

28th Bomb Wing, Ellsworth AFB

May 19, 2009

Public Meeting Restoration Advisory Board





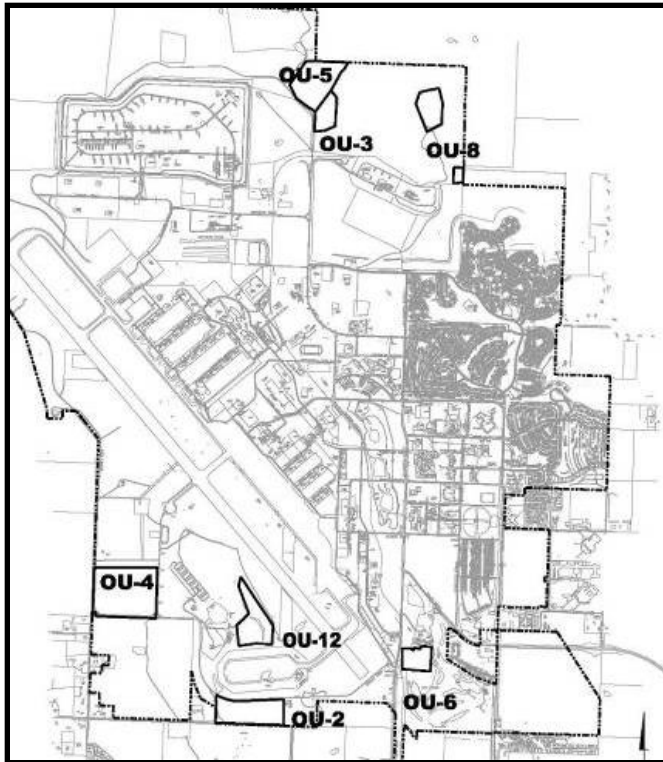
Presentation Outline



- **Landfill Sites (1 slide)**
- **Petroleum Release Sites (2 slides)**
- **On-Base Chlorinated Plume Sites (6 slides)**
- **Off-Base Plume (4 slides)**
- **Plans for the Upcoming Year (1 slide)**
- **Off-Base Plume Project (2 slides)**



Landfill Sites



OU-8 after fire in 2007

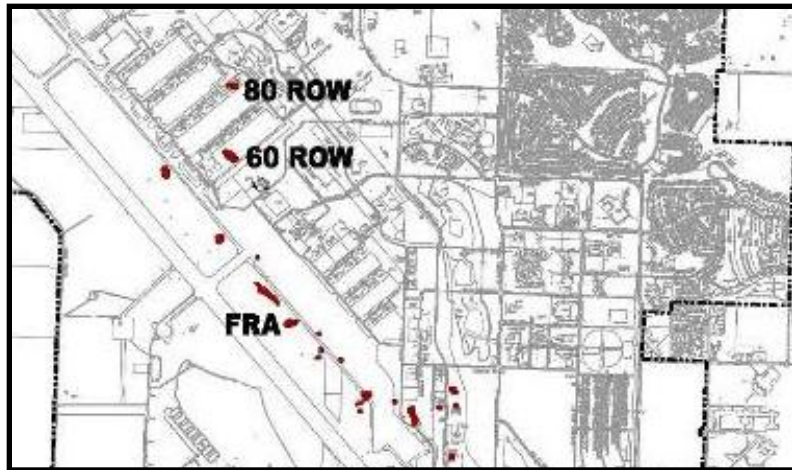
- 7 operable units with soil covers that were installed in 1995 & 1996.
- Quarterly inspections indicate soil covers are in good condition.
- Sampling results are below standards.
- Inspections and sampling will continue.



OU-8 in May 2009



Petroleum Release Sites – 60 and 80 Row



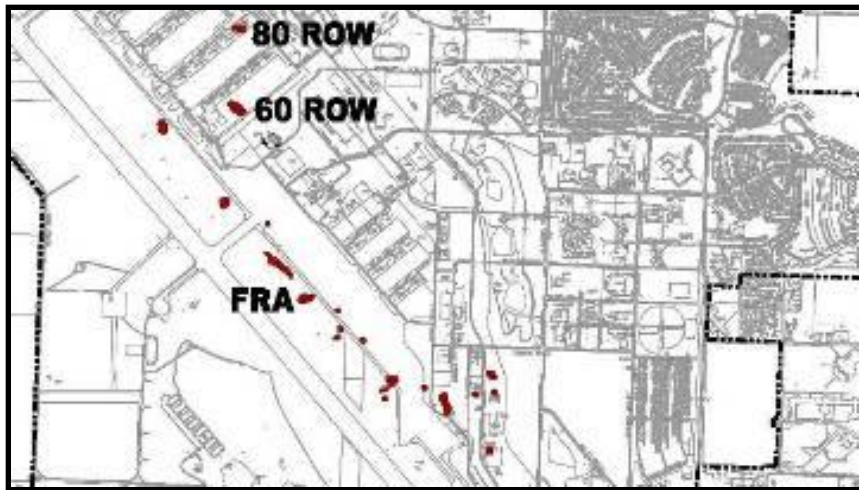
- Our goal is to achieve No Further Action (NFA) status from SDDENR, which requires up to 2 years of successful compliance monitoring results after product is removed.
- In 2008, 60 Row and 80 Row were treated by surfactant enhanced aquifer remediation (SEAR) to remove remnants of free product (fuel), and then compliance monitoring began.
- 60 Row is starting second year of compliance monitoring with no detections of free product.
- A thin layer of fuel (about 1 inch) was detected in one well at 80 Row, so this area will be treated again using SEAR this summer and compliance monitoring will continue.



