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*Win the Fight - Strengthen the Team - Prepare for the Future*

# **Restoration Advisory Board**

**13 September 2017**

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Ellsworth Remedial Program Manager

*Prepare for the Future*

***Purpose:** Update the Public on the Status of Ellsworth's  
Environmental Restoration Program*



# Presentation Outline

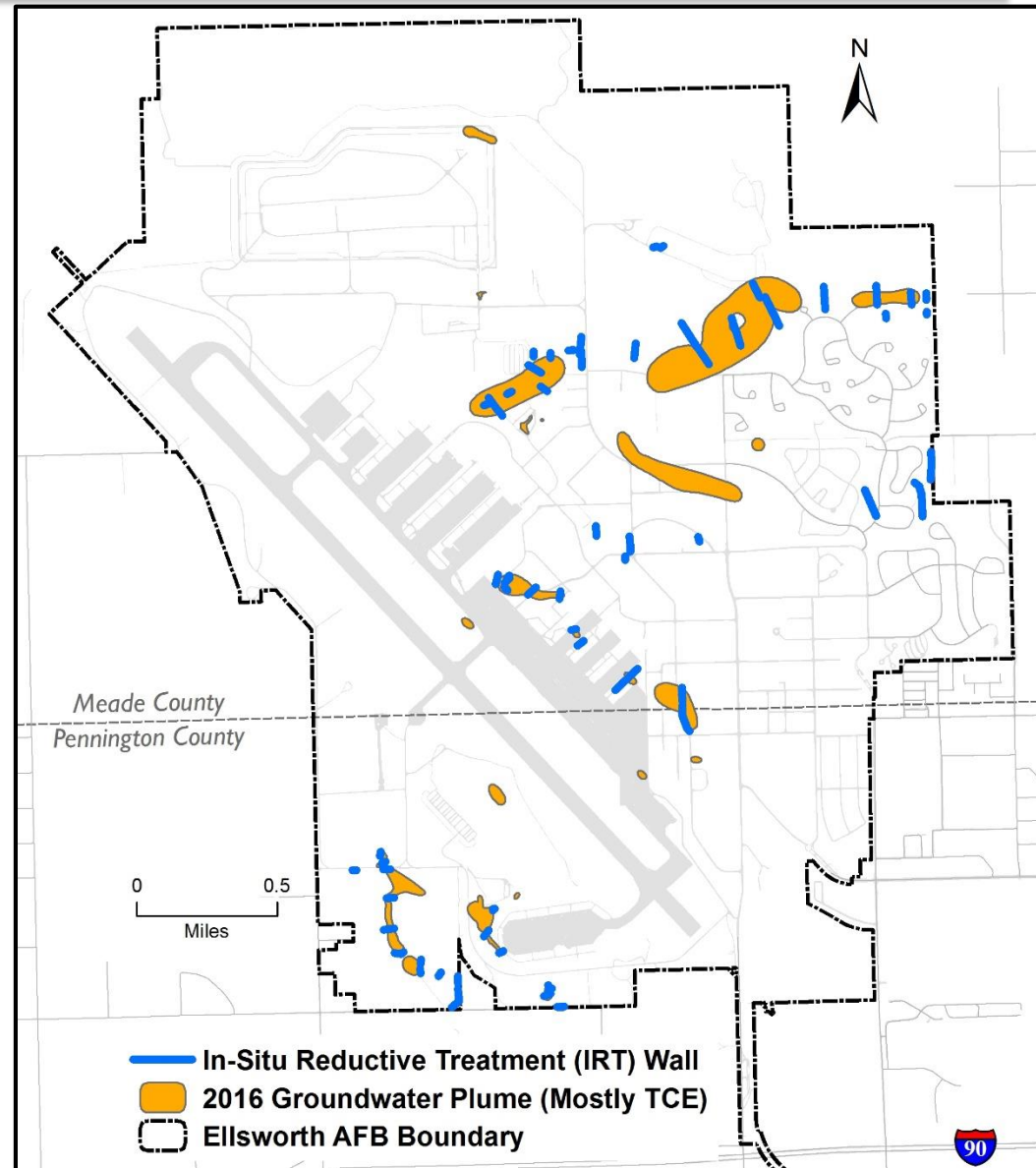
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- Basewide Groundwater
- East Off-Base Groundwater
- Status of Former Compliance Restoration Program Sites
- Upcoming Field Work
- RW028 Low Level Radioactive Waste Burial Site
- Military Munitions Response Program (MMRP) Site  
MB962 Remedial Investigation
- Perfluorinated Compounds (PFCs)
- Future Plans



