

28th Bomb Wing, Ellsworth AFB

November 8, 2011

Public Meeting Restoration Advisory Board



**This Briefing is:
UNCLASSIFIED**





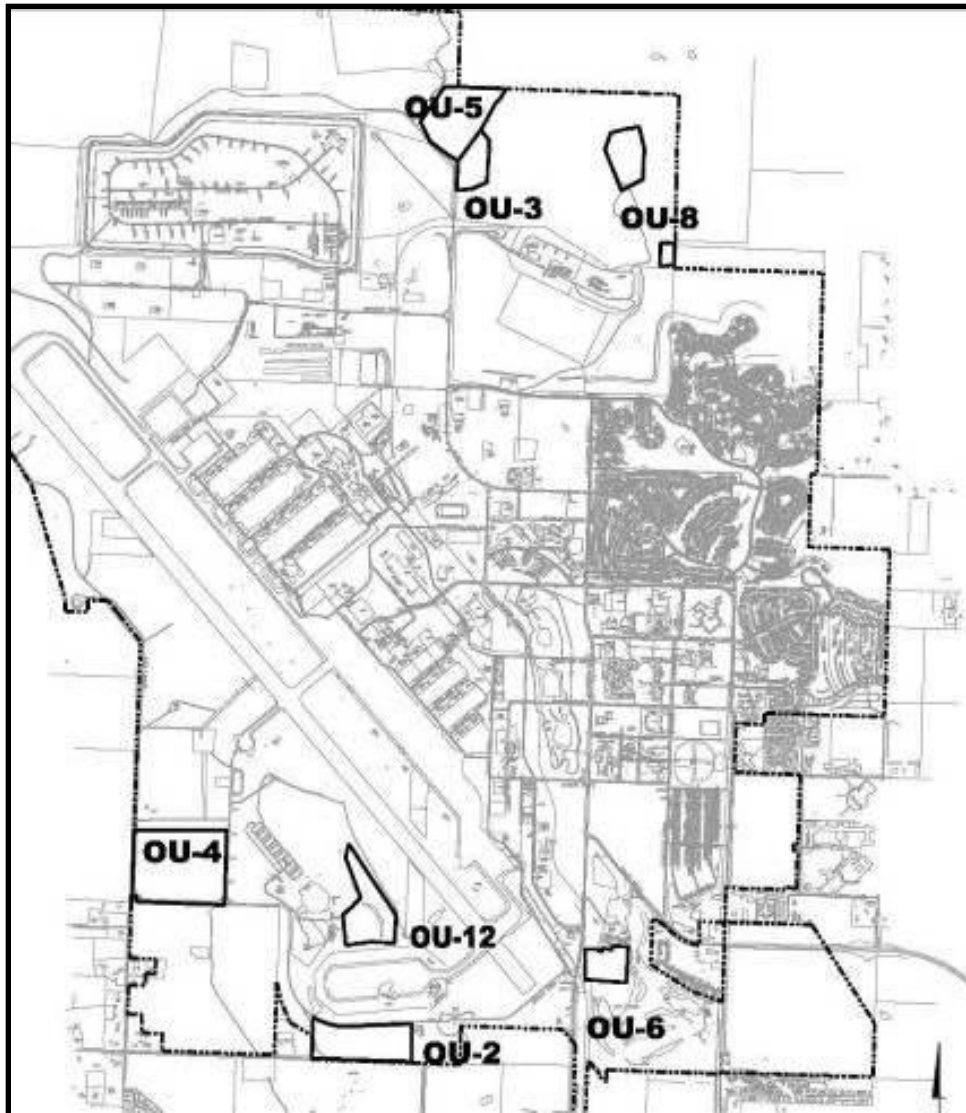
Presentation Outline



- **Status of Work**
 - Landfills
 - Petroleum Release Sites
 - Operable Unit 11 (OU-11) Basewide Groundwater
 - Exit Strategy Status for Off-Base TCE Plume
 - Partial Deletions
- **Future Plans**