SEAR injection in progress



Petroleum Release Sites Flightline Refueling Area (FRA)



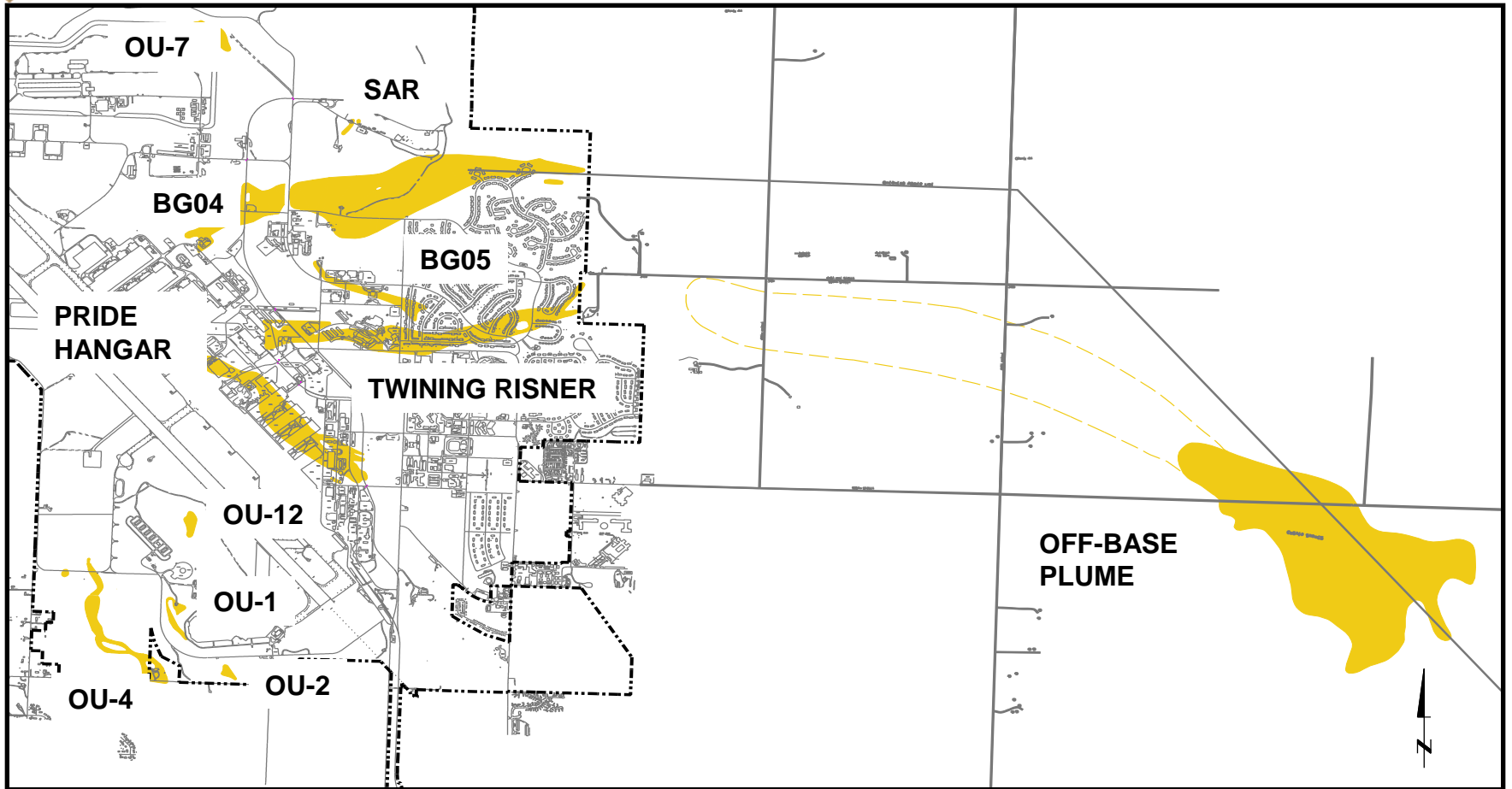
- Our goal at the seven pump houses is to achieve NFA.
- Two pump houses (PH2 and PH6) have been granted NFA status by SDDENR.
- The remaining five pump houses are starting second year of compliance monitoring.
- A new monitoring well was recently installed at PH1 to supplement the compliance monitoring network.
- With successful monitoring results, NFA status for the five remaining pump houses is expected in 2 years or less.



