 15
2003 6 46
2004 2 14
2005 5
2006 8 29
Legend
Air Force
Real Property Agency
Former Kelly AFB, Texas
Integrity - Service - Excellence


U.S. AIR FORCE
Off-Base Cleanup Briefing
Questions?
Integrity - Service - Excellence

U.S. AIR FORCE

Public Comment Period

8:00pm – 8:15pm

- Public Comment Period
  - Comments limited to three minutes per person

Integrity - Service - Excellence 45

U.S. AIR FORCE

RAB Open Discussion/April 2007 Meeting Agenda

8:15pm – 8:30pm

- RAB Open Discussion
- Meeting Agenda for 9 October 2007

Integrity - Service - Excellence 46

U.S. AIR FORCE

Adjournment

8:30pm

- Adjournment

Integrity - Service - Excellence

47

U.S. AIR FORCE

Notes – Upcoming Meetings

- **Next 2007 RAB Meeting:**
  - 9 October 2007, 6:30pm
- Location:
  - Port Authority San Antonio - Main Boardroom

Integrity - Service - Excellence

48

Former Kelly Air Force Base (AFB) BRAC Cleanup Team (BCT)
10 April 2007 Meeting Minutes

The BCT Meeting began at 10:30 am on 10 April 2007 in Conference Room #2 at the Air Force Real Property Agency Chief Operations Office – Kelly (AFRPA/COO-K) in San Antonio. A summary of the BCT meeting is provided below.

Item #	Lead	Support	Discussion Topic	Comments	Discussion Topic Concluded	Disposition/Action Items
1.	Ravichandran, M.	Braddy, G.	Zone 1 Update	Review status of Zone 1 CMS and CMI WP.	Yes	TCEQ received AF's response to comment on Volumes 1 and 2 of the Draft Final Corrective Measures Study (CMS). Draft design for Group 1 sites (LF11, LF13, SS043) has been provided to the AF for review. The following actions will be conducted this summer: • LF11 – bank restoration will be conducted along Leon Creek; site proposed for closure under Risk Reduction Standard No. 2. • LF13 – cosmetic work will be conducted; site proposed for closure under Risk Reduction Standard No. 2. • SS043 – trenches will be excavated; replaced in lifts to avoid future subsidence and a soil cap will be installed. Work will begin at the end of April. Work will begin along Leon Creek once COE completes review of permit and San Antonio River Authority reviews the workplan. TCEQ will complete review of Volume 3 of the CMS by 14 May 2007. TARA is currently reviewing the AF's response to comments on Volumes 1 and 2 of the CMS. TCEQ's comments to Volume 1 of CMS included discussion of TCE contamination upgradient of Site SS043. Lackland AFB is currently conducting an investigation of a potential source (AOC 50) for the TCE contamination. Investigation will be conducted under Lackland AFB's Installation Restoration Program and the TCEQ's Texas Risk Reduction Program (TRRP) provided in 30 TAC 350. Lackland AFB's CCR will be held on 18 Apr 07.

Item #	Lead	Support	Discussion Topic	Comments	Discussion Topic Concluded	Disposition/Action Items
2.	Landez, N.		Property Transfer	Review FY08 property transfer goal, schedule, and actions needed.	Yes	AFRPA's goal is to transfer ~1000 acres consisting of Zone 4 and Zone 5 to the Port Authority San Antonio in May 2008. Contract to conduct and prepare the Operating Properly and Successfully (OPS) Determination Report for the Zone 4 and 5 remedial systems has been recently awarded. Draft Final OPS Determination Report will be sent to EPA Region 6 for review in February 2008. A review has been conducted of the units and other environmental concerns identified in the original Environmental Baseline Survey (EBS) located in Zones 4 and 5. The following actions are underway: • Bldg 38 and Bldg 98 Tank sites. Plan B reports will be prepared and sent to TCEQ for review. Both sites are listed in the Compliance Plan and will require closure with a Class 1 Modification. • Active units (e.g. oil/water separator, washracks) being used by leaseback tenants (Lackland AFB and Redhorse) will be sampled to determine if the unit has released into the environment. A letter report will be developed to include data from the sampling events and sent to TCEQ requesting no further action. The report and TCEQ's response to the report will be used to support the Supplemental Environmental Baseline Survey and the Finding of Suitability to Transfer submitted to EPA Region 6. AFRPA is developing a schedule for transfer of the property to include OPS Determination, the above actions, Site Specific EBS, Finding of Suitability to Transfer, and other environmental milestones that may be needed.

Item #	Lead	Support	Discussion Topic	Comments	Discussion Topic Concluded	Disposition/Action Items
3.	Landez, N.	Zone Managers	Zone Updates	Review of major project status for IRP Zones 2, 3, 4 and 5.	Yes	The following updates were provided for Zones 2 and 3: • Statement of Work is being prepared and funding obtained to conduct source removal at Site E-3. Anticipate contract award by end of June 2007. • Bldg 360 soil vapor extraction (SVE) system - installation of the horizontal wells has been completed; SVE equipment is being purchased for installation. • Bldg 348 SVE system - installed but awaiting connection of system to electricity. • Bldg 301 Electrical Resistive Heating – site preparation will begin in May 2007. The following updates were provided for Basewide projects: • Annual Compliance Plan monitoring begins in this month. • Leon Creek monitoring will be conducted in July 2007. AFRPA reviewing budget to determine if sediment samples in city stormwater culverts can be sampled during this sampling event to determine if PCBs in Leon Creek may be coming from city stormwater events. TCEQ is currently conducting a technical review of the Zone 2 and Zone 3 Class 3 Modification application and will provide comments to the Permits Section by 24 April 2007. Mr Kerry Neeman, TCEQ's TMDL Project Manager for PCBs in Leon Creek, has requested a briefing on status of Kelly AFB corrective action program and a tour of Leon Creek.
4.	Landez, N.	Zone Managers	Pending Document Submittals	Review of documents to be submitted for regulatory review within the next 90 days; status of documents already in review.	Yes	Discussed documents to be submitted and current status of documents during the meeting and status provided in items noted above.

R[redacted]t #	JULY 2007 REPORTS FOR COMMUNITY COCHAIR LIBRARY	Date	Adm
[redacted]			
TCEQ Ltr	Revised Corrective Action Observation Wells for Site E-3 and Site S-8	27 Feb 07	Yes
TCEQ Ltr	Acceptance of Deed Certification for Building 1586 Oil/Water Separator	9 Mar 07	No
TCEQ Ltr	Acceptance of Deed Certification for Industrial Wastewater Collection System Pipeline	9 Mar 07	Yes
TCEQ Ltr	Acceptance of Deed Certification for Environmental Process Control Facility	24 Apr 07	Yes
TCEQ Ltr	Acceptance of Deed Certification for Facility 3041 Former Wash Rack	24 Apr 07	Yes
EPA Ltr	Review of Zone 1 Draft Final Corrective Measures Study Remedial Alternative Evaluation Report	17 May 07	Yes
TCEQ Ltr	Conditional Approval of Zone 1 DF Corrective Measures Study Remedial Alternative Evaluation Report	18 May 07	Yes
[redacted]			
	Signature (Installation Cochair): Date:		
[redacted]			

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

February 27, 2007

2007 FEB 30 AM 11 03

Ms. Norma Landez
BRAC Environmental Coordinator
AFRPA/DK
143 Billy Mitchell, Suite 1
San Antonio, TX 78226-1816

Re: Kelly Air Force Base (AFB)
TCEQ SWR No. 31750
EPA ID No. TX2571724333
TCEQ Hazardous Waste Permit/Compliance Plan CP-50310
Approval - *Revised Corrective Action Observation Wells for Site E-3 and Site S-8*

Dear Ms. Landez:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the referenced submittal dated November 27, 2006 and received by the TCEQ on November 29, 2006. Based upon our review, the requested changes to the corrective action observation well network for Site E-3 and Site S-8 are approved. Please update all Semi-Annual Compliance Plan Report figures and tables accordingly.

Questions concerning this letter should be directed to me at (512) 239- 2360. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Environmental Cleanup Section at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Mark A. Weegar, P.G., Senior Project Manager
Team 1, Environmental Cleanup Section I
Remediation Division
Texas Commission on Environmental Quality

MW/mw

cc: Mr. Gary Miller, USEPA Region 6, Dallas, TX (6PD-NB)
Co-Chair, Kelly Restoration Advisory Board
Ms. Abbi Power, TCEQ Region 13 Office, San Antonio (MC-13)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 9, 2007

2007 MAR 14 AM 9 04

Ms. Norma Landez
BRAC Environmental Coordinator
AFRPA/DK
143 Billy Mitchell, Suite 1
San Antonio, TX 78226-1816

Re: Acceptance of Deed Certification and Release From Post-closure Care Responsibilities
Industrial Wastewater Collection System (IWCS) Pipeline (IRP Site IWCS) - Risk Reduction Standard No. 2 - Soil Only
Kelly Air Force Base (AFB)
TCEQ SWR No. 31750
EPA ID No. TX2571724333
TCEQ Hazardous Waste Permit/Compliance Plan CP-50310

Dear Ms. Landez:

The Texas Commission on Environmental Quality (TCEQ) received a letter dated December 13, 2006 submitted by the Air Force Real Property Agency (AFRPA) containing proof of deed certification for the Industrial Wastewater Collection System (IWCS) Pipeline (IRP Site IWCS). The certification states that contaminants remaining at the site have been remediated to meet non-residential (i.e. industrial/commercial) soil criteria under Risk Reduction Standard (RRS) No. 2 pursuant to Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters A and S.

After review of the proof of deed certification, it appears that the deed certification requirements of 30 TAC §335.560(b) and ©) have been completed. The TCEQ hereby releases the facility from post-closure care responsibilities for the above referenced units.

In order to attain RRS No. 2, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated to health based standards and criteria. Contaminants allowed to remain in place in media of concern (i.e., soil, ground water, surface water and air) must not exceed the health based clean up levels as specified in 30 TAC §335.556. A Final Report, documenting that remediation at the facility has attained RRS No. 2 such that no post-closure care or engineering control measures are required, was previously accepted by the TCEQ on November 5, 2004. **Please note that the three (3) IWCS line segments from manhole locations MH-D9 [1215] to MH-B2 [1223], MH-B17 [1201] to MH-B3 [1222] and MH3 [1261] to 325-IWCS -016 [1002] are not covered by this release from post-closure care responsibilities. A separate deed certification will be required for these line segments. Also, groundwater contamination**

associated with releases from the IWCS is being addressed via the Site S-4 and Zone 2 and Zone 3 corrective action programs.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the response actions described in the report fail to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of your site to determine compliance with the report.

Questions concerning this letter should be directed to me at (512) 239-2360. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Environmental Cleanup Section I at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Mark A. Weegar, P.G., Senior Project Manager
Team 1, Environmental Cleanup Section I
Remediation Division
Texas Commission on Environmental Quality

MW/mw

cc: Mr. Gary Miller, USEPA Region 6, Dallas, TX (6PD-NB)
Co-Chair, Kelly Restoration Advisory Board
Ms. Abbi Power, TCEQ Region 13 Office, San Antonio (MC-13)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

March 9, 2007

2007 MAR 14 AM 9 04

Ms. Norma Landez
BRAC Environmental Coordinator
AFRPA/DK
143 Billy Mitchell, Suite 1
San Antonio, TX 78226-1816

Re: Acceptance of Deed Certification and Release From Post-closure Care Responsibilities
Building 1586 Oil/Water Separator (Including NOR SWMU 046 and NOR SWMU 055) - Risk Reduction Standard No. 2
Kelly Air Force Base (AFB)
TCEQ SWR No. 31750
EPA ID No. TX2571724333
TCEQ Hazardous Waste Permit/Compliance Plan CP-50310

Dear Ms. Landez:

The Texas Commission on Environmental Quality (TCEQ) received a letter dated December 13, 2006 submitted by the Air Force Real Property Agency (AFRPA) containing proof of deed certification for the Building 1586 Oil/Water Separator (Including NOR SWMU 046 and NOR SWMU 055). The certification states that contaminants remaining at the site have been remediated to meet non-residential (i.e. industrial/commercial) soil criteria under Risk Reduction Standard (RRS) No. 2 pursuant to Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters A and S.

After review of the proof of deed certification, it appears that the deed certification requirements of 30 TAC §335.560(b) and (c) have been completed. The TCEQ hereby releases the facility from post-closure care responsibilities for the above referenced units.

