28th Bomb Wing, Ellsworth AFB

May 10, 2011

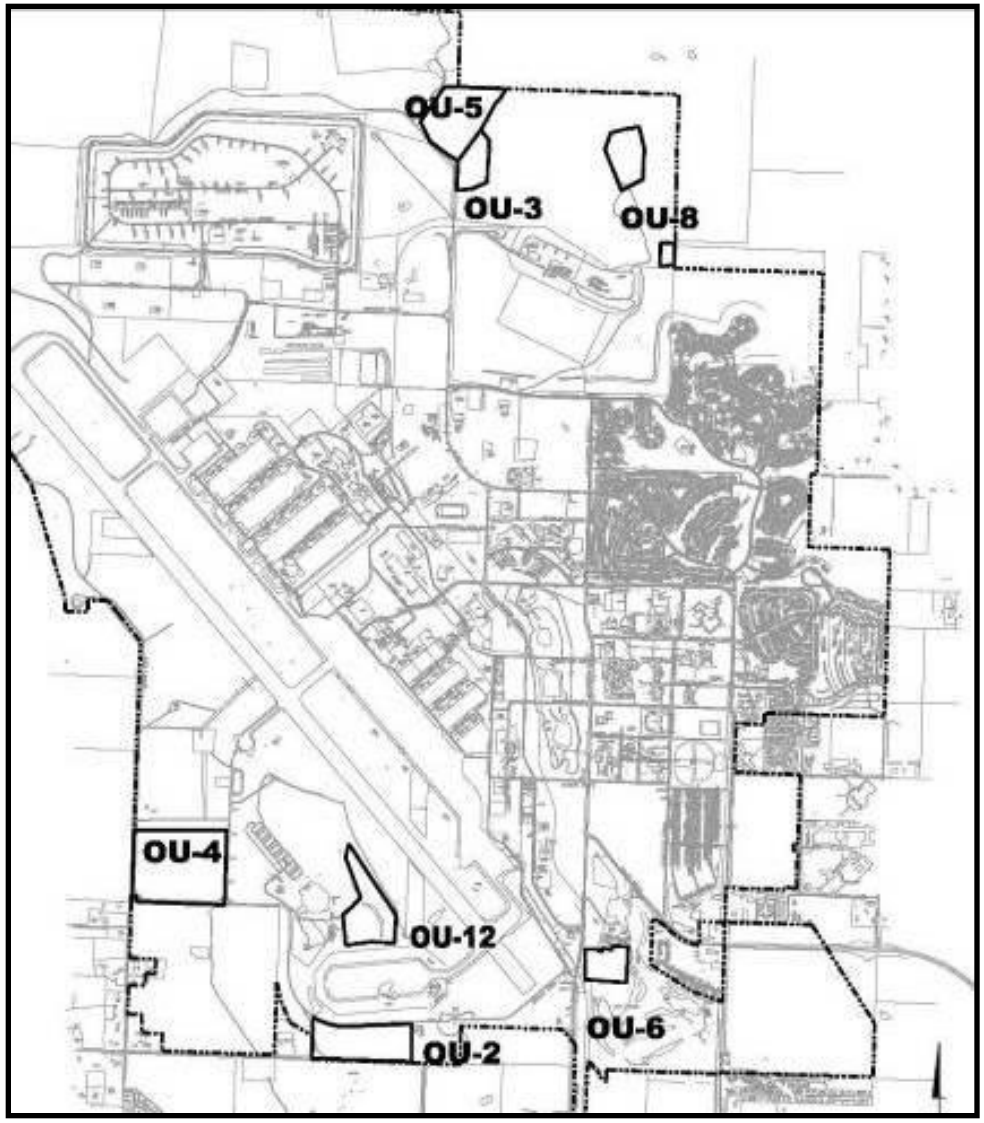
Public Meeting
Restoration Advisory Board

This Briefing is:
UNCLASSIFIED

Presentation Outline

- **Status of Work**
  - **Landfills**
  - **Petroleum Release Sites**
  - **OU-11 Basewide Groundwater**
  - **Partial Deletions**
  - **Off-Base TCE Plume**
- **Future Plans**