Flightline, Pump House 1



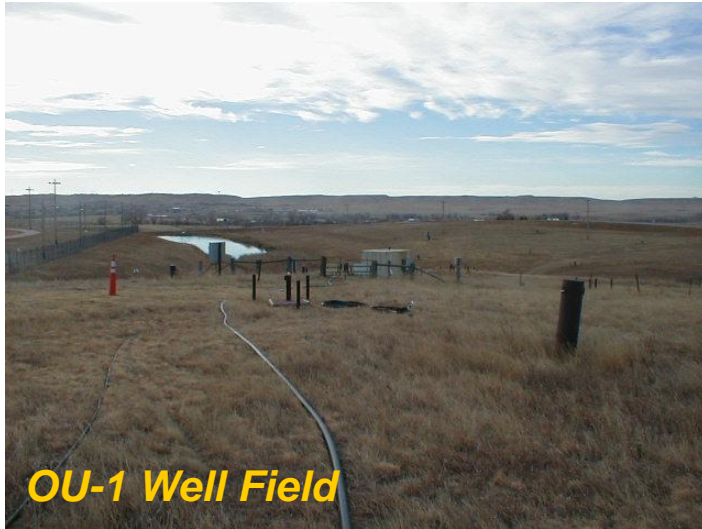
Chlorinated Plumes



- OU-1 is unique because it has both chlorinated solvent and fuel constituents.
- In-situ reductive treatment and performance monitoring is ongoing at 36 locations.
- Twining-Risner Plume recently investigated and will be treated this year.



Operable Unit 1 (OU-1)



- OU-1 has a mixed contaminant source area (chlorinated solvent and petroleum).
- Groundwater and SVE systems removed large amount of contaminant mass between 1996 and 2005, but recovery rates have declined significantly.
- Optimization since 2006:
 - Additional borings and wells
 - High vacuum extraction
 - Converting SVE to bioventing
 - Installing oxygen diffusers
 - Installing two IRT treatment walls
- Performance monitoring on-going:
 - No more free product (fuel)
 - Fuel and chlorinated solvent constituents are stable to decreasing at most wells





In-Situ Reductive Treatment (IRT)



- IRT involves injected organic substrate into the contaminated groundwater.
- Then, returning to the same injection zones about 2 months later to inject dechlorinating organisms.
- Monitoring to make sure the process is working.



Tanker delivering substrate



IRT injection in progress at Base boundary

36 Treatment Zone Locations (Red)



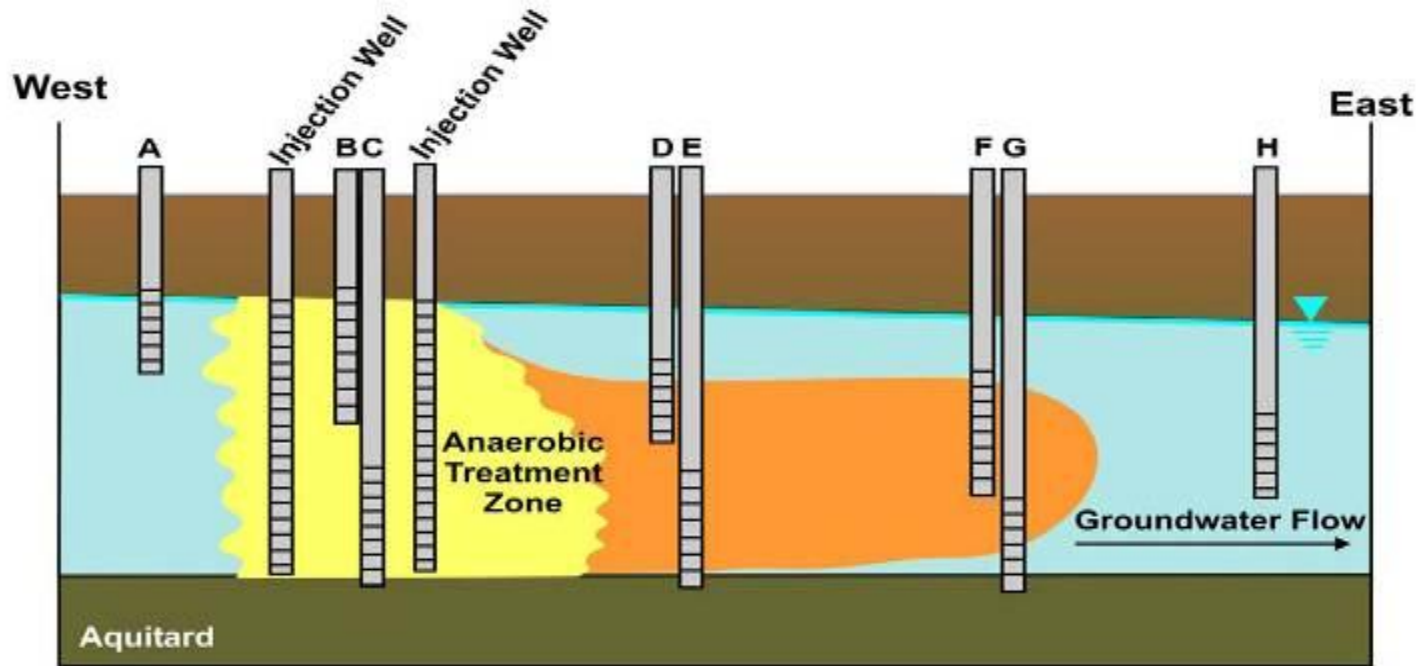
14 treatment zones at the Small Arms Range, BG04, and BG05 plumes