Landfill Sites

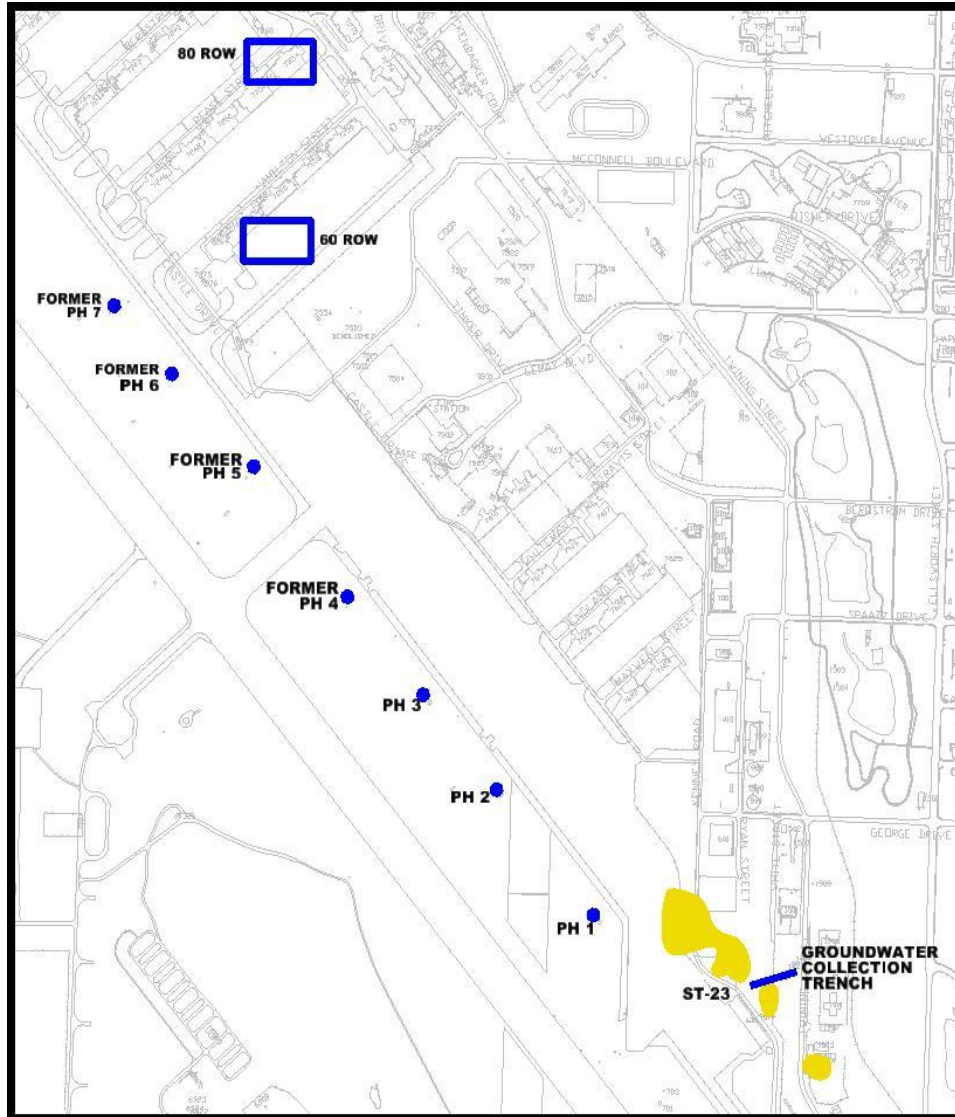


Typical Landfill (OU-8, May 2009)

- 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 (FRA) Pumphouses 1 through 7
 - ST-23
- Goal is to achieve **No Further Action (NFA)** status from South Dakota Dept. of Environment & Natural Resources (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



- 60 Row - No free product detected since 2008 and groundwater concentrations were below regulatory standards. Site granted NFA status in July 2011.
- 80 Row - No free product detected since 2009 and groundwater concentrations were either below regulatory standards or decreasing. Site granted NFA status in July 2011.