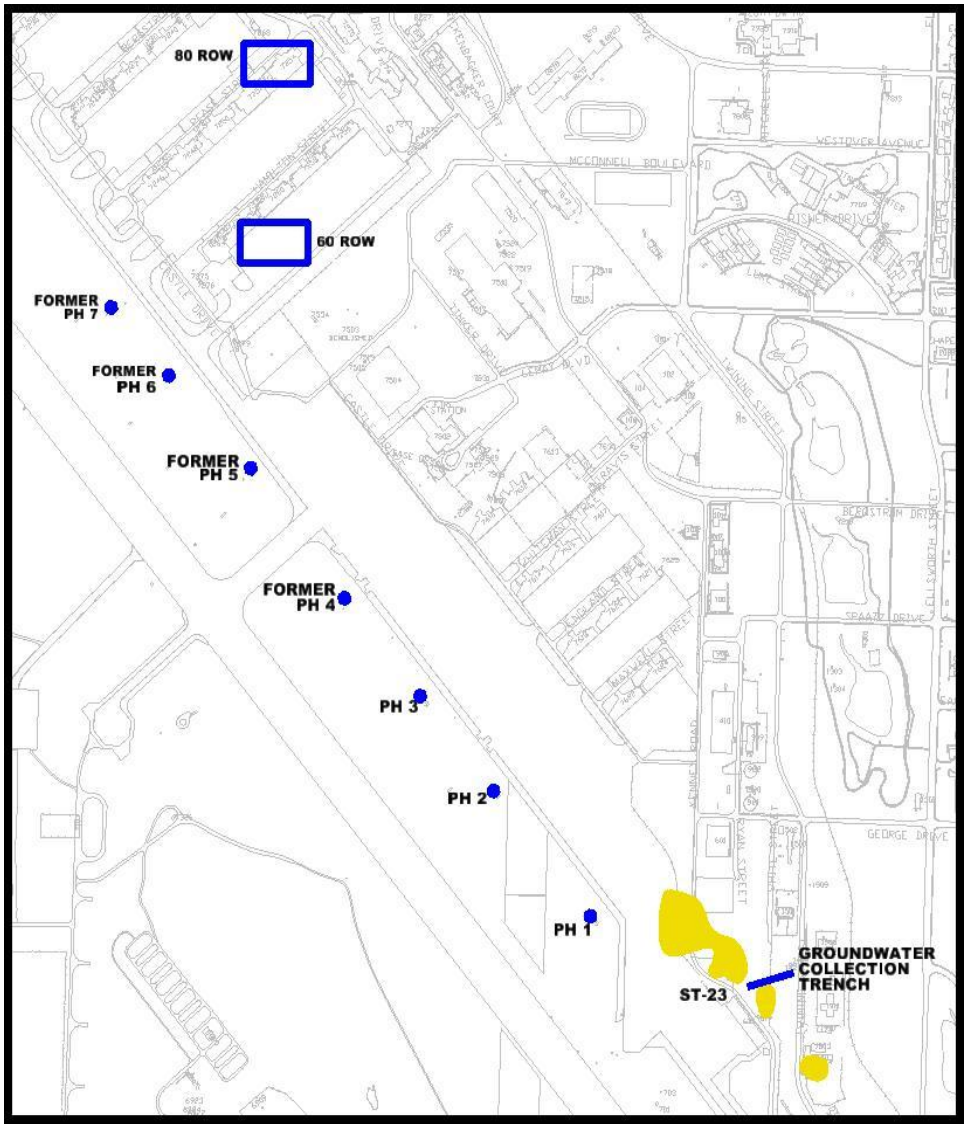
Landfill Sites




Typical Landfill (OU-8, May 2009)

- 7 operable units with soil covers that were installed in 1995 & 1996.
- Semi-annual inspections indicate soil covers are in good condition.
- Test results are below standards.
- Inspections and sampling will continue on a semi-annual basis.

Petroleum Release Sites



- Three groups of petroleum release sites:
  - 60 Row / 80 Row
  - Flightline Refueling Area (PH1 – PH7)
  - ST-23
- Goal is for all sites to achieve **No Further Action** (NFA) from SDDENR, which requires:
  - Absence of recoverable free product (fuel)
  - Nature and extent of contamination must be defined
  - Concentrations of dissolved contaminants must be below state standards, or stable, or declining

Petroleum Release Sites
60 Row and 80 Row

- Both sites treated in 2008 using surfactant enhanced aquifer remediation (SEAR) to remove free product (fuel).
- 60 Row - No free product detected since 2008 SEAR event. Groundwater concentrations were below regulatory standards in July and October 2010. Site recommended for NFA.
- 80 Row - No free product detected since SEAR re-treatment in June 2009. Groundwater concentrations are either below regulatory standards or decreasing. Site recommended for NFA.

Petroleum Release Sites
Flightline Refueling Area (FRA)

Flightline, Pump House 1

- There were originally 7 pump houses, and 4 have been decommissioned.
- Achieved NFA at 3 pump houses (PH2, PH3, and PH6) and 2 pump houses recommended for NFA (PH4 and PH7).
- Monitoring frequency increased at PH1 due to naphthalene fluctuation in one well. Results appear to have stabilized and SDDENR will change the status of this pump house from “open” to “monitoring”.
- Increasing trend of benzene was observed at PH5. Area was treated using dissolved oxygen, which will be replaced by persulfate injection. SDDENR will change the status from “open” to “monitoring” status this summer after injection.