8 treatment zones at the Pride Hangar/ South Docks Main plume

14 treatment zones at the OU-1, OU-2, and OU-4 plumes.



Performance Monitoring



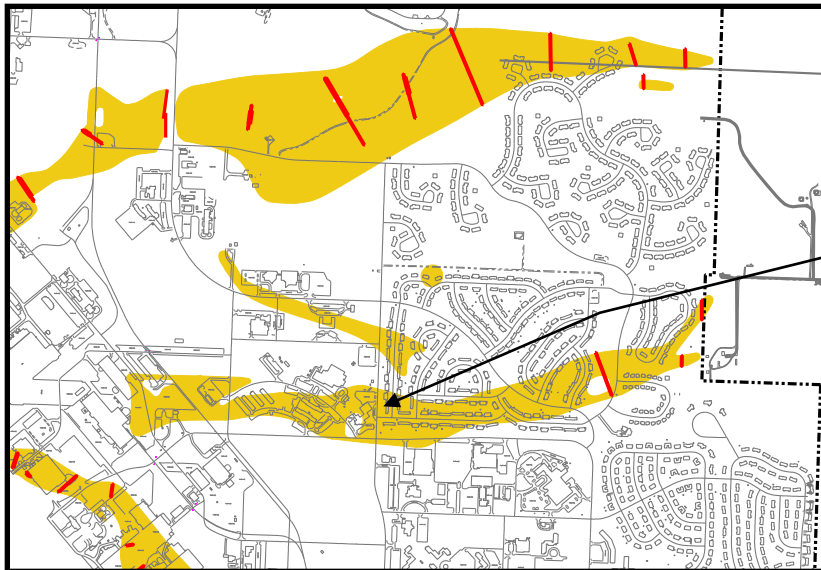
- Testing all 36 in-situ reductive treatment zones using 54 wells.
- In general, monitoring shows reducing conditions and reductions in TCE concentrations.
- The need for follow-up injections will be based on performance monitoring and additional testing along plume cores being done this summer.