In order to attain RRS No. 2, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated to health based standards and criteria. Contaminants allowed to remain in place in media of concern (i.e., soil, ground water, surface water and air) must not exceed the health based clean up levels as specified in 30 TAC §335.556. A Final Report, documenting that remediation at the facility has attained RRS No. 2 such that no post-closure care or engineering control measures are required, was previously accepted by the TCEQ on July 11, 2006. **Please note that the closure of the Building 1586 interior drainage trough and exterior wash rack are not covered by this release from post-closure care responsibilities. A separate closure/remediation report is required for these units.**

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the response actions described in the report fail to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of your site to determine compliance with the report.

A copy of this letter has been forwarded to the TCEQ Registration and Reporting Section to update your NOR. For questions regarding the NOR, please contact the Registration and Reporting Section at (512) 239-6847.

Questions concerning this letter should be directed to me at (512) 239-2360. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Environmental Cleanup Section I at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Mark A. Weegar, P.G., Senior Project Manager
Team 1, Environmental Cleanup Section I
Remediation Division
Texas Commission on Environmental Quality

MW/mw

cc: Mr. Gary Miller, USEPA Region 6, Dallas, TX (6PD-NB)
Co-Chair, Kelly Restoration Advisory Board
Ms. Abbi Power, TCEQ Region 13 Office, San Antonio (MC-13)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

April 24, 2007

Ms. Norma Landez
BRAC Environmental Coordinator
AFRPA/DK
143 Billy Mitchell, Suite 1
San Antonio, TX 78226-1816

2007 APR 26 AM 9:52

Re: Acceptance of Deed Certification and Release From Post-closure Care Responsibilities
Facility 3041 Former Wash Rack - Risk Reduction Standard No. 2
Kelly Air Force Base (AFB)
TCEQ SWR No. 31750
EPA ID No. TX2571724333
TCEQ Hazardous Waste Permit/Compliance Plan CP-50310

Dear Ms. Landez:

The Texas Commission on Environmental Quality (TCEQ) received a letter dated January 22, 2007 submitted by the Air Force Real Property Agency (AFRPA) containing proof of deed certification for the Facility 3041 Former Wash Rack. The certification states that contaminants remaining at the site have been remediated to meet residential soil criteria under Risk Reduction Standard (RRS) No. 2 pursuant to Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters A and S.

After review of the proof of deed certification, it appears that the deed certification requirements of 30 TAC §335.560(b) and (c) have been completed. The TCEQ hereby releases AFRPA from post-closure care responsibilities for the above referenced site.

In order to attain RRS No. 2, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated to health based standards and criteria. Contaminants allowed to remain in place in media of concern (i.e., soil, ground water, surface water and air) must not exceed the health based clean up levels as specified in 30 TAC §335.556. A Final Report, documenting that remediation at the facility has attained RRS No. 2 such that no post-closure care or engineering control measures are required, was previously accepted by the TCEQ on December 14, 2006.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a

nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the response actions described in the report fail to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of your site to determine compliance with the report.

Questions concerning this letter should be directed to me at (512) 239-2360. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Environmental Cleanup Section I at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Mark A. Weegar

Mark A. Weegar, P.G., Senior Project Manager
Team 1, Environmental Cleanup Section I
Remediation Division
Texas Commission on Environmental Quality

MW/mw

cc: Mr. Gary Miller, USEPA Region 6, Dallas, TX (6PD-NB)
Co-Chair, Kelly Restoration Advisory Board
Ms. Abbi Power, TCEQ Region 13 Office, San Antonio (MC-13)

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

2007 APR 27 AM 10 36

April 24, 2007

Ms. Norma Landez
BRAC Environmental Coordinator
AFRPA/DK
143 Billy Mitchell, Suite 1
San Antonio, TX 78226-1816

Re: Acceptance of Deed Certification and Release From Post-closure Care Responsibilities
Environmental Process Control Facility - Risk Reduction Standard No. 2
Kelly Air Force Base (AFB)
TCEQ SWR No. 31750
EPA ID No. TX2571724333
TCEQ Hazardous Waste Permit/Compliance Plan CP-50310

Dear Ms. Landez:

The Texas Commission on Environmental Quality (TCEQ) received a letter dated January 23, 2007 submitted by the Air Force Real Property Agency (AFRPA) containing proof of deed certification for the Environmental Process Control Facility (EPCF). The certification states that contaminants remaining at the site have been remediated to meet non-residential (i.e. industrial/commercial) soil criteria under Risk Reduction Standard (RRS) No. 2 pursuant to Title 30 Texas Administrative Code (TAC) Chapter 335 Subchapters A and S.

After review of the proof of deed certification, it appears that the deed certification requirements of 30 TAC §335.560(b) and (c) have been completed. The TCEQ hereby releases AFRPA from post-closure care responsibilities for the above referenced site.

In order to attain RRS No. 2, all industrial solid waste and municipal hazardous waste and waste residues must be removed or decontaminated to health based standards and criteria. Contaminants allowed to remain in place in media of concern (i.e., soil, ground water, surface water and air) must not exceed the health based clean up levels as specified in 30 TAC §335.556. A Final Report, documenting that remediation at the facility has attained RRS No. 2 such that no post-closure care or engineering control measures are required, was previously accepted by the TCEQ on September 5, 2006. Closure of the EPCF required public notice of the proposed corrective action. The public notice was published in the *San Antonio Express-News* on October 18, 2006. The TCEQ did not receive any public comments.

Please be aware that it is the continuing obligation of persons associated with a site to ensure that municipal hazardous waste and industrial solid waste are managed in a manner which does not cause the discharge or imminent threat of discharge of waste into or adjacent to waters in the state, a nuisance, or the endangerment of the public health and welfare as required by 30 TAC §335.4. If the response actions described in the report fail to comply with these requirements, please take any necessary and authorized action to correct such conditions. A TCEQ field inspector may conduct an inspection of your site to determine compliance with the report.

Questions concerning this letter should be directed to me at (512) 239-2360. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Environmental Cleanup Section I at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Mark A. Weegar

Mark A. Weegar, P.G., Senior Project Manager
Team 1, Environmental Cleanup Section I
Remediation Division
Texas Commission on Environmental Quality

MW/mw

cc: Mr. Gary Miller, USEPA Region 6, Dallas, TX (6PD-NB)
Co-Chair, Kelly Restoration Advisory Board
Ms. Abbi Power, TCEQ Region 13 Office, San Antonio (MC-13)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 6
1445 ROSS AVENUE, SUITE 1200
DALLAS, TX 75202-2733

MAY 17 2007

2007 MAY 21 AM 10 51

Mr. Mark Weegar
Corrective Action Section (MC-127)
Remediation Division
Texas Commission On Environmental Quality
P.O. Box 13087
Austin, TX 78711-3087

Dear Mr. Weegar:

We have completed our review of the document entitled, *Zone 1 Draft Final Corrective Measures Study (CMS) Remedial Alternative Evaluation Report, Environmental Restoration of Zone 1 Sites, Lackland Air Force Base, Texas, Volume 3.* This document is dated January 2007. The Zone 1 parcel was realigned from the former Kelly Air Fore Base as part of the Base Closure and Realignment process. EPA received this report on April 16, 2007.

In general I agree with the proposed remedial alternatives for the landfills and the source control removals that have been completed at several locations. However, a few comments are provided below, concerning the alternatives for SS043 and groundwater issues identified in the same general area.

The alternative selected for SS043 in the area of the softball field appears to allow irrigation water from the softball field to enter the former trenches in this area. If this occurs additional seeps could form in the drainage area and continue to allow contamination to reach Leon Creek. If the area is not to be withdrawn from use as a softball field the trenches should be excavated in this area and the area backfilled with clean soil.

Additionally groundwater monitoring data from two wells in the SS043 area indicates there is significant contamination present in the groundwater. Monitoring wells SS043MW014 and SS043MW002 contain concentrations of TCE and its break down products above MCLs. No alternative seems to address this issue. In addition the removal of the groundwater recovery system from the LF015 area is proposed. This is based upon recent data indicating no contamination is present in the recovery wells. However, this system appears to be down-gradient of SS043MW002. The contamination may be entering the Zone 1 area from an up-gradient site. Additional documentation that the groundwater flow direction and the contamination have been adequately characterized

should be presented. If the groundwater contamination is being addressed by another project this should be noted in the document.

Institutional controls are proposed as part of the remedy for landfills. The document indicates a detailed plan to implement and monitor the ICs will be presented during the CMI phase. As discussed during a recent meeting there are numerous utilities in the area, this document should address the control of unauthorized digging by both Lackland and other Air Force contractors and by the public utilities.

If you have any questions, please contact me at 214-665-8306.

Sincerely,

Gary W. Miller
Senior Project Manager
Federal Facilities Section

cc: Abbi Power, TCEQ Region 13
Norma Landez, AFRPA/DC-K

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Protecting Texas by Reducing and Preventing Pollution

2007 MAY 22 AM 10 16

May 18, 2007

Ms. Norma Landez
BRAC Environmental Coordinator
AFRPA/DK
143 Billy Mitchell, Suite 1
San Antonio, TX 78226-1816

Re: Conditional Approval with Comment - *Corrective Measures Study Remedial Alternative Evaluation Report Environmental Restoration of Zone 1 Sites Lackland Air Force Base, Texas Volume III* dated January 2007
Kelly Air Force Base (AFB)
TCEQ SWR No. 31750
EPA ID No. TX2571724333
TCEQ Hazardous Waste Permit/Compliance Plan CP-50310

Dear Ms. Landez:

The Texas Commission on Environmental Quality (TCEQ) has reviewed the referenced submittal hereafter referred to as Zone 1 CMS (Vol. III) dated January 2007 and received by the TCEQ on January 19, 2007. The Zone 1 CMS (Vol. III) was submitted by the Air Force Real Property Agency (AFRPA) in order to fulfill the requirements of Provision VIII.E of Groundwater Compliance Plan CP-50310 issued by the TCEQ on June 12, 1998 and last modified on January 11, 2007.

Compliance Plan Provision VIII.E requires that the corrective measures study *"identify and evaluate corrective measure alternatives and recommend corrective measures to protect human health and the environment"*. The Zone 1 CMS (Vol. III) completed an evaluation of alternatives for the remediation of soil and groundwater contamination associated with releases from 12 solid waste management units (SWMUs) located in Zone 1. According to the Zone 1 CMS (Vol. III), these SWMUs were grouped into three (3) general categories for remedy evaluation:

- Group A Sites (LF011, LF012-East, and LF013) - SWMUs with construction debris in direct contact with the alluvial aquifer, groundwater is either not contaminated or is not contaminated at levels requiring a remedial response (active remediation);

- Group B Sites (LF012-West, LF014, and LF015-Evaporation Pond Area) - SWMUs with waste in direct contact with the alluvial aquifer, which is contaminated by chemicals of concern (CoCs) exceeding regulatory criteria, potentially migrating offsite, and may discharge to Leon Creek; and

- Group C Sites (LF001, LF015, LF016, LF017, SS043 and WP029) - SWMUs located directly on the Navarro Clay in which shallow groundwater is inconsistently present or not observed and landfill leachate is not migrating off-site.

According to the Zone 1 CMS (Vol. III), remedial alternatives were evaluated based upon the following criteria: 1) Compliance with laws and regulations; 2) Control sources of releases; 3) Long-term effectiveness and permanence; 4) Reduction of toxicity, mobility, or volume; 5) Short-term effectiveness; 6) Implementability; 7) Community acceptance; and 8) Cost. In general, the criteria AFRPA used to evaluate remedial alternatives are consistent with the requirements of 30 Texas Administrative Code (TAC) §335.562 Remedy Evaluation for Risk Reduction Standard (RRS) No. 3.

The goals of the proposed remedial actions are to prevent potential exposure to subsurface waste and contaminants; reduce infiltration and contaminant leaching to groundwater; control surface water runoff and erosion; remediating or controlling contaminated groundwater until concentrations of CoCs comply with Compliance Plan Table I (Table of Hazardous and Solid Waste Constituents and Concentration Limits for the Ground-Water Protection Standard); preventing exposure of ecological receptors to unacceptable concentrations of CoCs; collection and treatment of leachate, as necessary, to prevent migration from source areas; and perform additional measures as necessary for closure of SWMUs consistent with good engineering practices and applicable regulations.

According to the Zone 1 CMS (Vol. III), Section 5 Preferred Alternatives, the following remedial actions are proposed:

- Group A Sites (LF011, LF012-East, and LF013) - Closure pursuant to 30 TAC §335.555 RRS No. 2. Institutional controls only;

- Group B Sites (LF012-West, LF014, and LF015-Evaporation Pond Area) - Closure pursuant to 30 TAC §335.561 RRS No. 3. Upgrade of soil cover system for all SWMUs, enhanced biodegradation, groundwater recovery and upgraded vertical well system, installation of interceptor trench (LF012), and institutional controls; and

- Group C Sites (LF001, LF015, LF016, LF017, SS043 and WP029) - Closure pursuant to 30 TAC §335.561 RRS No. 3. Upgrade of soil cover system (all SWMUs except LF001), install redundant soil cover system at LF001, and institutional controls.