Petroleum Release Sites FRA



- There were originally 7 pumphouses, and 4 have been decommissioned.
- NFA status has been granted by SDDENR at all pumphouses except Pumphouse 5.
- Due to increasing trend of benzene at Pumphouse 5, the site was treated using dissolved oxygen in 2010 and then persulfate injection was completed in May 2011. SDDENR changed the site status from “open” to “monitoring” in July 2011 and site monitoring continues.



Petroleum Release Sites ST-23



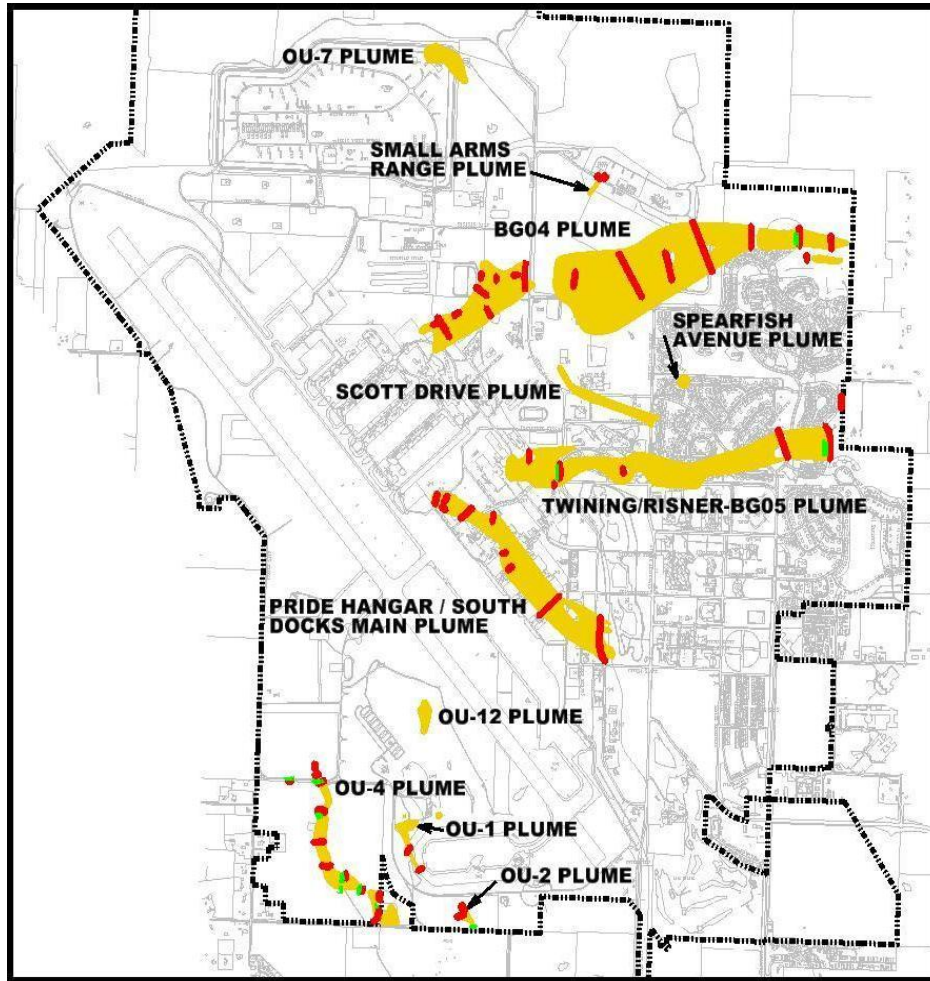
- Additional characterization was necessary because:
 - Possible presence of free product (fuel)
 - Possible bypass of groundwater contamination around the southwest end of the Groundwater Collection Trench.
 - Incomplete documentation of the nature and extent of fuel-related contamination in the area.