Twining-Risner Plume

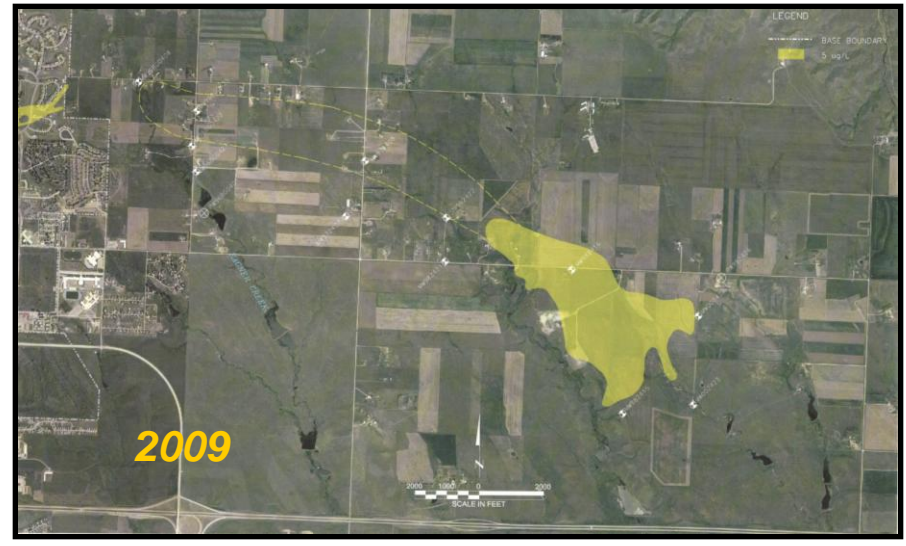
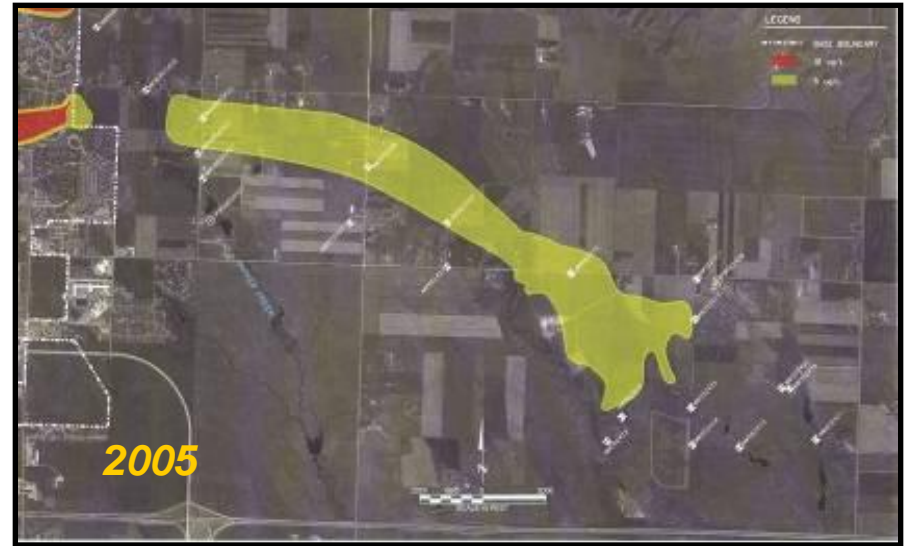
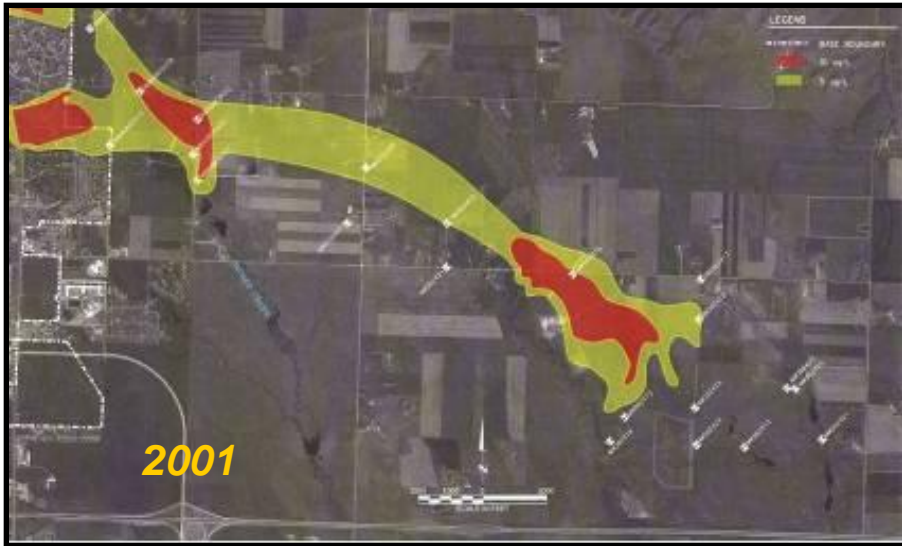