Based upon our review of the Zone 1 CMS (Vol. III), the TCEQ concurs that the proposed remedial actions listed above appear appropriate. This concurrence is conditional upon the resolution of TCEQ comments previously provided concerning the *Corrective Measures Study Remedial Investigation Report Environmental Restoration of Zone 1 Sites Lackland Air Force Base, Texas Volume IA and IB, March 2006;* and *Corrective Measures Study Baseline Human Health Risk Assessment Environmental Restoration of Zone 1 Sites Lackland Air Force Base, Texas Volume II April 2006.* AFRPA's response to TCEQ comments have been received and are currently under review. Our evaluation of AFRPA's response with be forthcoming under separate cover.

The TCEQ would like to offer one point of clarification as it relates to the SWMUs being addressed by the Zone 1 CMS. Throughout the Zone 1 CMS (Vol. III), these SWMUs are referred to as both non-hazardous industrial landfills and municipal landfills. Section 2.1 Remedial Action Objectives cites 30 TAC Chapter

330 Municipal Solid Waste, 40 Code of Federal Regulations (CFR) §258.60 Closure Criteria for Municipal Solid Waste Landfills, and 40 CFR §264.310 and 30 TAC §335.174 related to federal and state closure and post-closure care for hazardous waste landfills. Kelly AFB is an industrial generator and therefore landfills located on this facility are precluded from being closed pursuant to the requirements for municipal solid waste landfills. Also, these landfills are not permitted hazardous waste landfills and therefore, the closure and post-closure care requirements for hazardous waste landfills are not applicable. To avoid confusion, the Final Zone 1 CMS (Vol. III) should remove any reference to these SWMUs being municipal landfills and should not cite federal and state rules and regulations that are not applicable to the closure/remediation of these SWMUs.

Questions concerning this letter should be directed to me at (512) 239- 2360. When responding by mail, please submit an original and one copy of all correspondence and reports to the TCEQ Environmental Cleanup Section at Mail Code MC-127. An additional copy should be submitted to the local TCEQ Region Office. The information in the reference block should be included in all submittals.

Sincerely,

Mark A. Weegar

Mark A. Weegar, P.G., Senior Project Manager
Team 1, Environmental Cleanup Section I
Remediation Division
Texas Commission on Environmental Quality

MW/mw

cc: Mr. Gary Miller, USEPA Region 6, Dallas, TX (6PD-NB)
Co-Chair, Kelly Restoration Advisory Board
Ms. Abbi Power, TCEQ Region 13 Office, San Antonio (MC-13)

April 10, 2007
Kelly Restoration Advisory Board (RAB)
Port Authority of San Antonio
143 Billy Mitchell Blvd., Bldg. 43, Ste. 6
San Antonio, Texas 78226

DRAFT Meeting Minutes

RAB Community Members:
James Betus
Rodrigo Garcia, Jr.
Nazirite Perez
Brian Skrobarcek

RAB Government Members:
Adam Antwine, Air Force Real Property Agency (AFRPA), Installation Cochair
Sal Aguinaga, Port Authority of San Antonio
Kyle Cunningham, San Antonio Metropolitan Health District (SAMHD) (Alternate for Melanie Ritsema)
Mark Weegar, Texas Commission on Environmental Quality (TCEQ)

AFRPA Staff:
Don Buelter, AFRPA
Joseph Clark, AFRPA Contractor
Sonja Coderre, AFRPA
Todd Colburn, AFRPA Contractor
Shelly Crull, AFRPA Contractor
Linda Geissenger, AFRPA
Norma Landez, AFRPA
Steven LaFreniere, AFRPA
Jose Martinez, Facilitator
Ed Salinas, AFRPA Contractor
Brian Sytsma, AFRPA Contractor

AFRPA Partner Agencies:
Cindy Cash, HGL Contractor
Diane Glass, HGL Contractor
Linda Kaufman, SAMHD
Abigail Power, TCEQ (Alternate for Mark Weegar)

Elected Officials:
David Rodriguez, office of U.S. Rep. Charles A. Gonzalez

Public Participants:
Dora Galvan
Esmeralda C.
Kristi James
Roque Labasan
Henrietta LaGrange

Armando Quintanilla
Hector Rendon
Juanita Rendon
Carlos Rios
Lenny Siegel
Robert Silvas

The meeting began at 6:30 p.m.

I. Welcome and Overview – Jose Martinez

Mr. Martinez began the meeting by asking RAB members to introduce themselves. After RAB introductions, Mr. Martinez provided an overview of the purpose of the Kelly RAB, then encouraged people to use the community resource guides located at the sign-in table as a reference for issues outside the scope of the Kelly RAB. Following RAB introductions, other meeting attendees introduced themselves.

During community introductions, Mr. Robert Silvas addressed agent orange concerns and submitted documents to Mr. Antwine, requesting they be distributed to RAB members.

Mr. Martinez then reviewed the meeting agenda and contents of the meeting packets.

Mr. Martinez indicated meeting minutes from the 23 January 2007 Kelly RAB meeting were previously provided for review in read ahead packets, and asked if anyone had corrections. No corrections were provided, and minutes were approved.

II. Installation Cochair Comments/Funding Update – Adam Antwine

Mr. Antwine welcomed all meeting attendees and thanked them for attending the meeting.

Mr. Antwine provided a budget update which covered two slides:

1. Environmental Budget for the former Kelly AFB, Fiscal Years 1986-2013; This slide showed a total environmental cost to date of $330.7 million as of April 2007. Of this $330.70 cost, $71.93 million was spent prior to BRAC (1996).
2. FY07 Environmental Restoration Projects; This slide depicted current 2007 project spending which totaled $8,757,000.

III. BCT Update – Ms. Norma Landez

Ms. Landez indicated final BCT minutes from the 10 January 2007 Kelly BCT meeting were provided in meeting packets. Additionally, Mr. Landez covered topics of discussion which took place prior to the 10 April 2007 RAB meeting, and stated minutes from this meeting would be provided at the 10 July 2007 Kelly RAB meeting.

Ms. Landez then reviewed a list of reports and letters exchanged with regulators, which would be placed in the library located at the Environmental Health and Wellness Center. Both a listing and description of the following documents were provided in meeting packets:

- Corrective Measures Study Remedial Alternative Evaluation (Vol. 3), January 2007

- Semiannual Compliance Plan Report for January 2007 (Jul-Dec 06) w/CD, January 2007
- TCEQ Letter – Approval to Final Corrective Measures Implementation Addendum Report for Site S-4, 25 August 2006
- TCEQ Letter – Comments to CMS Investigation for Zone 1 and CMS Baseline Human Health Risk Assessment, 11 October 2006
- TCEQ Letter – Approval of January 2006 Semiannual Compliance Plan (Jul-Dec 05), 20 October 2006
- AFRPA Letter – 2006 Facility Annual Report, 19 January 2007
- AFRPA Letter – Submittal of Draft Final CMS Remedial Alternative Evaluation Report Zone 1, Volume 3, 23 January 2007
- TCEQ Letter – Review with comments on RCRA Closure Report for Zone 2, Site D-10 (LF019), 2 February 2007
- AFRPA Letter – Response to comments on the RCRA Closure Report for Zone 2, Site D-10 (LF019), 27 March 2007

IV. Information Repository Tour – Ms. Sonja Coderre

Ms Coderre provided a briefing with slide presentation of the Kelly Information Repository (IR), which contains the Kelly Administrative Record (AR). The briefing showed community members how to find the government documents section at the San Antonio Central Library, and how to locate and review documents both hard copy and electronically via the online AR.

Mr. Garcia stated the library was not accessible to the community at a location closer to the former Kelly AFB. Ms. Coderre indicated various locations have been considered, but the San Antonio Central Library continues to be the best choice after weighing all factors. Additionally, Ms. Coderre indicated an IR location was provided within the former base boundaries at the Kelly Library, but was not used by the community and recently closed. Ms. Kaufman with the Environmental Health and Wellness Center (EHWC) indicated only five people have visited the document section at the EHWC over the past several years. Mr. Antwine indicated the solution may be to provide all documents electronically.

V. Appointment of Community Cochair – Mr. Jose Martinez, facilitator

Based on meeting attendance of four RAB members, the process to appoint a Community Cochair could not take place because the quorum of six present community RAB members was not met. The appointment process will be rescheduled for the July 2007 RAB meeting.

VI. January 2007 Semiannual Compliance Plan Report Presentation – Mr. Don Buelter

Mr. Buelter provided a briefing of the January 2007 Semiannual Compliance Plan Report, which includes July-December 2006 sampling data. The presentation handouts were included in all meeting packets.

In response to Mr. Buelter discussing analytical results for sampled monitoring wells, Mr. Weegar indicated TCEQ would be making a change to the arsenic Groundwater Protection Standards (GWPS) listed in the compliance plan from 50 ug/L to 10 ug/L in 2008 when the permit is renewed. He indicated the state is providing advance notice of this change.

Mr. Garcia stated AFRPA needs to provide RAB members an executive summary of the Semiannual Compliance Plan Report and all other reports in layman's terms. He stated there were a lot issues which still need to be addressed such as cleaning up Leon Creek and conducting air monitoring throughout the city. Mr. Martinez stated AFRPA's responsibility was to cleanup contamination resulting from activities from the former Kelly AFB, not citywide issues.

A five minute break took place at 8:05 p.m.

VII. Public Comment Period

- Ms. Esmeralda Camacho stated the AFRPA tells the community everything is ok when it is not. She stated more people would attend RAB meetings if the message was more straightforward. She also complained maps used in the briefings were too small, and she could not read street names. Ms. Coderre stated she would provide a map with street names after the meeting.
- Mr. Armando Quintanilla indicated he lived in the toxic triangle 1952-2000, and served on the Kelly RAB 1994-2006. He stated the Air Force intentionally dumped solvents in the ground and created a 10 sq/mile plume. He stated area residents are paying unfair property taxes, and the Kelly RAB should demand environmental justice. He indicated cleanup in the off-base community should have priority over cleanup of the golf course. He stated the combined total of $32 million the Air Force has spent cleaning up the neighborhoods has not been enough. Mr. Quintanilla stated he would address the following topics at a later date:
    - TCE vapor intrusion in the surrounding neighborhoods
    - Removal of PCE sediment in Leon Creek
    - Replacement of fish resulting from a guar spill
    - Restoring water re-use, which he addressed in a previous FOIA
- Mr. Lenny Siegel stated he has been unable to locate the necessary data needed to address vapor intrusion concerns in the Kelly area. He stated he felt the situation at Kelly warranted the need for indoor, outdoor and sub-slab air monitoring. He asked for TCEQ, EPA and AFRPA to take vapor intrusion seriously. Mr. Skrobarcek asked Mr. Siegel if commercial buildings had the same risk exposure as residential homes regarding vapor intrusion. Mr. Siegel indicated the level of exposure is specific to individual sites, but all foundations are susceptible to exposure because PCE/TCE can easily find a way inside a building.
- Mr. Perez asked when Kelly cleanup efforts would address off-base contamination in the neighborhoods. He said he asks about off-base cleanup again and again with no action. Mr. Antwine indicated hundreds of monitoring wells and numerous cleanup systems are currently installed both on-base and off-base which are actively addressing off-base contamination. Ms. Landez used a remediation systems map to depict the cleanup technologies in place, both on-base and off- base.

  Mr. Siegel asked if the AF is using bioventing technology off-base, and Mr. Landez replied it is not. Ms. Landez stated numerous cleanup technologies were studied during the Zones 4 and 5 Corrective Measures Study, and Permeable Reactive Barriers (PRBs) and natural attenuation were determined to be the best solutions. Mr. Siegel asked if the AF would consider installing new cleanup systems if vapor intrusion studies showed an exposure pathway to residents, to which Ms. Landez replied, "Yes".

Mr. Weegar stated numerous public meetings took place to allow community members an opportunity to comment on cleanup technologies to be used in their neighborhoods, and TCEQ did not receive a single comment. Additionally, he indicated the Kelly RAB hired an independent TAPP contractor (Geomatrix) to review the proposed off-site cleanup systems before they were installed.

After further discussions about air sampling, Mr. Weegar recommended AFRPA provide Mr. Siegel with reports detailing air studies previously conducted by AFRPA.

VIII. RAB Open Discussion/Upcoming Agenda

Mr. Garcia restated he would like executive summaries and more generalized, less technical information explaining the cleanup progress. He also reminded Ms. Coderre about developing an orientation book they have previously discussed, and a need to train new RAB members. Ms. Coderre informed him all new RAB members have been provided or offered orientation training to accommodate their individual schedules.