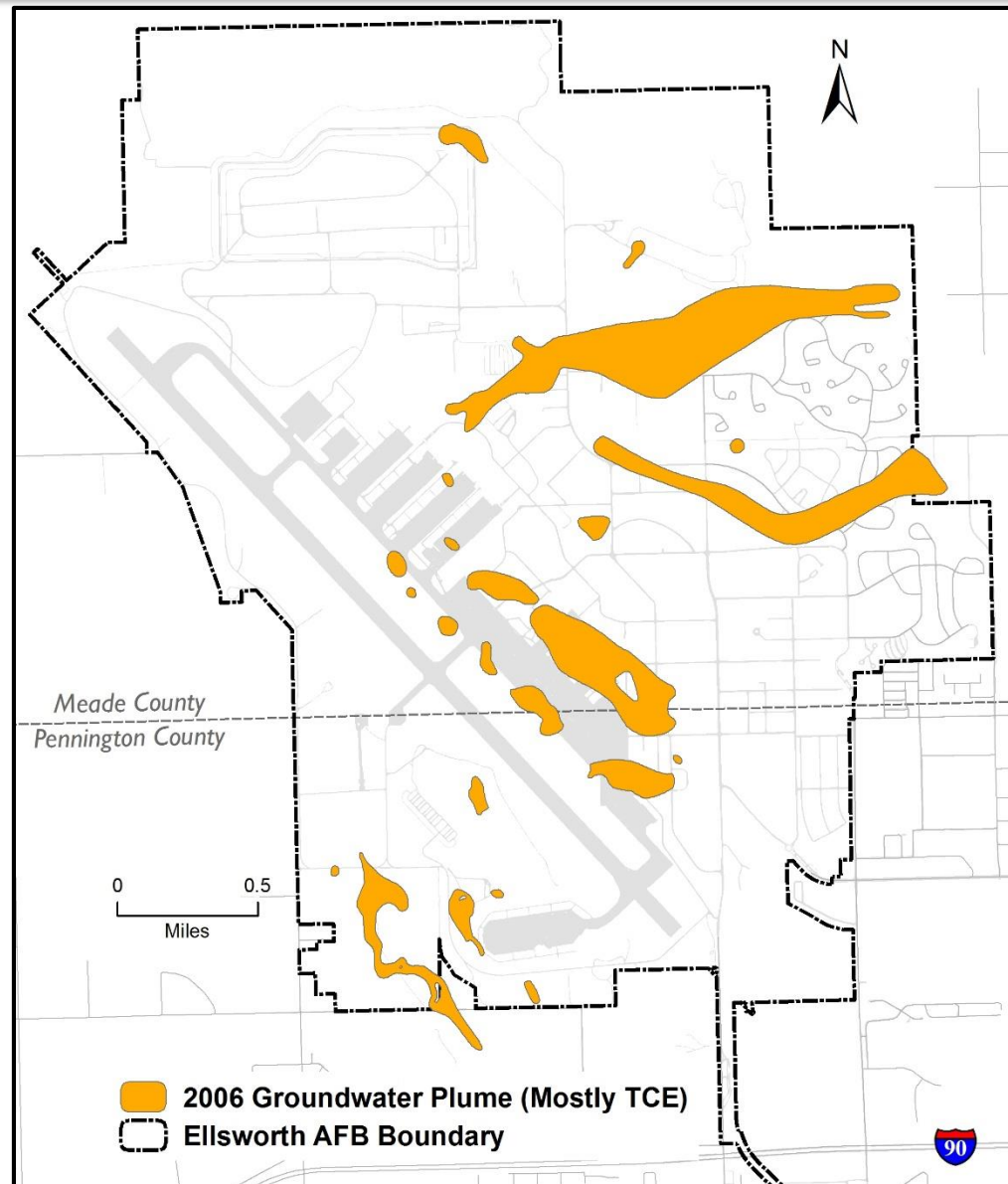
# Basewide Groundwater (Mostly TCE)