Collecting samples

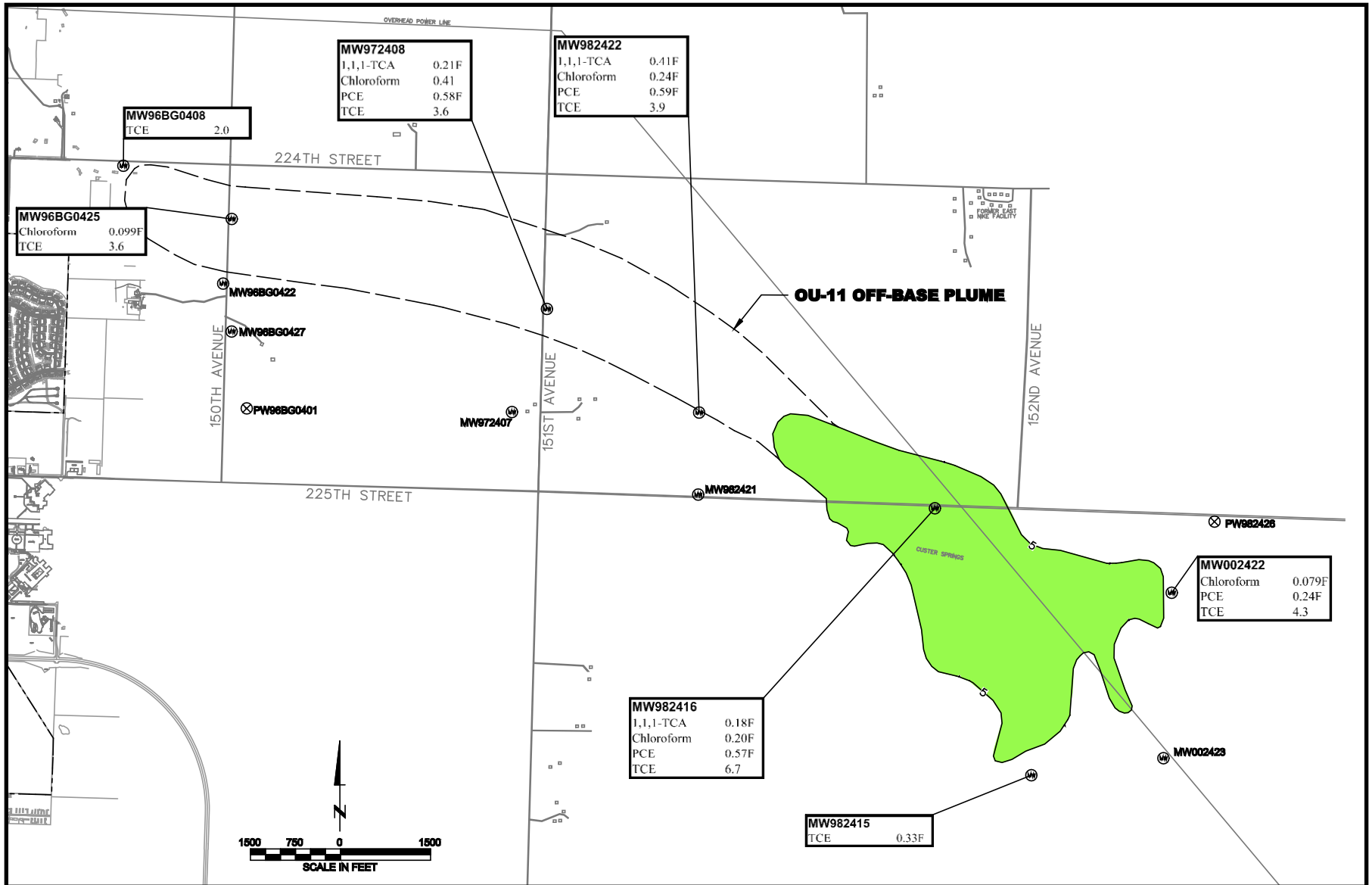


- Approximately 100 groundwater samples have been collected over the past two years.
- Plume originates at location of former runway and taxiway, migrates easterly, and co-mingles with BG05 plume, which is one of the sources of the off-Base plume.
- Installed 3 performance monitoring wells.
- Plans for this summer:
 - Inject in-situ treatment zones at several locations within the plume
 - Monitor performance.

Off-Base Plume Maps (2001 – 2009)