Agenda topics for the next RAB meeting included cleanup of off-base areas and anticipated timeframes and soil vapor intrusion.

Mr. Skrobarcek stated he would like future meetings to remain on schedule and on topic without discussions getting off track.

IX. Meeting Adjournment

The meeting adjourned at 9:07 p.m.

Upcoming Meetings:

Next RAB Meeting: 10 July 2007, 6:30 p.m. – Port Authority of San Antonio - Boardroom

Attachments:

- 10 April 2007 RAB Agenda
- Handouts for overall meeting slides for April 2007 RAB meeting
- Meeting Minutes – 10 January 2007 BCT meeting
- List of Kelly RAB Community Cochair library documents, April 2007
- Memo to Kelly RAB, 4 April 2007, Re: Appointment of Cochair and Charter Review
- Meeting Minutes – 23 January 2007 Kelly RAB
- Action Item Report – 23 January 2007 Kelly RAB
- Electric Resistive Heat Technology Fact Sheet

DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY

MAY 0 2 2007

AFRPA/COO-Kelly
143 Billy Mitchell Blvd Ste 1
San Antonio TX 78226-1816

Dear Kelly Restoration Advisory Board Members and Public Participants

The following is an action items report for the 10 April 2007 Kelly Restoration Advisory Board (RAB) meeting.

1. Ms. Esmeralda Camacho, public participant, requested a map be provided to her of the Kelly area plume boundaries depicting street names.

Ms. Camacho was mailed copies of both PCE and TCE plume maps depicting street names Monday, 23 April 2007. These maps are attached.

2. Mr. Lenny Siegel with the Center for Public Environmental Oversight requested AFRPA provide him with electronic links to documents in the online Administrative Record to assist him in locating areas of high contamination levels within the Kelly plume boundaries. Additionally, Mr. Mark Weegar suggested AFRPA assist Mr. Siegel in locating documents related to previous air monitoring studies already conducted in conjunction with the former Kelly AFB cleanup program.

Mr. Siegel was emailed the following information 11 April 2007.

- The initial study "Informal Technical Information Report, Zone 4 OU-2 and S-4 Soil Vapor Monitoring, March 2000" - AR Number 1738. EPA comments on this report are located at AR File 1978, Dec 2000, and the TCEQ comments are found in AR File 2150, Nov 2001. Links to these documents are as follows:
  https://afrpaar.afrpa.pentagon.af.mil/ar/getdoc.aspx?file=KELLY_AR_1738.pdf
  https://afrpaar.afrpa.pentagon.af.mil/ar/getdoc.aspx?file=KELLY_AR_1978.pdf
  https://afrpaar.afrpa.pentagon.af.mil/ar/getdoc.aspx?file=KELLY_AR_2150.pdf

- The sub slab study (Zone 4 Sub-Slab Soil Sampling, Mar 2004) - AR 2295.
  https://afrpaar.afrpa.pentagon.af.mil/ar/getdoc.aspx?file=KELLY_AR_2295.pdf

- "Kelly ITIR Seasonal Variance Zone 4, May 2005" (Provided as an email attachment to Mr. Siegel and included as a hard copy attachment to this action item report)

- Corrective Measures Zone 2 & 3 - Appendix E
  https://afrpaar.afrpa.pentagon.af.mil/ar/getdoc.aspx?file=KELLY_AR_2741.pdf

- PCEH Sub Slab Report – See the website below:

http://www.sanantonio.gov/health/PCEH/projects.asp

3. *Mr. Robert Silvas, public participant, provided AFRPA staff documents related to agent orange, and requested copies be provided to Kelly RAB members.*

The documents provided discuss the storage of agent orange at the Texas Building and Procurement Division, 2103 Ackerman Road, San Antonio, TX 78219-3017, and accusations of the illegal sale of agent orange to a facility in Louisiana. The environmental cleanup program at the former Kelly AFB is within full compliance of state and federal environmental regulations. The subject matter discussed in these documents is outside the scope of the Kelly Restoration Advisory Board. Therefore, the Kelly RAB is not the appropriate venue to discuss this topic. These documents have been returned to Mr. Silvas.

4. *Mr. Nazirite Perez asked to be provided with information specific to the completion of off-base cleanup.*

Based on discussions at this meeting, the next Kelly RAB meeting will discuss off-base cleanup systems and how they are working.

5. *Mr. Rodrigo Garcia requested RAB members be provided an executive summary of the January 2007 Semiannual Compliance Plan Report, which was briefed at the 10 April 2007 RAB meeting. Additionally, Mr. Garcia requested information in layman's terms be provided at the upcoming meeting on the topic of vapor intrusion.*

The executive summary from the January 2007 Semiannual Compliance Plan Report is attached. The entire report can also be found in the online Administrative Record (AR) at: https://afrpaar.afrpa.pentagon.af.mil/ar/docsearch.aspx under Kelly AR # 3198.

Additionally, vapor intrusion will be added to the agenda for the next meeting.

6. *Mr. Brian Skrobarcek asked for future meetings to remain on task and on schedule, and focus on agenda topics.*

The facilitator will make every effort to keep upcoming meetings on schedule and on topic.

Thank you for your continued interest in the Kelly environmental restoration program.

Sincerely

Adam G. Antwine

ADAM G. ANTWINE
Senior Representative

Attachments:
1. 2007 (2006 data) PCE/TCE Plume maps w/street names
2. Kelly ITIR Seasonal Variance Zone 4, May 2005
3. Executive Summary – January 2007 Semiannual Compliance Plan Report

2007 PCE Basewide Compliance Plan (2006 Well Sample Data)

x:\arcview\projects\kafb\em\emdata\2007-semiannual\pce\2007_bwcp_pce_11x17.mxd

Date: 10 April 2007

Legend

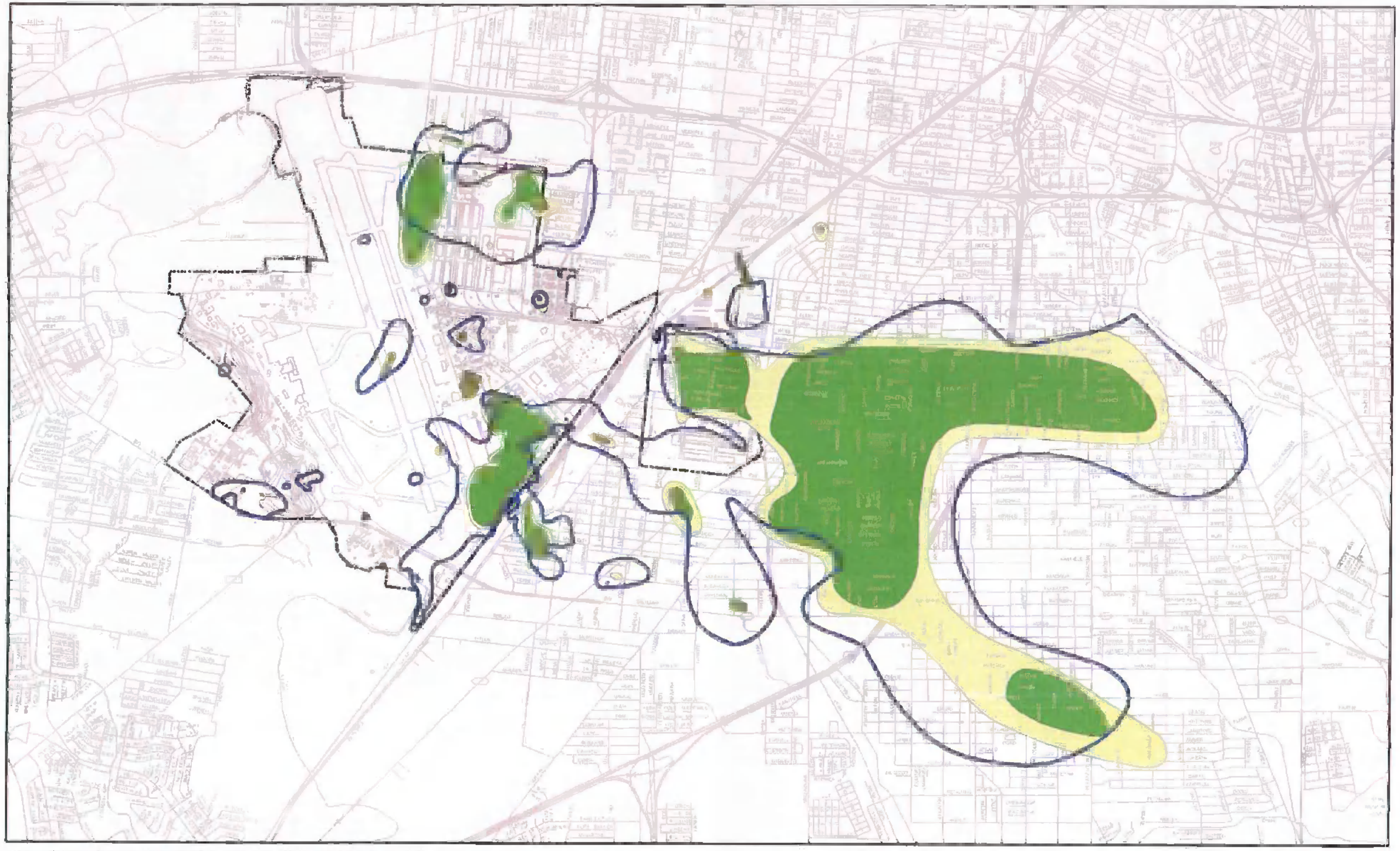
- 5 parts per billion
- 10 parts per billion
- 100 parts per billion
- 1000 parts per billion
- 1998 PCE Data

0 1,300 2,600 5,200 Feet

Air Force
Real Property Agency
Former Kelly AFB, Texas

N W E S

2007 TCE Basewide Compliance Plan (2006 Well Sample Data)



x:\arcview\projects\kafb\em\emdata\2007-semiannual\tce\2007_bwcp_tce_11x17.mxd

Date: 10 April 2007

Legend

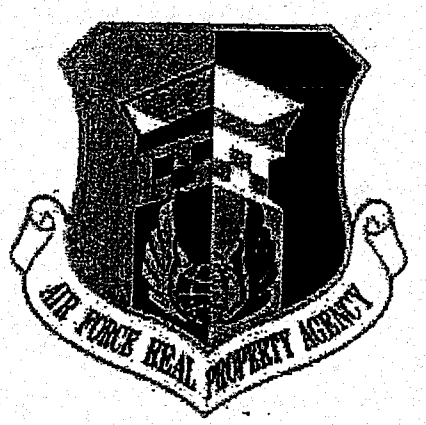
- 5 parts per billion
- 10 parts per billion
- 100 parts per billion
- 1000 parts per billion
- 10000 parts per billion
- 1998 TCE Data

0 1,500 3,000 6,000 Feet

Air Force
Real Property Agency
Former Kelly AFB, Texas

N W E S

Informal Technical Information Report (ITIR)
Zone 4 OU-2 Assessment of Seasonal Variation of Soil Vapor Data



Air Force Real Property Agency
at the former
Kelly Air Force Base

May 2005

DEPARTMENT OF THE AIR FORCE
AIR FORCE REAL PROPERTY AGENCY
Certified Mail: 7004 2890 0002 6411 6749

AFRPA/DK
143 Billy Mitchell Blvd., Suite 1
San Antonio, Texas 78226

10 May 2005

Mr Mark Weegar
Corrective Action Section
Remediation Division
TCEQ
P.O. Box 13087, (MC 127)
Austin, TX 78711-3087

RE: EPA ID No. TX 2571724333; Industrial Waste Registration No. 31750
Zone 4 OU-2 Assessment of Seasonal Variation of Soil Vapor Data
Zone 4

Dear Mr Weegar,

Two copies of the Zone 4 OU-2 Assessment of Seasonal Variation of Soil Vapor Data are being submitted for comment and approval. The purpose of the report is to present an analysis of seasonally dependent factors of the migration of vapor phase volatile organic compounds.

Please feel free to Mr Walter Peck at (210) 925-3100 ext. 206 if you have any questions.

Sincerely

DONALD BUELTER
Chief, Environmental Restoration

Attachment:
Zone 4 OU-2 Assessment of Seasonal Variation of Soil Vapor Data

cc: US EPA, (G. Miller)
TCEQ, Region 13 (A. Power)
CoSA, (David Newman)
PCEH, (Kyle Cunningham)

Informal Technical Information Report (ITIR)
Zone 4 OU-2 Assessment of Seasonal Variation of Soil Vapor Data
May 2005

I. Introduction and Background

The purpose of this ITIR is to present an analysis of the affect of seasonally dependent factors on the migration of vapor phase volatile organic compounds (VOCs) from groundwater to the ground surface in the vicinity of Installation Restoration Program (IRP) Zone 4 at the former Kelly Air Force Base (AFB). Data were collected specifically for this ITIR during April and September/October 2002. The data collection was specifically designed to evaluate the potential for seasonal variation of vapor migration and the associated risk.