Petroleum Release Sites
ST-23

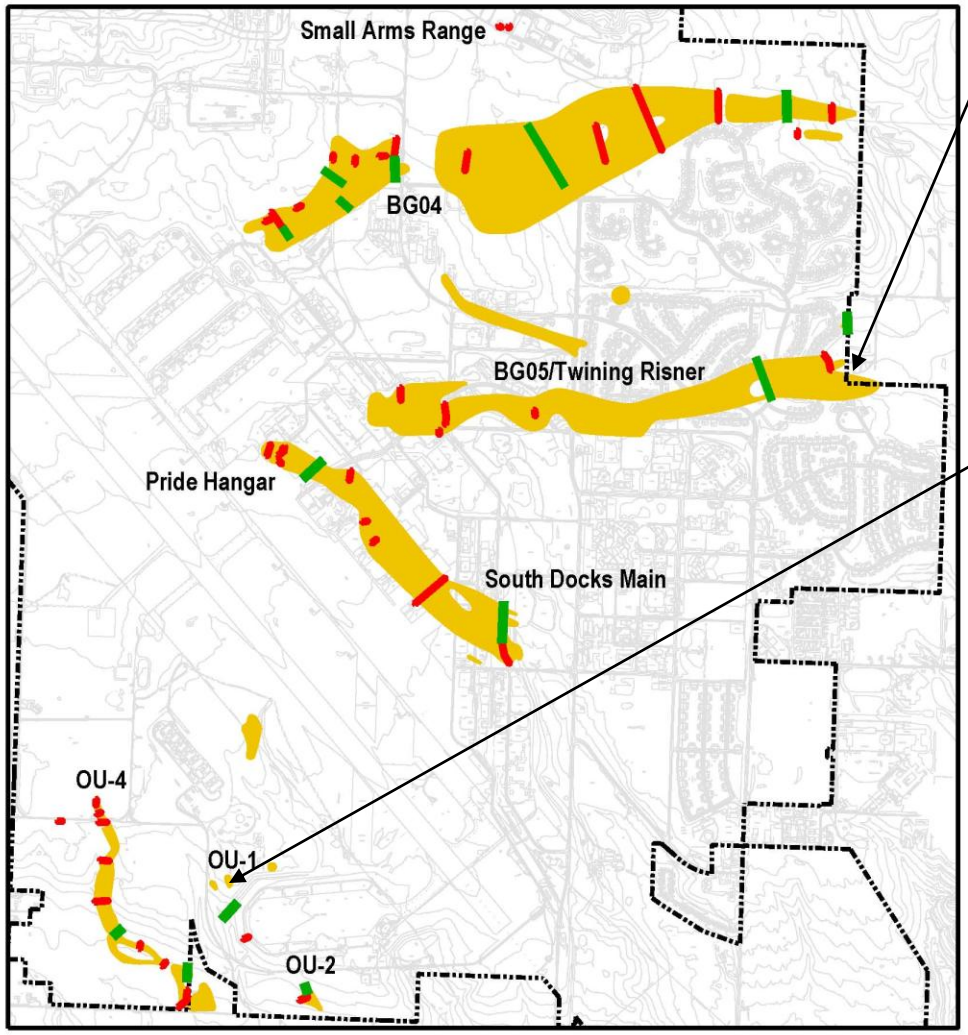
- Additional characterization was necessary because:
  - Possible free product fuel
  - Possible bypass of groundwater contamination around the southwest end of the Groundwater Collection Trench.
  - Incomplete documentation of the nature and extent of fuel-related contamination in this area.

- Recently completed a groundwater investigation with direct push groundwater samples.
- No free product has been found.
- Now have a better definition of the nature and extent of groundwater contamination
- Plan to install 4 new monitoring wells and develop a long term monitoring program.

OU-11 Basewide Groundwater ROD Amendment

- EAFB has been working toward this Record of Decision (ROD) Amendment since 2005.
- Purpose is to allow for shutdown of active remediation systems (pumping wells and treatment plants).
- The ROD Amendment follows up on an Explanation of Significant Differences (ESD) that was prepared in 2007 to allow implementation of in-situ reductive treatment (IRT).
- ROD Amendment process includes the following:
  - Focused Feasibility Study (April 2011).
  - Proposed Plan is currently under regulatory review.
  - Proposed Plan will be made publicly available and a public meeting will be scheduled (targeting late June to early July).
  - Public comments will be addressed, and then the ROD Amendment will be prepared and signed.

OU-11 Basewide Groundwater
Work Completed Since Last RAB Meeting



Base Boundary at BG05

- Increasing TCE found in April 2010 and confirmed in Oct 2010.
- Extraction well restarted in Nov 2010 and additional injection in Dec 2010.
- April 2011 sampling found TCE concentrations below groundwater standards at Base Boundary and extraction well shut off.