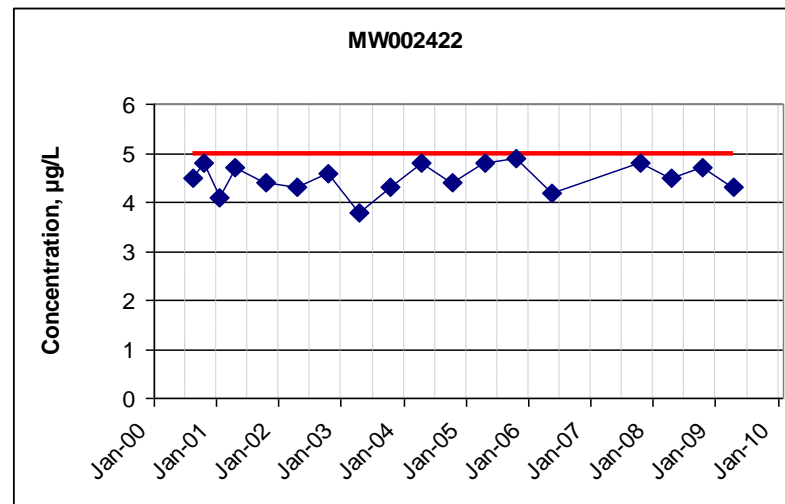
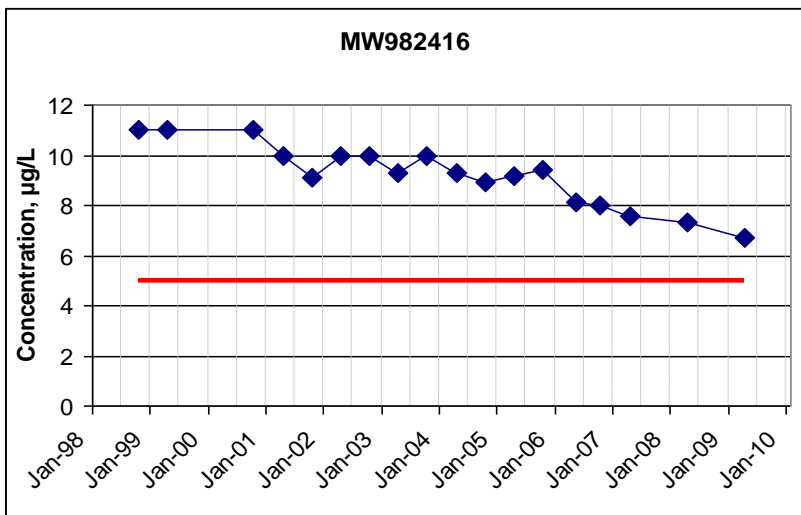
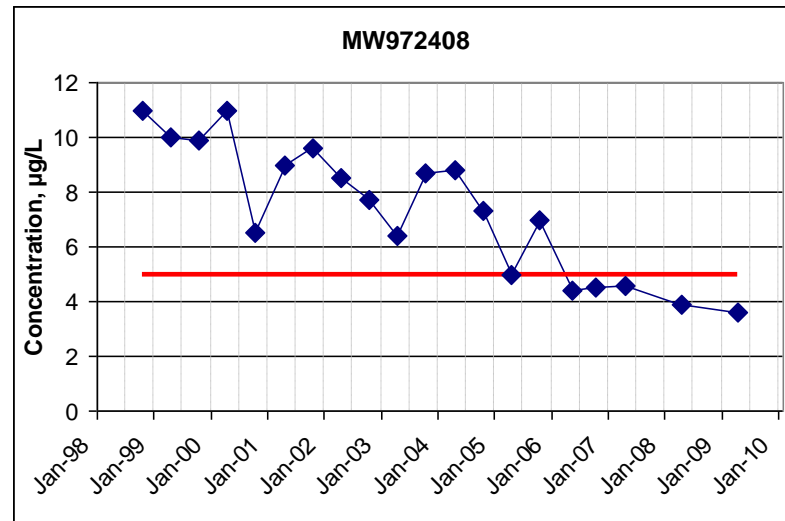
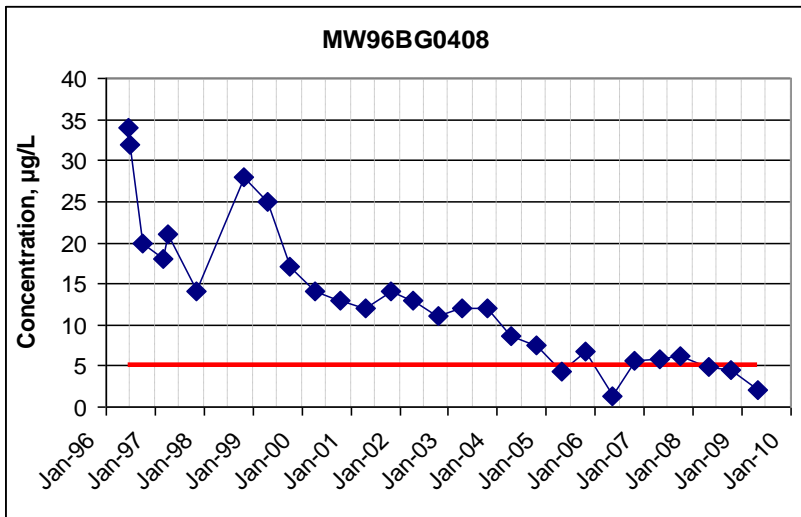