- Groundwater investigation was completed and a report was submitted.
- No free product was found and extent of groundwater contamination was defined.
- Four monitoring wells were installed and sampled.
- A monitoring program was developed.



OU-11 Basewide Groundwater Work Completed Since Last RAB Meeting



Installed 13 new monitoring wells (MWs) for Monitored Natural Attenuation (MNA) and Plume Monitoring

In-Situ reductive Treatment (IRT) Injection in August-September

- Reinjected 8 sites and injected 3 new sites (all shown in green).
- Continued monitoring of IRT injection zones and added monitoring at 3 new sites.

OU-1

- Operated biosparge and oxygen gas infusion systems in localized area of fuel contamination.
- Long Term Monitoring (LTM) indicates declining contaminant concentrations in groundwater.



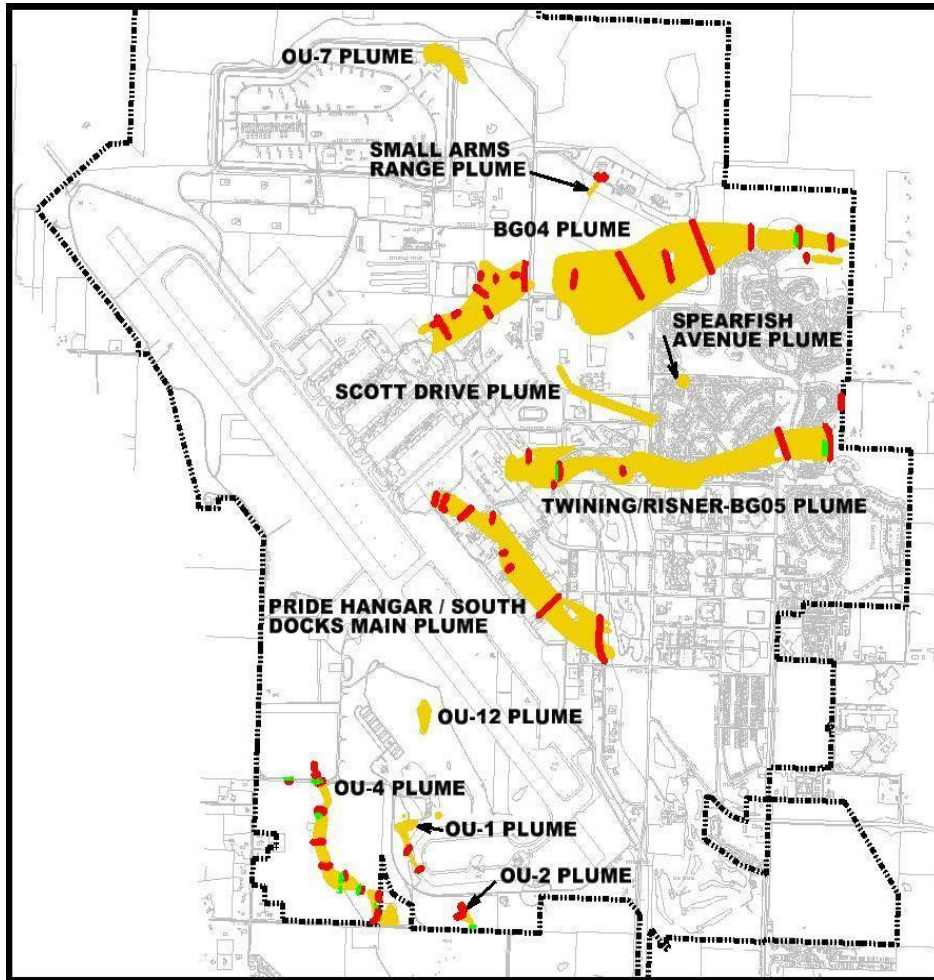
OU-11 Basewide Groundwater Record of Decision Amendment



- Ellsworth AFB 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 IRT.
- ROD Amendment process includes the following:
 - Focused Feasibility Study (April 2011).
 - Proposed Plan (June 2011) and public meeting (July 2011).
 - Public comment, no comments received.
 - ROD Amendment preparation, review and signatures (is now in the review stage and scheduled for completion by end of November).