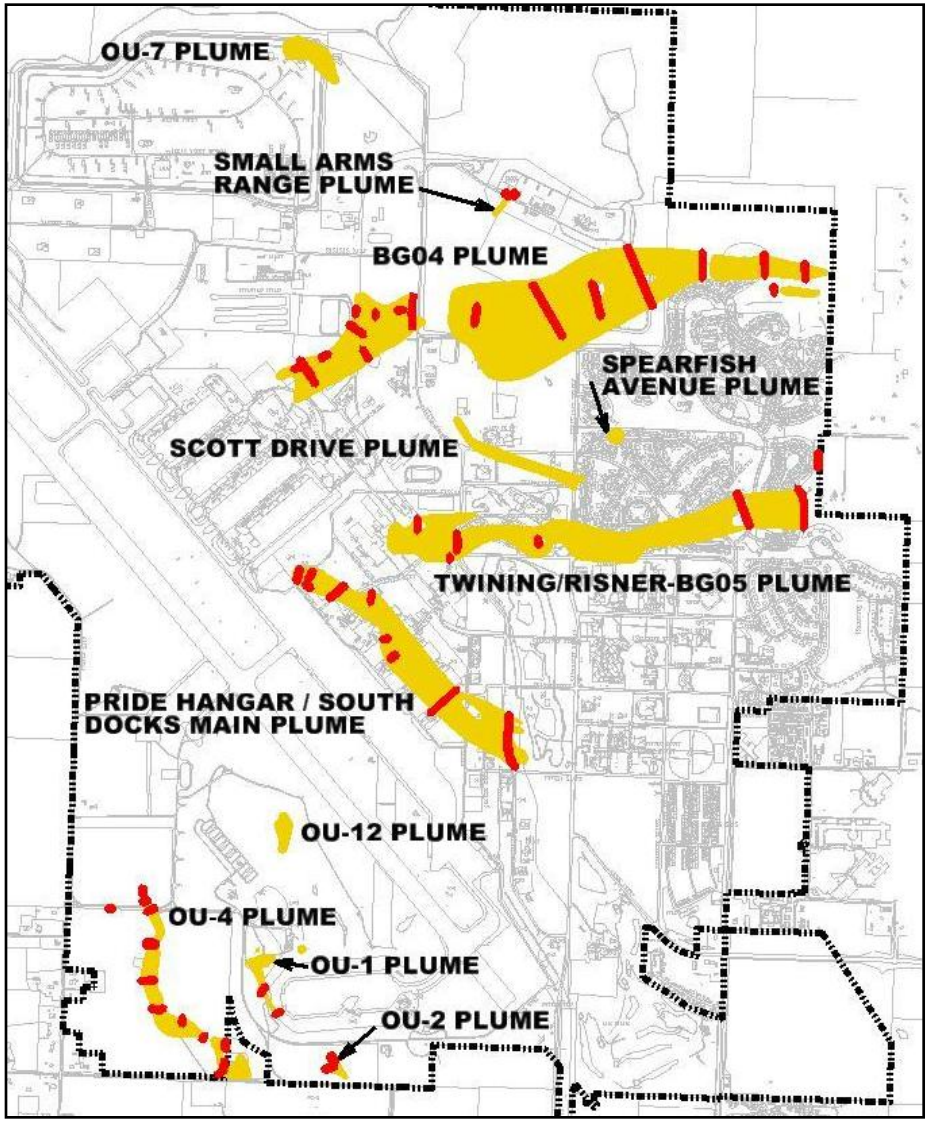
OU1

- Operated biosparge system in localized area of fuel contamination.
- LTM indicates declining VOC concentrations in groundwater.

Focused Feasibility Study for On-Base Portion of OU-11

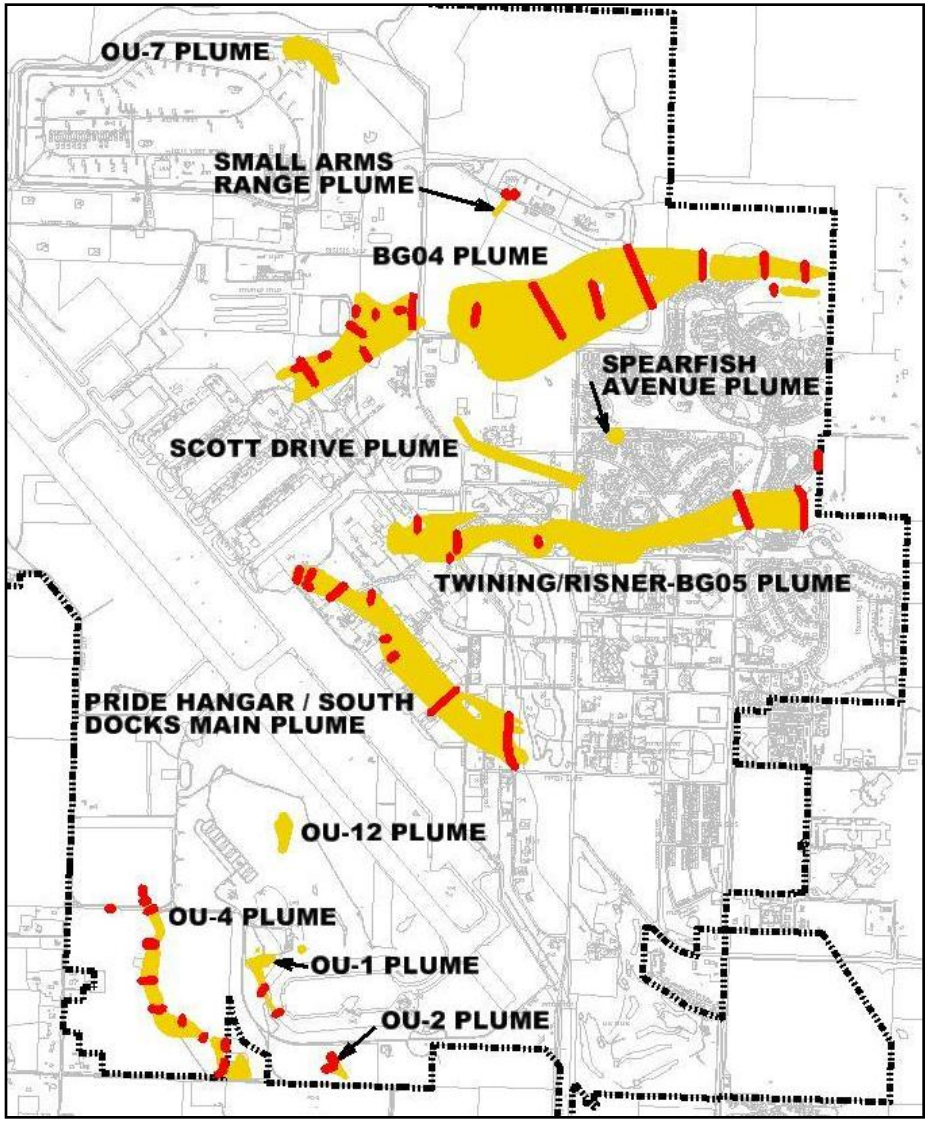
- Evaluated 3 alternatives:
  1. Active Treatment and MNA (current remedy)
  2. Active Treatment, IRT, and MNA
  3. **IRT and MNA with active treatment back-up**
- Recommended alternative is being documented in Proposed Plan

OU-11 Basewide Groundwater Proposed Plan, In-situ Reductive Treatment



- Monitor and maintain the 38 passive IRT zones that have been injected into 8 plumes over the past 4 years.
- Collect samples from performance monitoring wells to ensure proper performance and enhance monitoring network.
- Shut off active treatment systems, but continue to maintain them as backup systems.
- In the future, continue to re-inject organic substrate as necessary to “revitalize” treatment zones.