The Air Force Real Property Agency Division C-Kelly (AFRPA) has conducted previous sampling activities and studies of the vapor intrusion pathway to address community concerns relating to the possible transport of volatile groundwater contaminants to indoor air. The previous sampling activities include groundwater and soil gas sampling in March 2000 and sub-slab soil gas sampling and analysis in 2003. The 2000 data is documented in the *Informal Technical Information Report Zone 4 OU-2 and Site S-4 Soil Vapor Monitoring* by CH2MHill, dated March 2000 and the 2003 data are documented in *Technical Memorandum Zone 4 Sub-Slab Soil Gas Sampling* by CH2MHill, dated 2004.

Soil vapor wells were initially installed and sampled in 2000 at locations where potential risk from vapor intrusion was estimated to be the highest based on the groundwater monitoring data and the most sensitive parameters defined by the 1999 version of the Johnson and Ettinger (J&E) Model. Consequently soil vapor wells were co-located with groundwater monitoring wells exhibiting the highest concentrations of VOCs in groundwater. Other required model parameters such as depth and thickness of the affected zone were also considered during placement of the vapor wells.

The 2000 CH2MHILL ITIR concluded indoor air inhalation risks to be below the acceptable threshold of 10^{-6}. However, in an effort to identify the effects of seasonal variation in the vapor intrusion pathway, select soil vapor wells and their associated groundwater monitoring wells **(Figure 1)** were sampled again in April and October/September 2002.

II. Parameters with Seasonal Variation that May Impact Vapor Migration

The following parameters were identified as being sensitive to seasonal variation: temperature; water-filled porosity in the capillary and unsaturated zones (soil moisture content); and vertical distance for diffusive transport (USEPA, 2003).

Temperature change has an effect on soil vapor concentrations just above the groundwater source area, since vapor pressure and water solubility are temperature dependent. However, temperature variations decrease with depth in the soil column and are unlikely to have a large influence on concentrations at five feet below grade or greater (LUSTLine, October 2002). This is evidenced by the relatively small range of temperature variation in groundwater observed between the two sampling events in 2002 **(Table 1).** Although the maximum variation in average air temperature between the summer and winter months can be quite significant, the groundwater temperature remains fairly constant, as evidenced by empirical data readily available and observed in samples collected during basewide groundwater sampling events. Additionally, the degree of attenuation through the unsaturated zone is not very sensitive to the change in Henry's Law Constant (HLC) due to temperature change (USEPA, 2003). The greater effect of temperature on concentrations of VOCs on indoor air is due to convective transport and is directly affected by changes in ventilation and heating/cooling systems in buildings during the summer and winter months.

Vapor migration is sensitive to soil moisture (USEPA, 2003). Soil moisture is seasonally dependent because it can change significantly after rainfall events. Soil moisture sampling is not routinely conducted during groundwater or soil gas sampling and was not conducted during the sampling events in 2002. However, since the J&E model uses an average value of soil moisture based on the site specific soil type, soil moisture is corrected in the model based on site specific conditions. The model corrects for soil moisture using conservative assumptions and satisfies the requirements of this ITIR.

A sensitivity analysis performed on the J&E model using Zone 4 parameters shows that depth to groundwater has a moderate impact on the predicted concentrations in indoor air (CH2MHill, 2000). Groundwater fluctuations in areas with the shallowest water table affect the fluctuation in soil vapor concentrations more than any other seasonally dependent factor, with a rise in the water table corresponding to a rise in soil vapor concentrations. Water table depths rose from 1.53 ft to 5.16 ft between the April and October 2002 sampling events **(Table 1).**

III. Soil Gas and Groundwater Sampling and Analysis

Soil gas and groundwater samples were collected and analyzed at the former Kelly AFB following the methodology outlined in the 2000 ITIR Report (CH2MHill, 2000). Tetrachloroethylene (PCE) and trichloroethylene (TCE) were identified as the constituents of concern (COCs) during the 2002 sampling effort **(Table 2).** Cis-1,2-dichloroethylene (DCE) and vinyl chloride (VC) were excluded from further analysis in 2002 due to their very low or nondetections in soil gas **(Table 2).**

IV. Analysis of Sampling Data and Respective Attenuation Factors

The analytical data for groundwater and soil gas collected in 2002 at individual sampling locations are included in **Table 3** for PCE and **Table 4** for TCE. The data in the tables show an increase in soil vapor concentrations for PCE and TCE at seven out of nine locations from April 2002 to October 2002. Groundwater VOC concentrations measured in 2002 were generally lower than values measured and reported in 2000. **Table 2** lists the maximum concentrations observed during the 2000 as well as 2002 sampling events. Groundwater VOC concentrations continue to decrease throughout Zone 4. The tables also show that changes in soil gas concentration 5 feet below ground surface (bgs) are not consistent with the changes in groundwater concentrations.

Direct comparison of measured soil gas concentrations does not provide an accurate assessment of the effect of seasonal variation on vapor migration if the variation of COC concentrations in groundwater is not accounted for as well. Changes in groundwater concentrations for PCE and TCE were eliminated from concern by calculating the attenuation factor (defined below) and comparing the change in attenuation factors over two seasons to changes in other seasonally affected parameters as defined in **Section II** of this ITIR.

The attenuation factor is a measure of the potential for vapor transport between two measuring points. For the purposes of this investigation, the attenuation factor is a measure of the degree of attenuation of the soil vapor from the source to a direct measuring point within the unsaturated zone 5 feet bgs. The attenuation factor represents the degree of attenuation of soil vapor as it migrated from just above the water table through the capillary fringe and unsaturated zone to the soil vapor sampling point 5 ft bgs. The attenuation factor is a function of the physical and chemical properties of the contaminants,

subsurface geotechnical properties, and biodegradation. Biodegradation is typically not significant for chlorinated solvents in the unsaturated zone.

The attenuation factor is calculated as the ratio of the concentration of contaminant in air at 5 feet bgs to the concentration of contaminant in air just above the water table. The variation of the calculated attenuation factor at a given location between two sampling periods is used as a measure of the impact of seasonal variation in vapor transport within the subsurface during the two sampling periods. The variation in the degree of attenuation provides an assessment of seasonally dependent variations in soil gas migration through the capillary and unsaturated zones irrespective of changes in groundwater concentrations for the constituents of concern.

The attenuation factor as defined in this ITIR does not reflect seasonal variation in vapor transport from the subsurface into overlying buildings through convective transport. Vapor transport from the subsurface into overlying buildings was addressed in a previous document (CH2MHILL, 2004).

The depths to water table during the two sampling events in 2002, which reflects the length of diffusive transport between the two measuring points, are shown in **Table 1**. The degree of attenuation through the unsaturated zone is not very sensitive to the change in the HLC due to temperature change, even with a fairly large change in temperature (USEPA, 2003).

Tables 3 and 4 include attenuation factors at locations with detectable concentrations of VOCs.

The concentration of soil vapor above the water table partitioning from dissolved phase groundwater in the absence of any free product was calculated using the equation

$$C_{source} = HLC * C_{gw} * 1000$$

Where

C_{source}= soil gas concentration above water table in $\mu g/m^3$

C_{gw}=groundwater concentration in $\mu g/L$

HLC=dimensionless Henry's Law constant (HLC)

1000=unit conversion factor (L to m^3)

In order to capture the effect of temperature variation between the two sampling events, the groundwater temperature measured in the monitoring wells in April and October 2002 were used to calculate the HLC for PCE and TCE

during the two sampling events. The temperature measurements and depth to static water level taken during the two groundwater sampling events are presented in **Table 1**. Values of HLC as a function of temperature were calculated using USEPA's online calculator available at

http://www.epa.gov/athens/learn2model/part-two/onsite/esthenry.htm .

The source vapor concentration was converted from $\mu g/m^3$ to parts per billion by volume (ppbv).

Finally, the attenuation factor was calculated as the ratio of soil vapor measured at 5 ft bgs and calculated soil vapor concentrations from just above the water table. The calculated attenuation factors for PCE and TCE are included in **Tables 3 and 4** respectively. Detailed equations for diffusive transport of soil vapor can be found in the user's manual for J&E model (USEPA, 2003).

V. Risk-Based Screening

The soil vapor and groundwater concentration data collected in 2000 were screened for possible adverse impact to indoor air. The groundwater and soil vapor screening values were revised in 2001 using the updated J&E model released in 2001 and assuming more conservative soil type (more permeable) in the unsaturated zone. The maximum measured soil vapor and groundwater concentrations in 2002, along with the screening values established using the J&E Model, are listed in **Table 5**. The methodology and assumptions used in developing the screening values and the results were presented at the Former Kelly AFB BRAC Cleanup Team (BCT) meeting on December 12, 2001. All measurements in both soil gas and groundwater were below the screening levels established in 2001. The maximum measured concentrations in both soil gas and groundwater for both PCE and TCE were at least an order of magnitude below the screening level corresponding to a 10^{-6} risk from inhalation of indoor air by residents.

VI. Results and Conclusions

Figures 2 and 3 graphically show the attenuation factors for PCE and TCE at the vapor monitoring wells during the two sampling events. The results show that for PCE, out of the five locations where the attenuation factor could be calculated during both sampling events, the attenuation factor was higher in April at two locations and was higher at the remaining three locations in October. Of all the locations included in the analysis, the water table was the shallowest at location SS052MW213/SS052MW288. Although the attenuation factor was impacted the most at location SS052MW213/SS052MW288, boring

and completion logs for monitoring well SS052MW213 are indicative of a semi-confined aquifer. Therefore, the increase in separation of the attenuation factor (Figure 2) may be related to some aquifer leakage caused by groundwater head pressure or some other relationship of lithology and aquifer pressure. In other words the attenuation separation is not caused by the shallow potentiometric surface of what is essentially an aquifer confined to a much greater depth than the peisometeric surface of 6 feet bgs. The variation of the attenuation factor at the other locations is not significant and can not be attributed to any one parameter or combination of parameters.

The data at SS052MW526/SS052MW214 show the attenuation factor to be closer to or greater than one which indicates the possibility of additional sources of VOCs in soil or highly permeable soils in the unsaturated zone. The soil boring log for SS052MW214 shows the location to have layers of gravel and clayey gravel soil in the unsaturated zone that likely contribute to the increased vapor migration. The analysis of the attenuation factors for TCE was less robust, since for TCE, data limitations restricted calculation of attenuation factors to two locations. The variations at these two locations however are consistent with the data for PCE.

As expected, the variation in temperature is fairly small below five feet from ground surface, and the effect of temperature change on vapor transport is not significant. Even with a rise of the water table, a significant increase in attenuation factor, defined as increase of an order of magnitude or higher, was only observed at location SS052MW213. At that location, the interaction between the complex lithology and the greater head pressure is causing a greater than expected change in the attenuation factor.

In conclusion, the results and analyses show that there is no consistent pattern of seasonal variation in the degree of vapor transport within the unsaturated zone in Zone 4 of the former Kelly AFB. This observation is consistent with published studies (USEPA, 2002) that have established that seasonal variation in indoor air concentrations of volatile contaminants originating from subsurface sources are due to variation in building air exchange rates that vary widely by season and climatic region, rather than seasonal changes in subsurface conditions that impact vapor intrusion to indoor air.

VII. References

CH2MHill, March 2000. Informal Technical Information Report Zone 4 OU-2 and Site S-4 Soil Vapor Monitoring.

CH2MHill, 2004. Technical Memorandum Zone 4 Sub-Slab Soil Gas Sampling.

LUSTline Bulletin 42, October 2002. How to Collect Reliable Soil-Gas Data for Risk-based Applications.

USEPA, 2002. Draft Guidance for Evaluating the Vapor Intrusion to Indoor Air Pathway from Groundwater and Soils.

USEPA, 2003. User's Guide for Evaluating Subsurface Vapor Intrusion into Buildings.