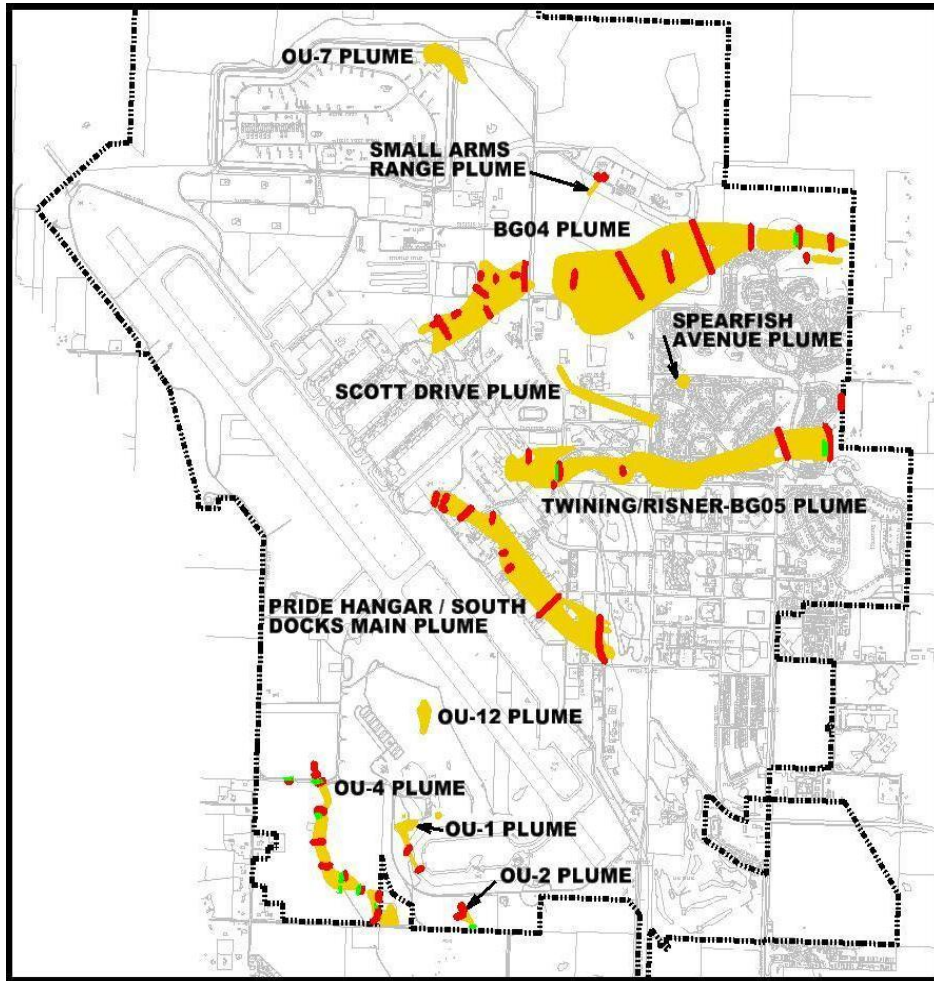
OU-11 Basewide Groundwater Proposed Plan, In-situ Reductive Treatment



- Monitor and maintain 39 passive IRT zones that have been injected into 8 plumes over the past 4 years.
- Collect samples from performance monitoring wells to ensure adequate performance.
- 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, MNA



- Implemented 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 trichloroethene (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.



Off-Base Plume Exit Strategy



Final Exit Strategy Report completed October 2010.

The process to allow non-potable use of groundwater is in place via changes to Memorandums of Agreement (MOAs) and two MOAs have been signed to date.