OU-11 Basewide Groundwater
Proposed Plan, Monitored Natural Attenuation

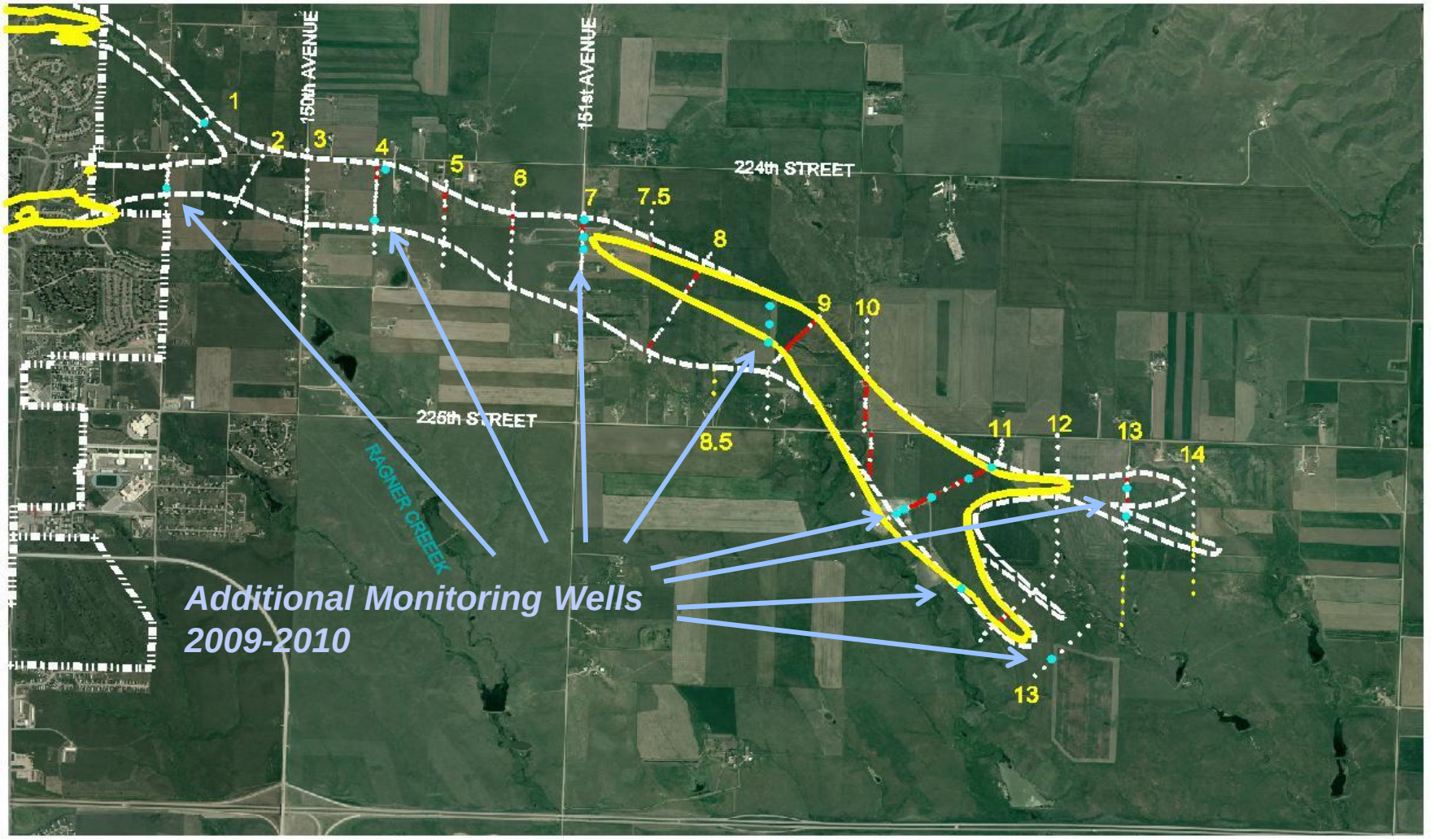


- Proposed at 4 smaller plumes:
  - OU-7: Sample 5 existing and 2 new MWs; also monitor seep.
  - Spearfish Ave: Sample 1 existing and 2 new MWs.
  - Scott Drive: Sample 2 existing and 5 new MWs.
  - OU-12: Sample 2 existing and 2 new MWs.
- No high concentration sources have been found and TCE concentrations in groundwater are low.
- Monitoring will check concentrations for gradual decline and plume shrinkage.
- Treatment could be implemented in future based on monitoring results.