Table 1. Depth to Groundwater and Water Temperature in April and October 2002

Monitoring Well Location	Date Measured	Water Temp. (°C)	Static Water Depth (ft)	Rise in Water Table (ft)
SS037MW079	15-Apr-02	23.94	18.13	1.53
SS037MW079	17-Oct-02	25.13	16.6	
SS040MW041	15-Apr-02	23.92	24.4	5.16
SS040MW041	17-Oct-02	23.86	19.24	
SS052MW213	11-Apr-02	23.22	9.44	3.09
SS052MW213	17-Oct-02	25.94	6.35	
SS052MW214	10-Apr-02	23.97	15.57	3.76
SS052MW214	17-Oct-02	26.41	11.81	
SS052MW314	08-Apr-02	26.24	26.45	2.1
SS052MW314	17-Oct-02	25.4	24.35	
SS052MW200	23-Apr-02	25.15	19	3.98
SS052MW200	17-Oct-02	25.14	15.02	

Table 2. Maximum Detected Soil Gas and Groundwater Concentrations

	Groundwater (µg/L)			Soil Gas (ppbv)		
Vapor Well ID	March 2000	April 2002	October 2002	March 2000	April 2002	September 2002
PCE	134	33.4	43.6	2100	1610	2050
TCE	90	90.1	74	115	8.6	41.5
Cis-1,2-DCE	225	86.8	118	86.7	ND	1.5
VC	4.12	1.9	1.04	ND	ND	ND

µg/L=micrograms per liter

ppbv=parts per billion by volume

Table 3. Analysis of Groundwater and Soil Gas Data for PCE, April and September/October 2002

		April 2002				September/October 2002			
Vapor Well ID	Monitoring Well ID	Soil Gas at 5 ft bgs (ppbv)	Ground-water (µg/L)	Equivalent Soil Gas at Water Table (ppbv)	Attenuation Factor	Soil Gas at 5 ft bgs (ppbv)	Ground-water (µg/L)	Equivalent Soil Gas at Water Table (ppbv)	Attenuation Factor
SS037MW193	SS037MW079	295	33.4	3570	8.3E-2	343	25.3	2830	1.2E-1
SS040MW044	SS040MW041	3.7	14.4	1542	2.4E-3	47.9	30.7	3420	1.4E-2
SS052MW284	SS052MW629	1610	NS	-	-	2050	43.6	4859	4.2E-1
SS052MW287	SS052MW200	ND	0.24	25	-	57	8.8	985	5.8E-2
SS052MW365	SS052MW314	54	21.8	2330	2.3E-2	27	24.4	2732	9.9E-3
SS052MW363 (SS037MW195)	SS037MW128	29.4	NS	-	-	67.2	NS	-	-
SS052MW288	SS052MW213	1.6	1(ND)	107	1.5E-2	47.6	1 (ND)	112	4.2E-1
SS052MW526	SS052MW214	1430	8.11	867	1.6E+0	458	4.99	561	8.2E-1
SS052MW364	SS052MW591	34.7	NS	-	-	96.9	25.4	2847	3.4E-2

µg/L=micrograms per liter ppbv=parts per billion by volume

NS: Not Sampled ND: Non Detect

An empty (dashed) box is indicative of a value that could not be calculated.

Table 4. Analysis of Groundwater and Soil Gas Data for TCE, April and September/October 2002

Vapor Well ID	Monitoring Well ID	April 2002				September/October 2002			
		Soil Gas at 5 ft bgs (ppbv)	Groundwater (µg/L)	Equivalent Soil Gas at Water Table (ppbv)	Attenuation Factor	Soil Gas at 5 ft bgs (ppbv)	Groundwater (µg/L)	Equivalent Soil Gas at Water Table (Ppbv)	Attenuation Factor
SS037MW193	SS037MW079	5.8	90.1	6837	8.5E-4	4.3	27.5	2172	2.0E-3
SS040MW044	SS040MW041	ND	10.1	766	-	ND	20.9	1643	-
SS052MW284	SS052MW629	ND	NS	-	-	41.5	28.5	2242	1.9E-2
SS052MW287	SS052MW200	ND	0.2	15	-	1	35.2	2780	3.6E-4
SS052MW365	SS052MW314	2.8	85.2	6516	4.3E-4	ND	74	5850	-
SS052MW363 (SS037MW195)	SS037MW128	ND	NS	-	-	1.2	NS	-	-
SS052MW288	SS052MW213	ND	ND	-	-	ND	ND	-	-
SS052MW526	SS052MW214	8.6	10.2	774	1.1E-2	6.4	7.17	569	1.1E-2
SS052MW364	SS052MW591	ND	NS	-	-	1.4	20.4	1614	8.7E-4

NS: Not Sampled

ND: Non Detect

An empty (dashed) box is indicative of a value that could not be calculated.

Table 5. Risk-based Screening of Groundwater and Soil Gas Results

Chemical	Indoor Air Risk Level	Kelly Target Soil Gas Concentrations 5 ft bgs (ppbv) 2001	Maximum Measured Soil Gas Conc. 5 ft bgs (ppbv)		Kelly Target Groundwater Conc. (µg/L) 2001	Maximum Measured Groundwater Conc. (µg/L)	
			April 2002	September 2002		April 2002	October 2002
PCE	1×10^{-6}	14,000	1610	2050	662	33.4	43.6
TCE	1×10^{-6}	5,500	8.6	6.4	357	90.1	35.2