The Air Force will continue to monitor the off-Base plume:

- Monitoring consists of tracking contaminant trends in 30 wells under an annual monitoring program.
- Exit Strategy requires the following decision process for each of the 30 wells:
 - Minimum 4 years of annual sampling starting in 2010.
 - Stable or declining contaminant trend in each well based on statistical analysis (Mann-Kendall test).
 - Chemical concentrations below Maximum Contaminant Levels (MCLs) for three consecutive years. Main contaminant is TCE with MCL of 5 µg/L (ppb).
 - When above criteria are met, stop annual sampling then sample at next Five-Year Review (2015, 2020, etc.)
 - When all 30 wells are below MCLs, sample all 30 wells one more time.
 - Continue sampling if any well above MCLs or recommend delisting if all below MCLs.
- Report status at future public meetings.



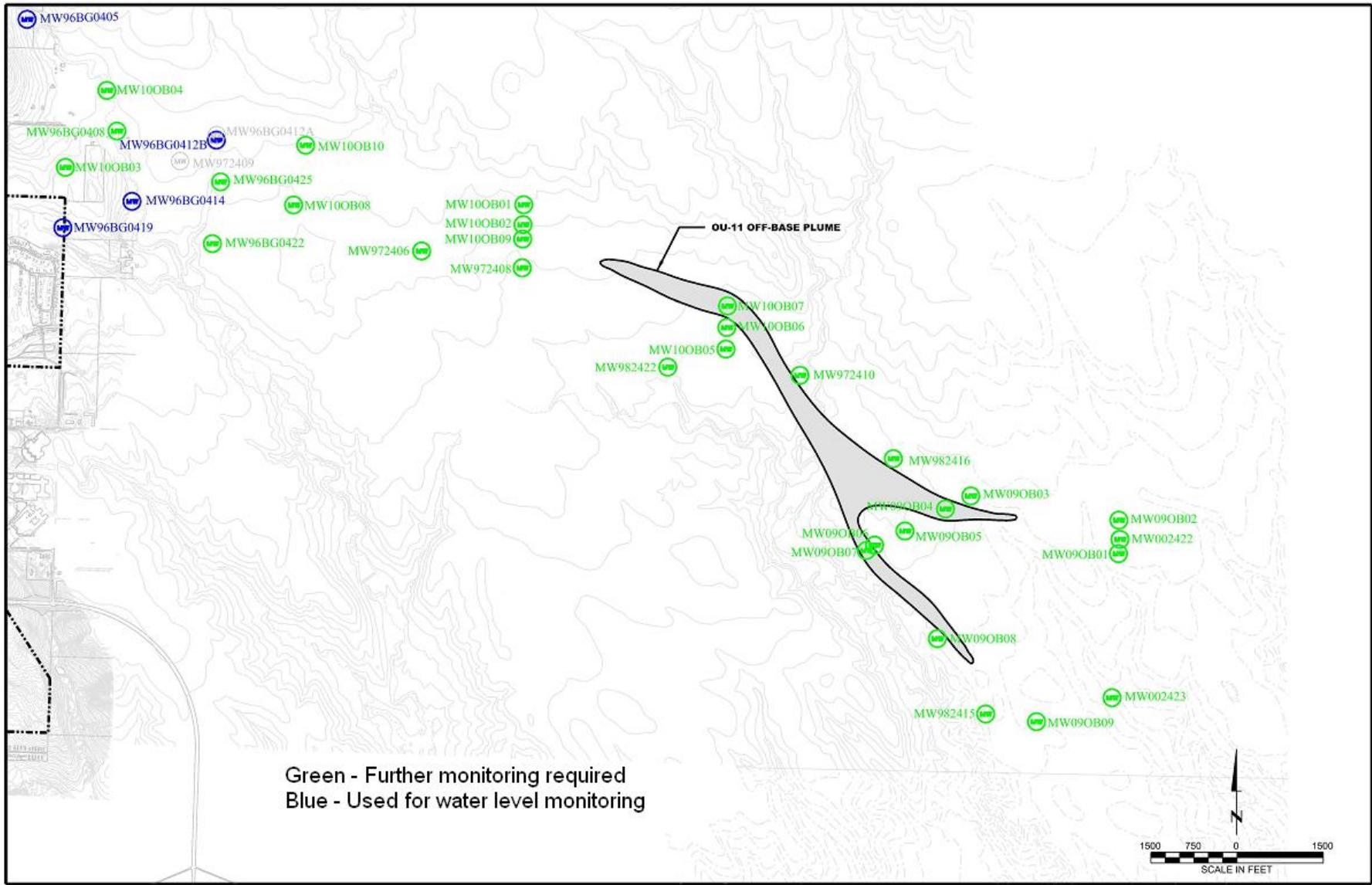
Off-Base Plume Exit Strategy Status



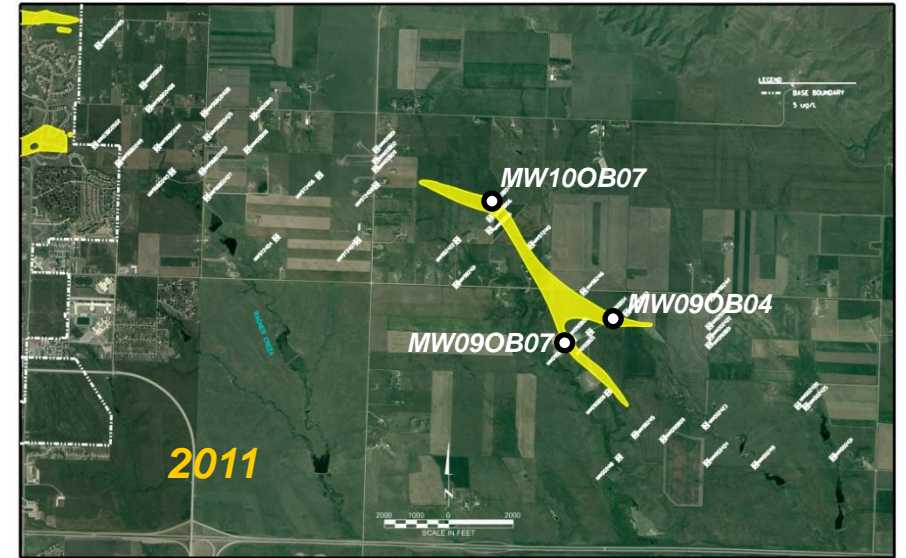
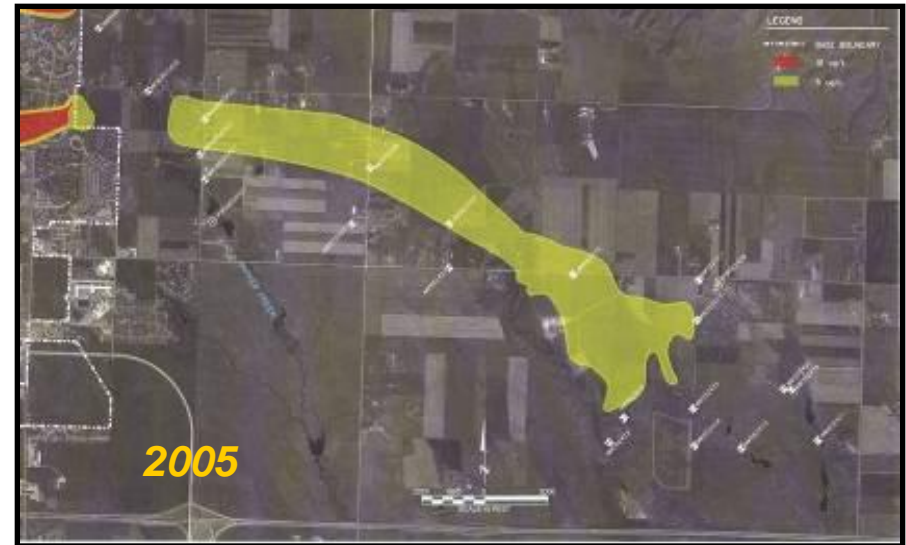
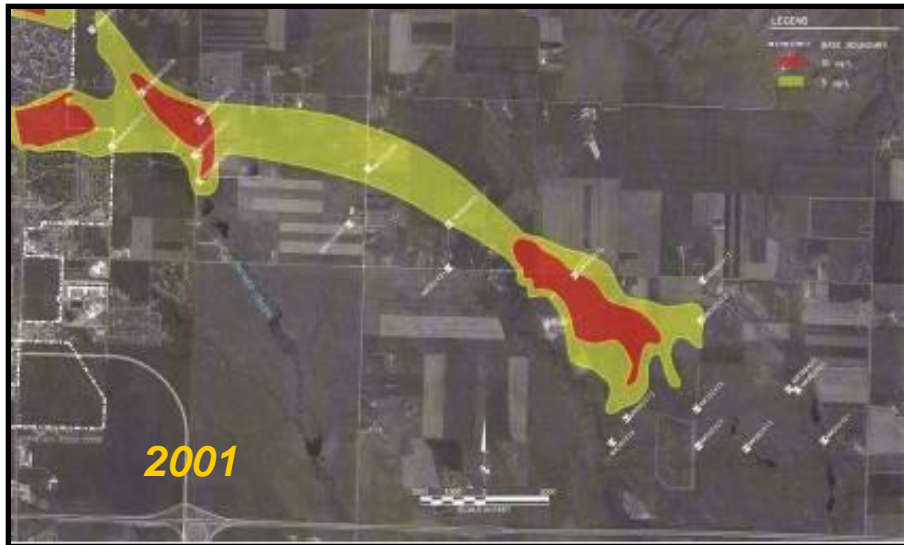
- April 2011 sample results indicated 27 of the 30 wells were below MCLs.
- For the three wells at or above MCLs, they were sampled for the second time in April 2011 so a minimum of three additional years of monitoring is required.
- Further monitoring is required for 30 of the monitoring wells.
- Status for all wells shown on next slide.