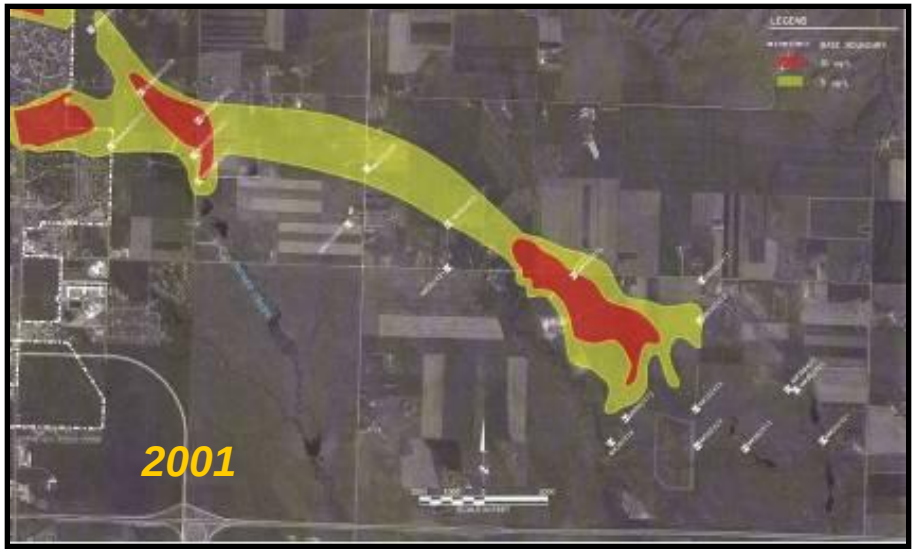
Partial Deletions

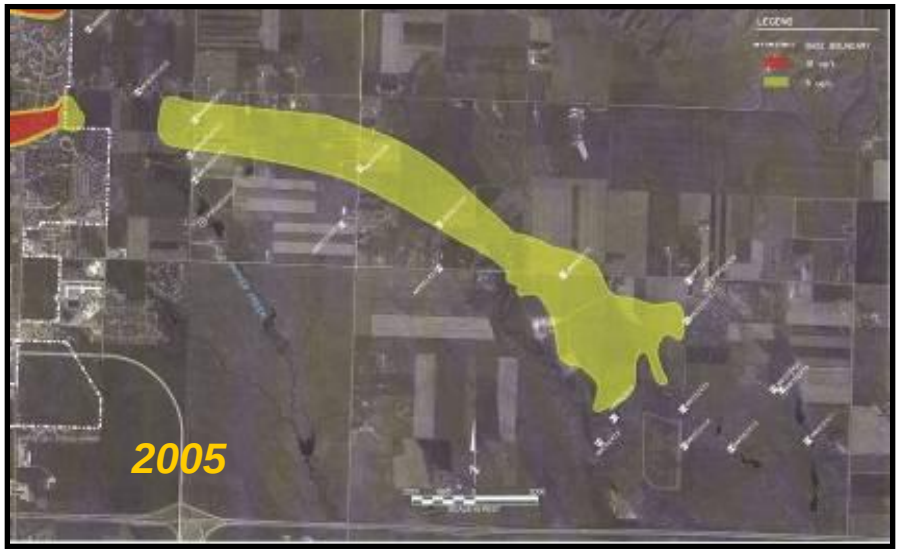
- All unsaturated soil (vadose zone) at Ellsworth AFB was deleted in 2006, except for three areas:
  - Pride Hangar Area of Concern
  - Gateway Lake Ash Area of Concern
  - OU-1 vadose zone soil
- Additional work completed in past 6 months includes:
  - Collected 14 vadose zone soil samples at Pride Hangar
  - Reviewed Gateway Lake Ash removal action records.
- All three areas are now recommended for partial deletion.
- This process expected to be completed by the end of 2011.

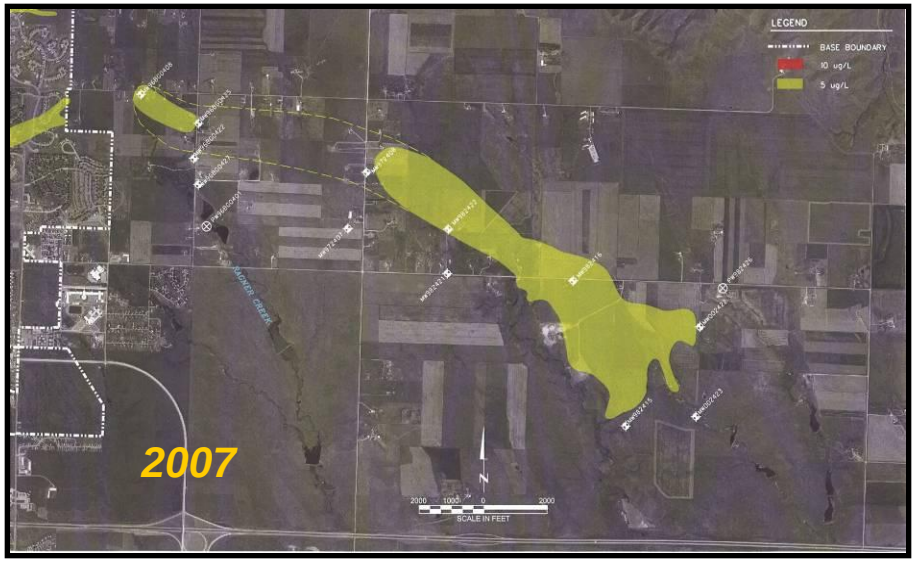
Off-Base Plume Map
April 2010

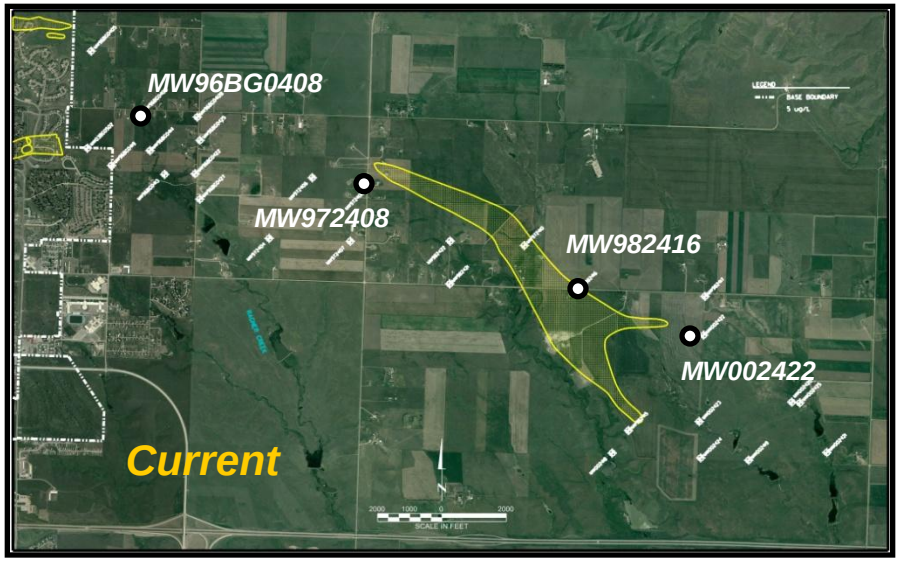


Off-Base Plume Attenuation Since Treatment Started (2001 – 2011)