Off-Base Plume Map – April 2009



TCE Trends in Off-Base Wells

Upgradient Northwest

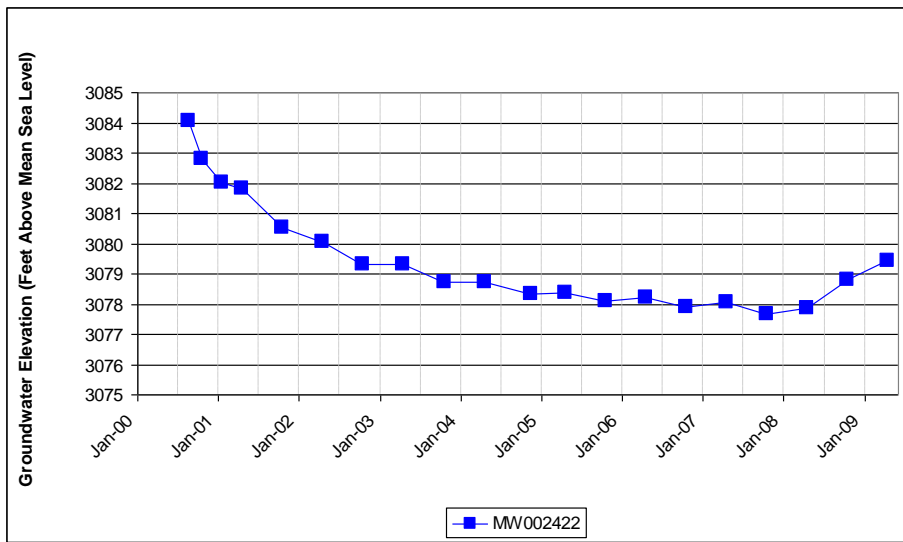
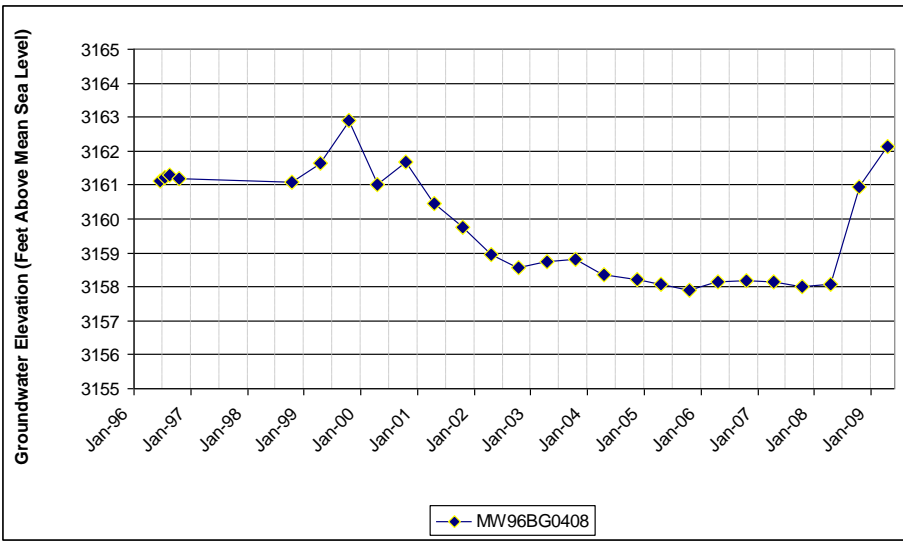


Downgradient Southeast



Water Level Trends in Off-Base Wells

MW96BG0408
Located 1/4 mile east of
Base boundary



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



Plans for Upcoming Year



Landfill Sites

- Continue routine inspection and monitoring.

Petroleum Release Sites

- Continue compliance monitoring at 60 Row, 80 Row, and FRA until NFA status is granted.

On-Base Chlorinated Plumes

- Continue routine performance monitoring of the 36 treatment zones and supplement existing treatment zones, as needed, based on results.
- Inject new treatment zones in Twining-Risner Plume.
- Amend the OU-11 ROD in 2010 to shut down active extraction systems.
- Continue oxygen diffusion and bioventing in OU-1 source area until next year, then amend the OU-1 ROD in 2010 to shut down active systems.

Off-Base TCE Plume

- Investigate plume to delineate current conditions.
- Perform human health risk analysis for potential non-potable groundwater use.
- Develop Exit Strategy & evaluate alternatives to accelerate beneficial re-use of groundwater.

All Operable Units

- Complete a Five-Year Review, which is a CERCLA requirement for 2010.



Off-Base Plume Investigation



Purpose: Investigate the off-Base plume to determine the current TCE concentrations throughout the off-Base plume to develop an Exit Strategy that could potentially expedite the return of groundwater for beneficial re-use by landowners.

Scope: Determine current nature and extent of contamination (up to 320 direct push samples and 15 new monitoring wells).

Assess human health risks to determine what TCE concentrations in groundwater might allow various non-potable groundwater uses in all or parts of the off-Base plume through a ROD amendment.

Develop criteria for determining plume has met MCLs and evaluate alternatives to expedite beneficial re-use of groundwater.

Schedule: Field work this year and final report next year.

What to expect:

URS will contact property owners to obtain access permission for drilling and sampling using Air Force's Right-of-Entry form.

Field work will be done in phases from June until December.

Air Force and URS will update the public at the RAB meetings.

Equipment to be used (next slide).



Equipment to be Used for Off-Base Plume Investigation



- Sizes and types of equipment will vary.
- Initial part of work will be done by direct push (two pictures at right show typical rigs).
- Monitoring wells will be installed later (picture lower left shows typical drill rig).
- We want to minimize any disruption to homeowners and their property.