µg/L=micrograms per liter

ppbv=parts per billion by volume

bgs = below ground surface

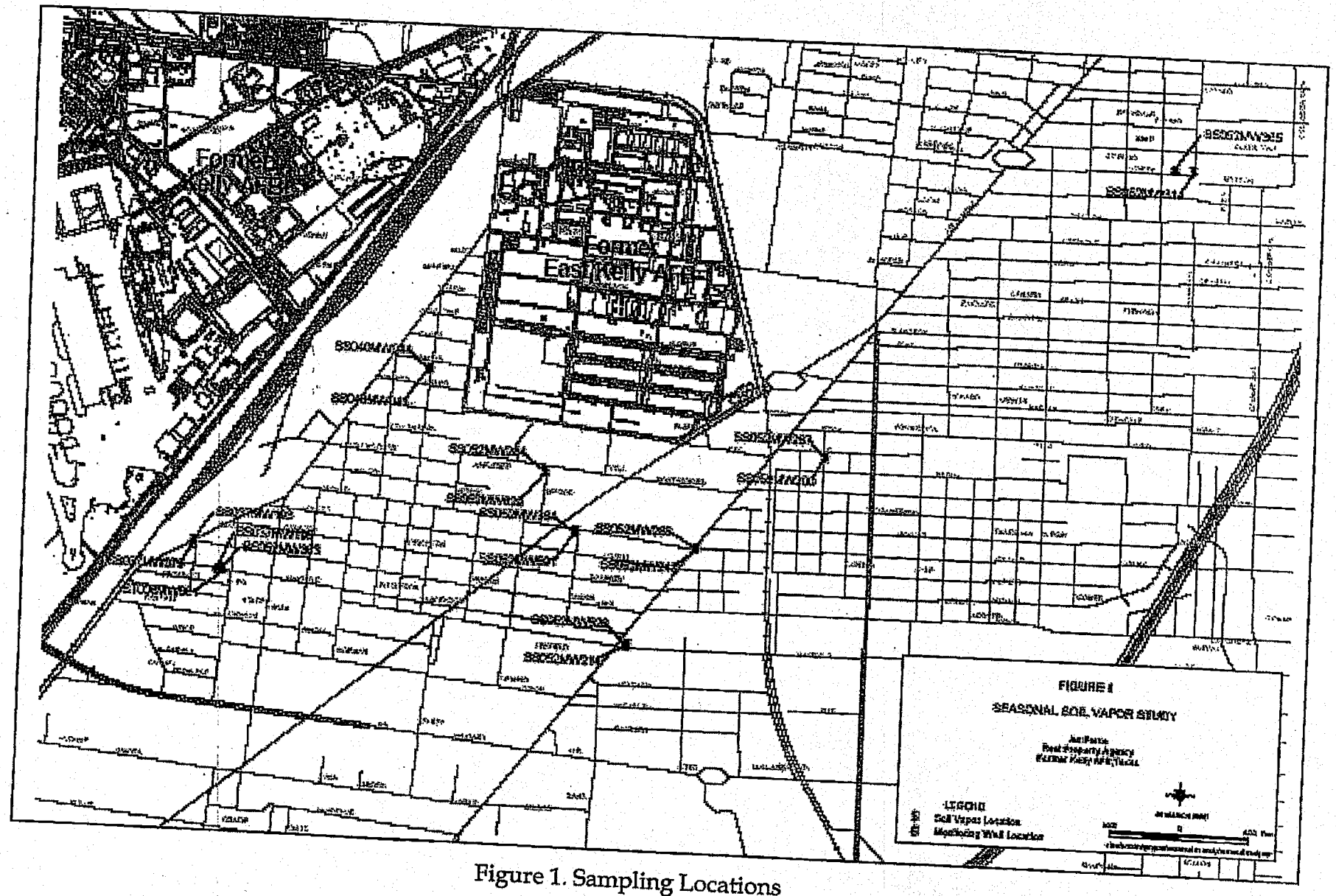


Figure 1. Sampling Locations

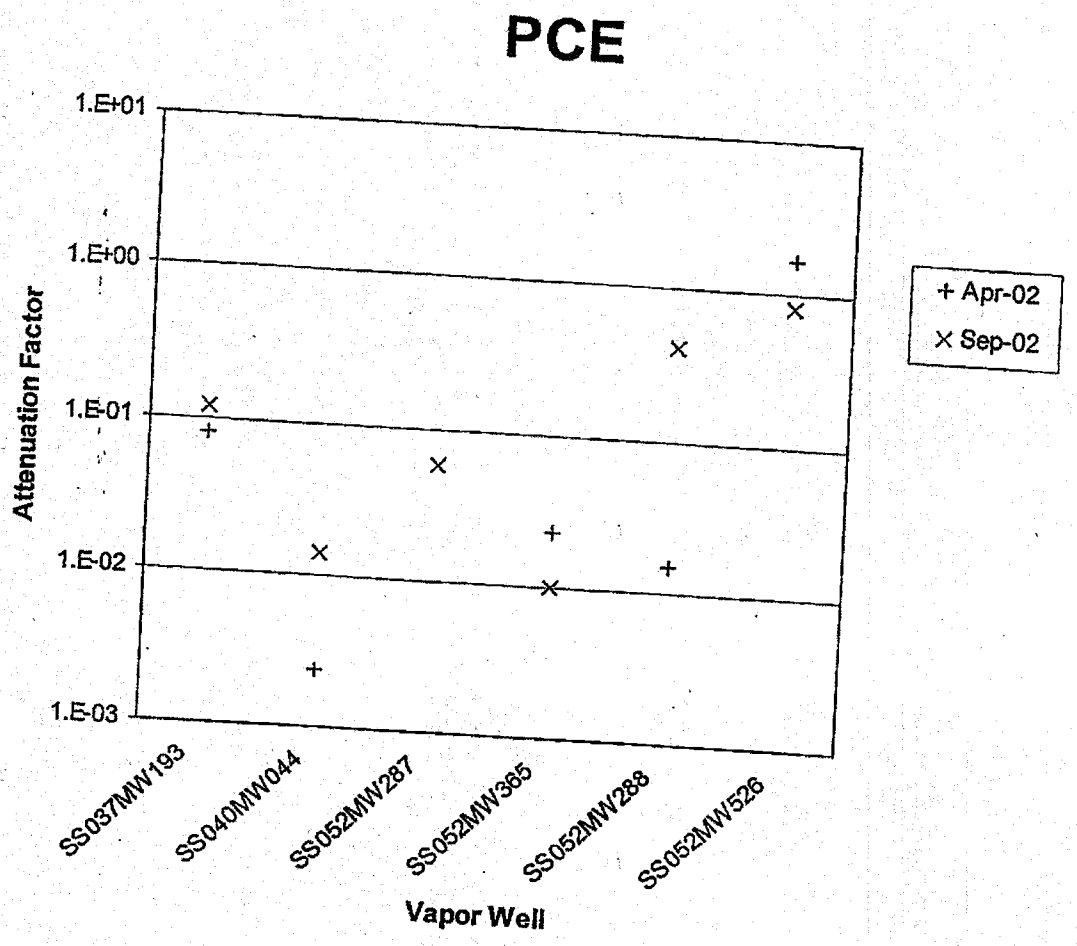


Figure 2. Soil Vapor Attenuation of PCE

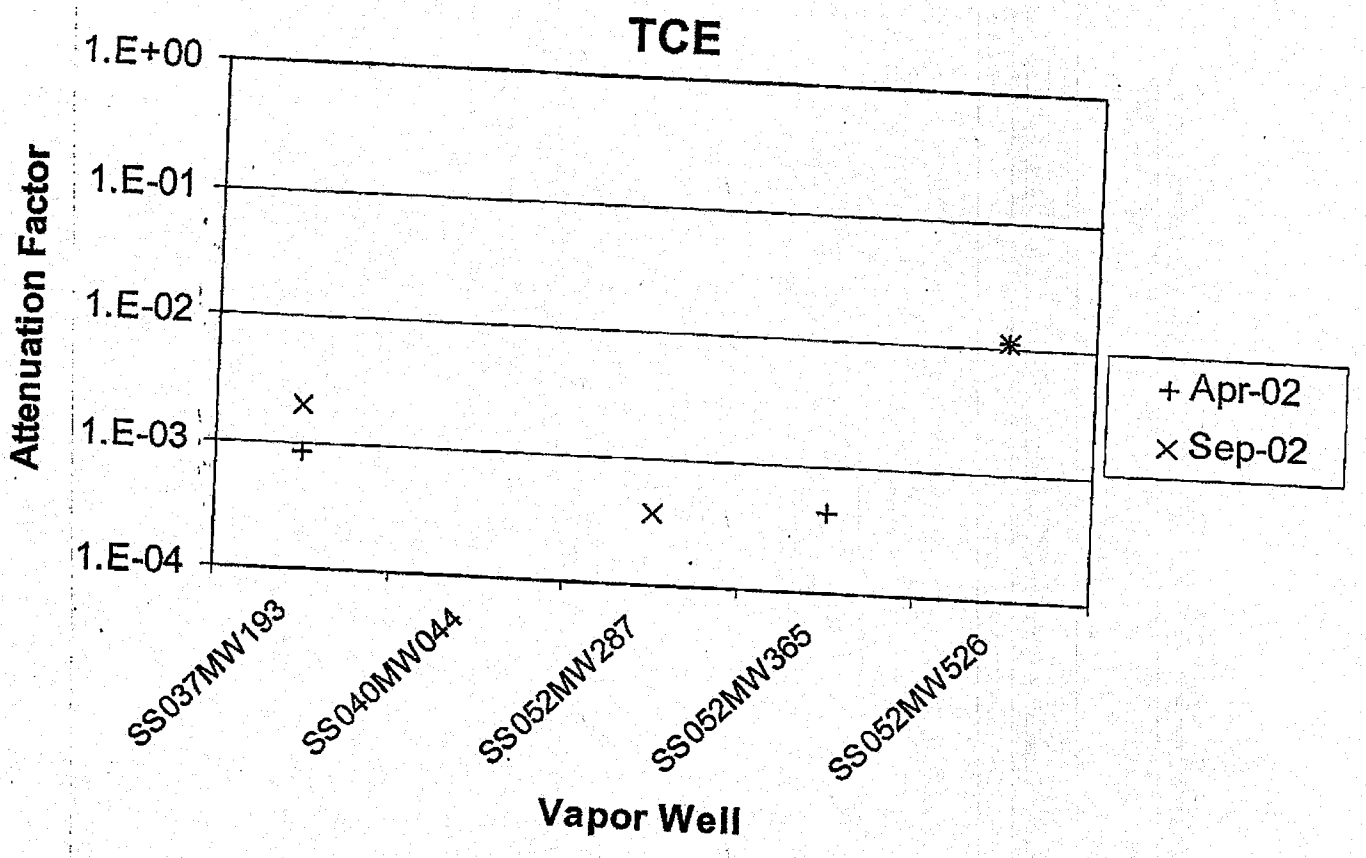


Figure 3. Soil Vapor Attenuation of TCE

EXECUTIVE SUMMARY
SEMIANNUAL COMPLIANCE PLAN REPORT
JULY THROUGH DECEMBER 2006
FORMER KELLY AIR FORCE BASE
SAN ANTONIO, TEXAS

This report meets the requirements of Compliance Plan Number CP-50310 and Permit Number HW-50310 (Texas Natural Resource Conservation Commission [TNRCC], 1998), which were finalized and issued by the Texas Commission on Environmental Quality (TCEQ) (formerly the TNRCC) on June 12, 1998 and subsequently modified. The Compliance Plan and Permit require the former Kelly AFB to conduct Corrective Action and Groundwater Monitoring programs to address basewide groundwater contamination in the uppermost (alluvial) aquifer. The Compliance Plan and Permit also require the former Kelly AFB to close four Resource Conservation and Recovery Act (RCRA)-regulated units (Sites E-3, SD-1, SA-2, and S-8) and investigate Solid Waste Management Units (SWMUs) under applicable regulatory programs.

This report summarizes: (1) the July 2006 field and laboratory data associated with sampling at the two RCRA-regulated sites; (2) the July and August 2006 field and laboratory data associated with sampling along Leon Creek; (3) the April through July 2006 basewide groundwater sampling data; and (4) an evaluation of ongoing groundwater Corrective Action Programs (CAPs) at the two RCRA-regulated units and SWMUs with environmental concerns to determine if the CAPs have attained specified groundwater protection standards (GWPS) listed in the Compliance Plan.

The former Kelly AFB has historically been subdivided into five groundwater zones (Zones 1 through 5), with report organization by zone. Submittal of Compliance Plan Modifications for Zones 2, 3, 4 and 5 redefined discrete contamination areas and associated remediation activities resulting in the reorganization of the former base into 11 Waste Management Areas (WMAs). SWMUs within Zone 1 have not been reorganized into WMAs at this time, and will continue to be associated with Zone 1.

GROUNDWATER GAUGING

Groundwater sampling and gauging are associated with a relatively shallow groundwater aquifer located within native alluvial sediments and man-made fill materials beneath the site. The April through July 2006 groundwater gauging and sampling activities included: (1) measurement of the depth to groundwater in monitoring wells and actively pumping groundwater recovery wells located across the base and in immediately adjacent off-base areas; (2) visual inspection of the condition of gauged groundwater wells; and (3) where sufficient data were available, development of RCRA or SWMU site-specific groundwater potentiometric maps showing the general direction of groundwater flow.

Groundwater in the main portion of the former base generally flows towards Leon Creek, located along the west side of the former base and crossing through the southwest corner of the former base. Groundwater along the eastern side of the former base and in the vicinity of Zone 4

generally flows toward Six Mile Creek, located southeast of Zone 4. These observed flow directions are similar to previous years.

Groundwater gradients are used to estimate the rate at which groundwater moves through the subsurface. Based on the March through April 2006 groundwater gauging activity (discussed in further detail in the July 2006 Semiannual Compliance Plan Report), groundwater gradients on former Kelly AFB varied from 0.001 feet per foot (ft/ft) to 0.227 ft/ft. The steepest groundwater gradient was located in the southwest portion of the former base, south of Leon Creek.

In general, depths to groundwater in March and April 2006 ranged from less than one foot to 34.85 feet below the ground surface. The average depth to groundwater was 19.9 feet. In comparison, the average depth to groundwater in March 2005 was 15.5 feet below the ground surface. This 4.5-foot decrease in the average depth to groundwater reflects drought conditions experienced in the San Antonio area prior to and during the sampling period.

BASEWIDE WELL SAMPLING

Groundwater sampling was performed in accordance with the Compliance Plan to evaluate groundwater conditions in the shallow alluvial aquifer beneath the former Kelly AFB and off site areas adjacent to the former base. The following types of wells were sampled:

- Basewide groundwater monitoring wells (basewide list);
- Monitoring wells associated with the seven Permeable Reactive Barriers (PRB) (PRB well list);
- Recovery wells associated with active groundwater pump and treat systems (recovery well list); and
- Monitoring wells associated with the two RCRA sites (RCRA well list).

Evaluation of each site included: a comparison of the analytical data to determine, on a well-by-well basis, those chemicals that exceeded the GWPS; an evaluation of the groundwater gradient, velocity, and flow direction; how the hydrology at each site may affect contaminant migration; and a general evaluation of the effectiveness of any groundwater treatment or containment systems that may be present at each site. Key areas of concern were identified based on the data analysis, and are summarized below.

Zone 1: Zone 1 includes SWMUs D-1, D-2, D-3, D-4, D-5, D-6, D-7, D-9, CS-3 and SA-1. Interim groundwater recovery systems are present at Sites D-2, D-4, and D-5. A Corrective Measures Study for the Zone 1 sites is currently under development. Key areas of concern are identified below by site.

- **IRP Site D-1:** No issues were identified.
- **IRP Site D-2**: A groundwater plume consisting of trichloroethylene (TCE) and its associated degradation products total 1,2-dichloroethene (total 1,2-DCE) and vinyl chloride, appears to be migrating into the western portion of the site from the adjacent Lackland AFB.
- **IRP Site D-3:** No key areas of concern were identified.

- **IRP Site D-4:** The 2006 data suggest that some groundwater in the region between the remediation system and Leon Creek may escape capture and discharge into Leon Creek.
- **IRP Site D-5:** No key areas of concern were identified in the 2006 data.
- **IRP Site D-6:** No site-specific data were collected during the period covered by this report.
- **IRP Site D-7:** The northern edge of this site may be impacted by contaminants from Site D-9 or D-6 or from a source(s) within D-7 itself.
- **IRP Site D-9**: The sample from well KY032MW006 contained GWPS exceedances for a large number of chemicals, including 1,1,1-trichloroethane, 1,1,2-trichloroethene, 1,1-dichloroethene, 1,1-dichloroethane, 2,4-dichloropropane, acetone, arsenic, benzene, lead, nickel, p,p'-DDE, toluene, total 1,2-DCE, TCE, and vinyl chloride. Measured concentrations of four of these chemicals (1,1-DCA, 1,1-DCE, total 1,2-DCE and vinyl chloride) exceeded the corresponding GWPS by two to four orders of magnitude.
- **IRP Site CS-1:** No key areas of concern were identified.
- **IRP Site SA-1:** No site-specific data were collected during the period covered by this report.

Site E-3 WMA: The Site E-3 WMA is located in the northern portion of Zone 2 and includes RCRA Site E-3. Site E-3 contains a groundwater recovery system and a soil vapor extraction (SVE) system. One key area of concern was identified:

- Approximately two feet of dense non-aqueous phase liquid (DNAPL) was identified in Point of Compliance (POC) well WP022MW100. The trend graph for this well shows a relatively steady increase in benzene concentrations between July 2001 and July 2004, then stabilization in the benzene concentration between July 2004 and July 2005. The chlorobenzene concentration in this well has fluctuated since 2000. Based on the relatively low concentrations of other VOCs at this site, it is believed that the DNAPL may be associated with the chlorobenzene. Based on the current and historical non-detect results for benzene and chlorobenzene in the wells downgradient from well WP022MW100, recovery well WP022RW096 appears to be operating effectively as a boundary control recovery well.

600 Area WMA: The 600 Area WMA is located in the north-central portion of Zone 2 and includes Site IWTP. The IWTP Site contains three groundwater recovery wells located in the southern portion of the WMA. The Zone 2 groundwater treatment plant is located in the northern end of this WMA. Additional corrective actions within the 600 Area WMA consisted of vegetable oil injection near Building 621 for VOC degradation performed in 2006 and Hydrogen Releasing Compound (HRC) injection for chromium reduction in the southern portion of the WMA in 2004. Two key areas of concern were identified:

- **Building 621:** Vegetable oil was injected in the vicinity of Building 621 in 2006. This area is located near the current groundwater treatment plant in the northern portion of the 600 Area WMA. The purpose of the vegetable oil injection is to enhance the natural degradation of VOCs in groundwater. There has not been sufficient time between the 2006 injection and the 2006 annual groundwater sampling event to discern potential effects of the vegetable oil on the contaminant plumes in this area.

- **HRC Injection in the Southern 600 Area WMA:** In Fall 2004, HRC was injected at 42 locations in the vicinity of the northwestern end of the Zone 2 PRB and extending north and west into the southern portion of the 600 Area WMA. The purpose of the HRC injection was to reduce hexavalent chromium to its trivalent form. Two areas of total chromium were identified based on groundwater sampling. Wells SS002MW001 and SS002MW005, located in the southern portion of the 600 Area WMA and within the area of the HRC injection, reported total chromium concentrations of 2,680 µg/L and 113 µg/L, respectively. However, the turbidity at monitoring well SS002MW001 was recorded at 290 NTU; therefore, the sample collected from this well may not represent groundwater concentrations. The GWPS for total chromium is 100 µg/L. It is recommended that these wells continue to be sampled in the future to evaluate the effectiveness of the HRC injection.

Site E-1 WMA: The Site E-1 WMA is located in the southern portion of Zone 2 and includes Site E-1. Site E-1 contains a groundwater recovery system consisting of vertical groundwater recovery wells and a groundwater recovery trench with four standpipes. Historic soil excavation has been performed to remove source material from the site. One key area of concern was identified:

- Monitoring wells WP021MW011 and WP021MW038, which represent isolated TCE detections, are located downgradient of the groundwater recovery system. Based on their location, these wells should continue to be sampled in the future to evaluate the effectiveness of the recovery system.