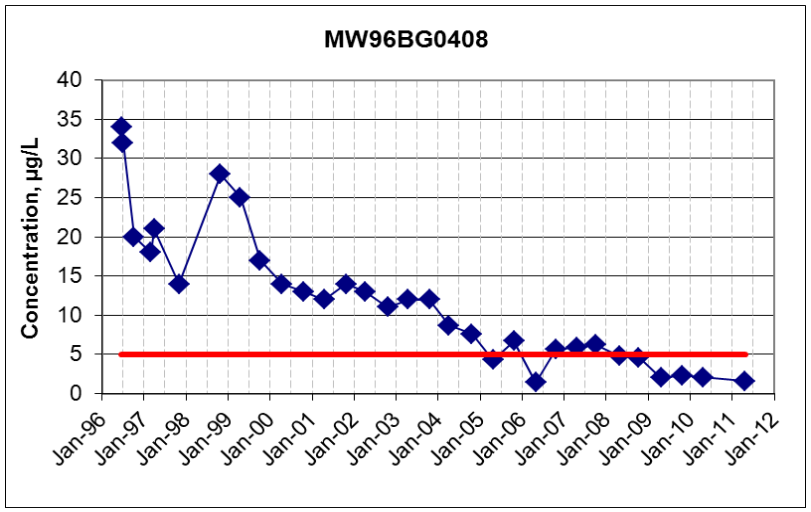


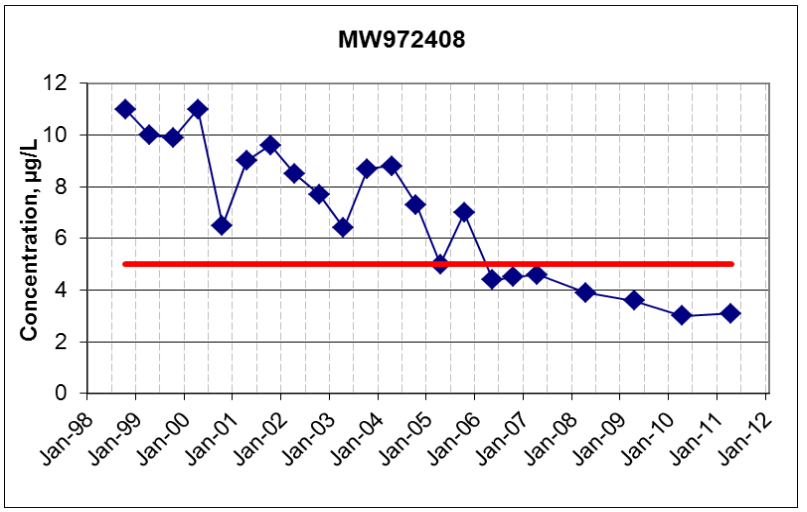


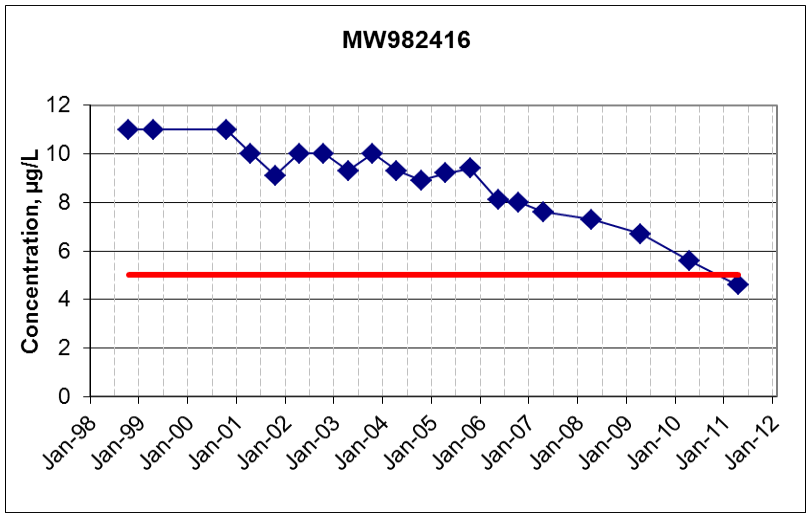


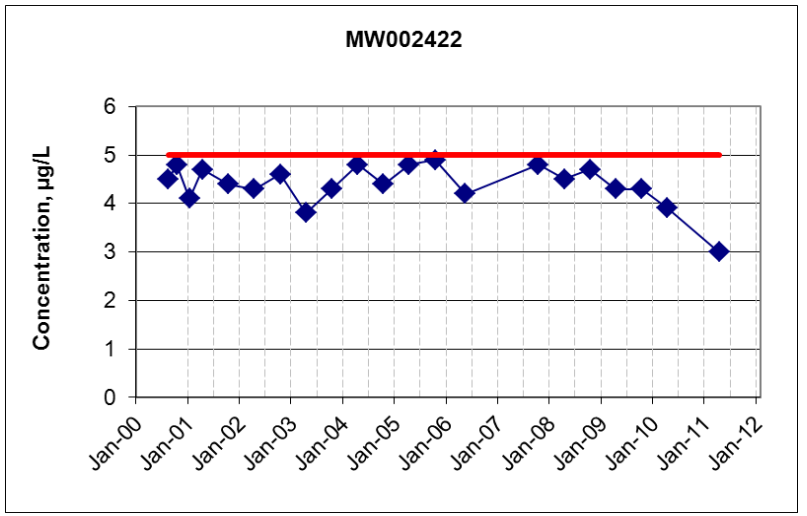
TCE Trends in Off-Base Wells

Upgradient Northwest





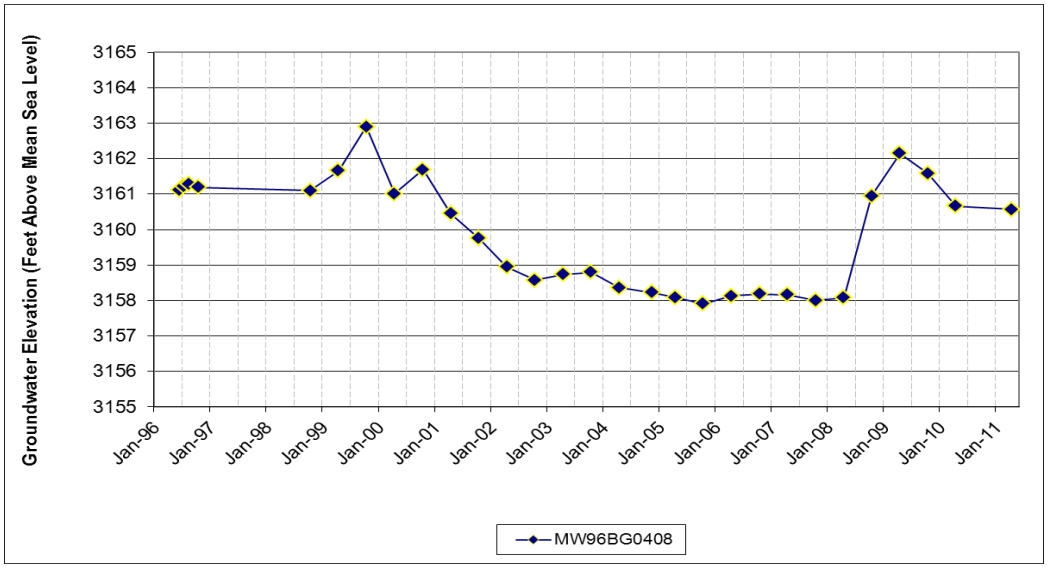


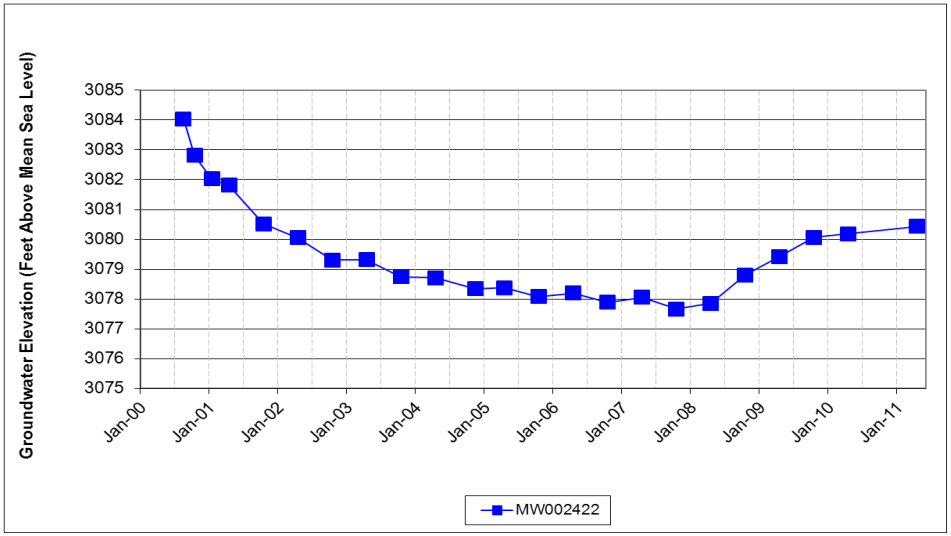


Downgradient Southeast

Water Level Trends in Off-Base Wells

MW96BG0408
Located ¼ mile east of Base boundary





MW002422
Located 3-1/2 miles east of Base boundary

Off-Base Plume Exit Strategy

Final Exit Strategy Report completed October 2010.

Developed the following process to allow non-potable use of groundwater (Completed activities are highlighted in green):

- Air Force legal review of the final Exit Strategy report.
- DOJ review of proposed decision (declined to review).
- Air Force decision whether to change ROD to allow new wells.
- Preparation of ESD or ROD Amendment.
- SDDENR and USEPA review of proposed ESD or ROD Amendment.
- Public comment on proposed ROD changes – not required (ESD instead of ROD Amendment).
- **ESD review and signature by Air Force, USEPA, and SDDENR.**
- Landowner submits request to drill new well or use existing well for non-potable purposes.
- Preparation of new MOAs.
- Final legal review of proposed modifications to MOAs.
- Allow drilling of new wells or use of existing well.
- Air Force will continue to monitor off-Base plume.

Future Plans

Landfill Sites

- Continue routine inspection and monitoring.

Petroleum Release Sites

- Continue compliance monitoring until NFA status is granted.
- Monitor results of persulfate injection at PH5.
- Install new monitoring wells at ST-23.

On-Base Actions

- Continue performance monitoring of the 38 treatment zones and supplement existing treatment zones, as needed, based on results.
- Install new monitoring wells to monitor IRT and natural attenuation.
- Abandon wells that are no longer needed.
- Prepare the OU-11 ROD Amendment for signature by December 2011.
- Complete partial deletions by December 2011.

Off-Base Groundwater

- Follow the new ESD, which allows non-potable use of groundwater.
- Update MOAs when requested by landowner.
- Continue monitoring of Off-Base plume.