Off-Base Monitoring Well Status April 2011



Off-Base Plume Trend of Attenuation 2001 – 2011





Partial Deletions

- All unsaturated soil (vadose zone) at Ellsworth AFB was deleted from the National Priorities List in 2006, except for three areas:
 - Pride Hangar Area of Concern
 - Gateway Lake Ash Area of Concern
 - OU-1 vadose zone soil
- Additional work at these sites completed in past year:
 - Submittal of a technical report containing results for 14 vadose zone soil samples collected at the Pride Hangar.
 - Submittal of a technical memorandum summarizing a review of Gateway Lake Ash removal action records.
 - Continued remedial actions at OU-1.
- All three areas are in the process of partial deletion by an Environmental Protection Agency (EPA) process called Notice of Intent to Partially Delete (NOIPD).
- The NOIPD is expected to be completed by December 2011.



Future Plans



Landfill Sites

- Continue routine inspection and monitoring.

Petroleum Release Sites

- Continue monitoring Pumphouse 5 site in the FRA.
- Continue monitoring ST-23 site.

On-Base Actions

- Continue performance monitoring of the 39 treatment zones and supplement existing treatment zones, as needed, based on results.
- Implement revised LTM program to include 13 newly installed monitoring wells to monitor IRT and MNA.
- Abandon wells that are no longer needed (in progress).
- Complete the OU-11 ROD Amendment in November 2011 (in progress).
- Complete partial deletions (NOIPD) by December 2011 (in progress).



Future Plans - continued



Off-Base Groundwater

- Follow the new ESD which allows non-potable use of groundwater, and continue to update MOAs when requested by landowners.
- Follow the Exit Strategy and continue monitoring the plume, abandon wells no longer needed.
- Report the Exit Strategy status at future public meetings.
- Continue to send out semi-annual newsletters.