300 Area WMA: The 300 Area WMA encompasses the majority of Zone 3 and crosses the southern portion of Zone 5 into the central portion of Zone 2. This WMA includes Site MP, which includes a slurry wall that surrounds the site and an associated groundwater recovery well system. Two PRBs are located in the WMA in the vicinity of Buildings 301 and 360; a slurry wall is associated with the Building 360 PRB. A third PRB and slurry wall system is located in Zone 2. Corrective action performed within the 300 Area WMA included vegetable oil injections at Buildings 522 and Building 331 in 2006 and the Building 360 basement area in 2005. Five key areas of concern were identified:

- **Well SS042MW123**, located north of the Zone 2 PRB, reported a total chromium concentration of 1,210 µg/L. Previous sampling at this location has not detected chromium in the groundwater and the current detection may be the result of the stainless steel casing within the monitoring well. It is recommended that this well continue to be sampled in the future.

- **Zone 2 PRB:** The PCE concentration in downgradient well SS042MW019 and both PCE and TCE concentrations in downgradient well SS042MW032 exceeded the corresponding GWPS values. The plume located on the downgradient side of the Zone 2 PRB appears to have been cut off from the upgradient portion of the plume when the PRB was installed and should continue to decrease in concentration. These wells should continue to be sampled in the future to evaluate the effectiveness of the PRB.

- **Seep KY030SP003:** A water sample from Seep KY030SP003, associated with the Leon Creek sampling activities, contained a PCE concentration of 6.9 µg/L, which exceeds the Texas Surface Water Quality Standard (TWQS) criteria of 5 µg/L for human health. Seep KY030SP003 is located south of the Zone 2 PRB in the southern portion of the 300

Area WMA. The PCE plume located on the downgradient side of the Zone 2 PRB appears to have been cut off from the upgradient portion of the plume when the PRB was installed and should continue to decrease in concentration. The reported concentration suggests contaminated groundwater associated with the PCE plume is discharging into Leon Creek at this location.

- **Seep KY030SP011:** A PCE concentration of 12.3 µg/L and a TCE concentration of 10.8 µg/L were reported in the water sample collected from Seep KY030SP011. These concentrations exceed the TWQS of 5 µg/L for human health for both PCE and TCE. Seep KY030SP011 is located downgradient from well WP021MW145, which is located south of the Zone 2 PRB. The groundwater sample from well WP021MW145 reported an exceedance of the PCE GWPS. It appears that PCE present in groundwater within the vicinity of this well is discharging to Leon Creek as indicated by analytical results of the seep sample.
- **Area between Sites MP and S-8:** Each of these sites, which are both located along the southeastern boundary of the 300 Area WMA, contain groundwater recovery systems to protect from off-site migration of groundwater plumes. Well SS037MW113 is located in the area between these two sites and their respective recovery systems. The 2006 analytical data did not identify any constituent concentrations in groundwater within this area. This well should continue to be sampled in the future to evaluate the continued effectiveness of the groundwater recovery systems at these two sites.

Site S-4 WMA: The Site S-4 WMA is located in the southeastern portion of Zone 3 and includes Site S-4. Site S-4 contains multiple on-site and off-site groundwater recovery trenches and an off-site impermeable barrier associated with a City of San Antonio culvert. No key areas of concern were identified.

Site S-8 WMA: The Site S-8 WMA is also located in the southeastern portion of Zone 3 and includes RCRA Site S-8. No key areas of concern were identified.

East Kelly WMA: The East Kelly WMA includes East Kelly (Zone 4) and groundwater plumes off base to the east. East Kelly WMA includes Site OT-051 and Site SS052 (zone-wide contaminated groundwater). The East Kelly WMA also includes the East and South bank groundwater recovery well systems, located along the east and south property boundaries of Zone 4, respectively, and the Zone 4 groundwater treatment plant. Off-site PRBs are located along Commercial Street to the east and near a Union Pacific rail yard to the northeast. Corrective actions consisting of vegetable oil injections were performed at Rainmaker Park in 2006 and at Site OT-051 in 2002. Five key areas of concern were identified:

- **South Bank Recovery System:** Both the 2005 and 2006 analytical data indicate there are no groundwater plumes in the vicinity of the South Bank recovery system; therefore, continued operation of the recovery wells associated with this system is no longer needed.
- **East Bank Recovery System:** East Bank contains five overlapping horizontal groundwater recovery wells spaced along the eastern boundary of Zone 4. TCE was detected in wells SS052MW594, SS052MW183 and SS052MW180, located immediately downgradient from the East Bank recovery system. These wells should continue to be

sampled in the future to evaluate the effectiveness of the groundwater recovery systems along the East Bank.

- **UPRY PRB:** This PRB was newly constructed in 2005, so there are limited historical data to evaluate the effectiveness of this PRB. Although 2006 data show PCE and/or TCE concentrations above the GWPS in downgradient wells at four of the transects, these concentrations could still reflect pre-PRB construction conditions. These wells should continue to be sampled in the future to evaluate the effectiveness of the PRB.
- **Rainmaker Park:** Vegetable oil was injected in the vicinity of Rainmaker Park in 2006. Rainmaker Park is located in the southern portion of Zone 4. There has not been sufficient time between the 2006 injection and the 2006 annual groundwater sampling event to discern potential effects of the vegetable oil on the contaminant plumes in this area.
- **Site OT-051:** Vegetable oil was injected in this area in 2002 Site OT-051 is located in the northwest corner of Zone 4 on the edge of the Zone 4 TCE plume. Analytical data indicate that a residual vinyl chloride plume is present in this area from the microbial degradation of the TCE caused by the vegetable oil injection.

OT-50 North WMA: The OT-50 North WMA includes the northeastern portion of Zone 5 except for Site S-1 and the groundwater plumes off base to the north and northeast of Zone 5. The OT-50 North WMA includes on-site Building 1533 PRB located in the northeast corner of the WMA and off-site 34th Street PRB located northeast of Site S-1. Corrective action within the OT-50 North WMA has included vegetable oil injection performed at Building 1414 in 2006. Three key areas of concern were identified:

- **Building 1533 PRB**: Samples from wells along transects 3 and 4, located along the southern end of the Building 1533 PRB, reported TCE concentrations above the GWPS on both sides of the PRB. The wells associated with these transects should continue to be sampled in the future to evaluate the effectiveness of the PRB.
- **34th Street PRB:** No key areas of concern were identified.
- **Building 1414:** Vegetable oil was injected in the vicinity of Building 1414 in 2006. There has not been sufficient time between the 2006 injection and the 2006 annual groundwater sampling event to discern potential effects of the vegetable oil on the contaminant plumes in this area.

Site S-1 WMA: The Site S-1 WMA is located in the north-central portion of Zone 5 and includes Site S-1. Site S-1 contains a groundwater recovery system consisting of vertical recovery wells and a SVE system. Historic soil excavation was performed at Site S-1 to remove source material. The Zone 5 groundwater treatment plant is located within the Site S-1 WMA. No key areas of concern were identified.

Plume K WMA: The Plume K WMA is located in the northwestern portion of Zone 5. No key areas of concern were identified.

Plume D WMA: The Plume D WMA is located in the central portion of Zone 5. HRC injection was historically performed at Building 1600 to treat for PCE and at Building 1650 to treat for TCE. One key area of concern was identified:

- Wells SS050MW113, SS050MW513, SS050MW514, and SS050MW515, located within Plume D WMA near building 1650, continue to show TCE concentrations above the GWPS. These wells should continue to be sampled in the future to evaluate the effectiveness of the HRC injections in this area.

LEON CREEK SAMPLING

The Leon Creek monitoring program was initiated to document the physical, chemical, and biological conditions of the creek upstream, adjacent to, and downstream of the former Kelly AFB. This assessment summarizes results of the Leon Creek data collection activities performed in July and August 2006. The activities included surface water and sediment sampling; toxicological and biological monitoring; and surface water elevation and flow measurements.

The hydrologic characterization of Leon Creek consisted of analyses of surface water elevations, stream segment flows, and groundwater seep and point-source discharge inflows. Stream elevations ranged from 664.81 feet above mean sea level (amsl) to 603.11 feet amsl, a drop in elevation of 61.70 feet along a downstream distance of approximately 37,000 feet. Monthly average stream flow rates ranged from 2.49 cubic feet per second (cfs) in August to 10.5 cfs in September. The hydrologic budget for July 15, 2006 showed water losses in the first two stream segments and water gains in the two downstream stream segments with an overall net gain of water. The water gain is assumed to be primarily from groundwater flow.

Surface water samples were collected for chemical analysis from 38 stations: 32 in-stream stations, four seeps, and two outfalls. Some contaminants were detected but were below the TWQS standard. No polychlorinated biphenyls (PCBs) were detected. Cyanide was detected at one sample station, but there is not an applicable TWQS freshwater criteria published for cyanide. Chemical analyses that showed results in excess of TWQS standards are discussed in the following paragraph.

One general chemistry parameter, dissolved oxygen, was below its respective TWQS freshwater criteria for three sampled in-stream locations. One pesticide, heptachlor, was detected upstream from the former Kelly AFB slightly above the TWQS (0.0042J µg/L versus 0.004 µg/L) for human health and chronic aquatic life protection. Chromium was detected above TWQS criteria at one outfall. PCE was detected above TWQS freshwater criteria at two seeps. TCE was detected above TWQS freshwater criteria at one seep. No other contaminants exceeded the TWQS freshwater criteria.

Based on analytical data results and collected field data, it appears that PCE and TCE associated with the former Kelly AFB groundwater is migrating into the lower reaches of Leon Creek. The PCE detected in Leon Creek appears to be associated with a PCE plume located in the vicinity of well WP021MW145. The TCE detected in Leon Creek appears to be associated with the TCE plume located on the downgradient side of the Zone 2 PRB.

Additionally, surface water samples were collected at three reference stations: one in-stream station in Salado Creek, one in-stream station in Medio Creek, and one in-stream station in the Medina River. Heptachlor was detected at Salado Creek above the TWQS human health and

chronic aquatic life protection values. No other contaminants exceeded the TWQS freshwater criteria.

Sediment samples were collected for chemical analysis from 27 stations: 26 in-stream stations and one outfall. The following results were reported.

- Three VOCs were detected, but no concentrations exceeded the applicable TWQS sediment screening values.
- 18 SVOCs were detected. However, only eight of the SVOCs (benzo(a)anthracene, benzo(b)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene) exceeded TWQS sediment screening values.
- Three pesticides were detected, but only two of the pesticides (4,4'-DDD and 4,4'-DDT) exceeded TWQS sediment screening values.
- PCBs 1254 and 1260 were detected at concentrations exceeding the applicable TWQS sediment screening values in samples collected within the former Kelly AFB.
- 16 metals were detected; however, only eight of the metals (chromium, copper, lead, mercury, nickel, selenium, silver, and zinc) exceeded the applicable TWQS sediment screening values. Except for beryllium, there are no established TWQS standards for the other metals detected.
- Cyanide was also detected at six sample stations, but there is no applicable TWQS sediment screening value for cyanide.

Sediment samples were also collected at three reference stations: one in-stream station in Salado Creek, one in-stream station in Medio Creek, and one in-stream station in the Medina River. Each of the three locations contained detectable concentrations of organic and inorganic compounds, but only the concentrations of three metals (cadmium, lead, and selenium) exceeded the applicable TWQS sediment screening values.

A rapid bioassessment was conducted as part of the Leon Creek assessment at eight Leon Creek stations and the three reference stations located at Salado Creek, Medio Creek, and the Medina River. Impairment, as represented by habitat quality and quality of community integrity of benthic organisms and fish, was indicated in seven of the eight Leon Creek stations and at the Salado Creek reference station. The primary influence on impairment at the majority of the stations appeared to be low flow conditions due to the current drought.

Surface water chronic toxicity tests were conducted at eight Leon Creek stations and the three reference stations located at Salado Creek, Medio Creek, and the Medina River. The surface water test organisms included the water flea (*Ceriodaphnia dubia*) and fathead minnow (*Pimephales promelas*). The IC25 results for chronic reference toxicant tests were within the allowable control chart limits range for *Pimephales promelas* and *Ceriodaphnia dubia* for the test endpoints of survival, growth, and reproduction. Regarding chronic toxicity, this appears to indicate that portions of Leon Creek associated with the former Kelly AFB are not impacted by upstream conditions or contaminants associated with the former Kelly AFB.

Fish tissue samples were collected for the purpose of ecosystem monitoring at eight Leon Creek stations and the three reference stations at Salado Creek, Medio Creek, and the Medina River. A total of 10 species were collected. In the whole body fish tissue samples collected during the current assessment, six pesticides and one PCB were detected. None of the detected parameters exhibited concentrations that exceeded the applicable TCEQ screening levels for organics in fish tissue. Similarly, none of the detected parameters exhibited concentrations that exceeded the whole body tissue residue effects levels for freshwater fish species. This appears to indicate that the fish sampled are not impacted by either Leon Creek upstream conditions or contaminants associated with the former Kelly AFB.

FINAL PAGE

ADMINISTRATIVE RECORD

FINAL PAGE