- Record of Decision (ROD) Amendment signed in February 2012, allowed shut down of pump and treat systems
- Current remedy for Basewide Groundwater is in-situ reductive treatment (IRT) and monitored natural attenuation (MNA)
  - Underperforming IRT zones reinjected as needed
  - Pump and treat systems maintained as a backup option if needed



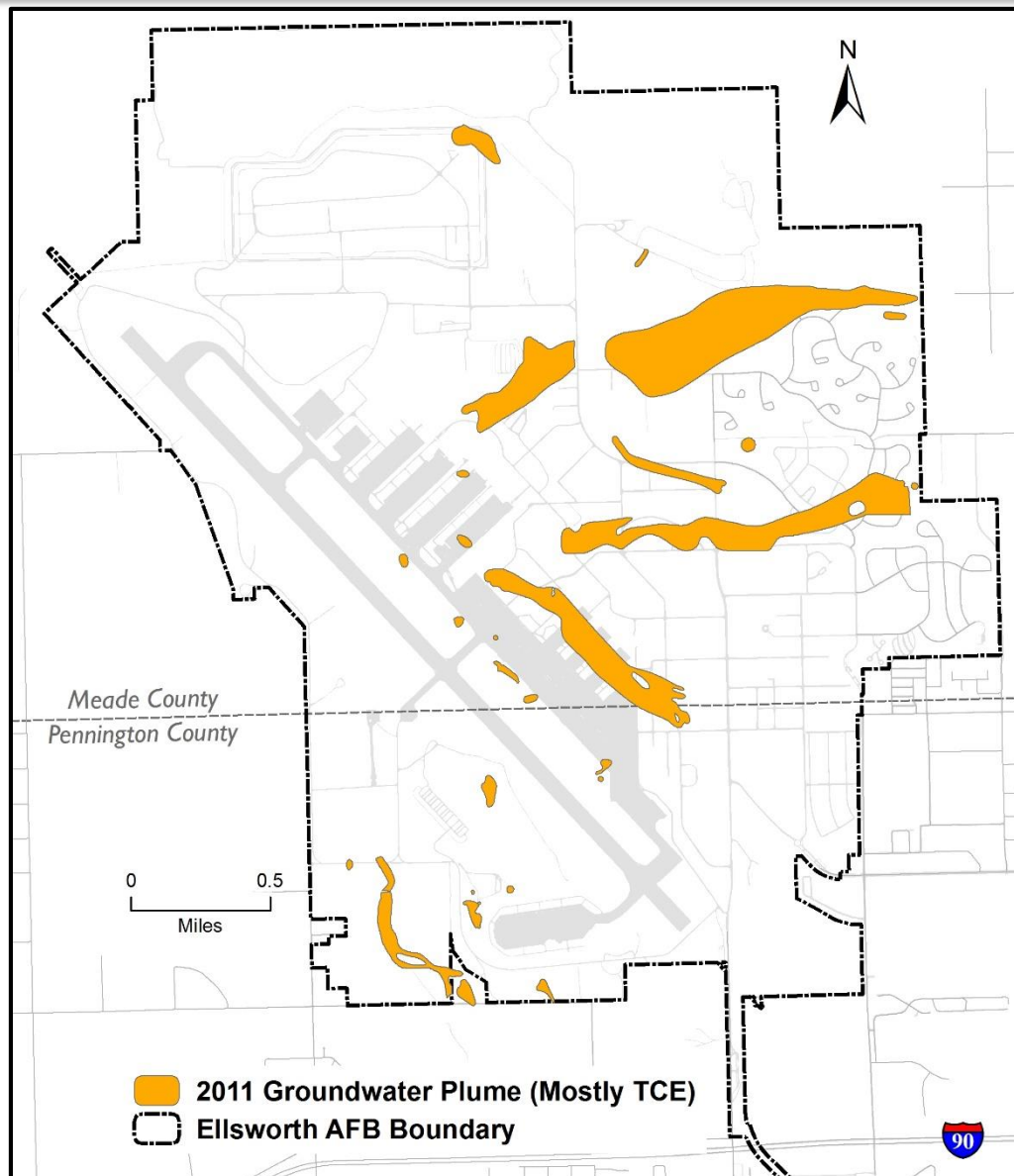


# Basewide Groundwater (TCE) Plumes in 2006



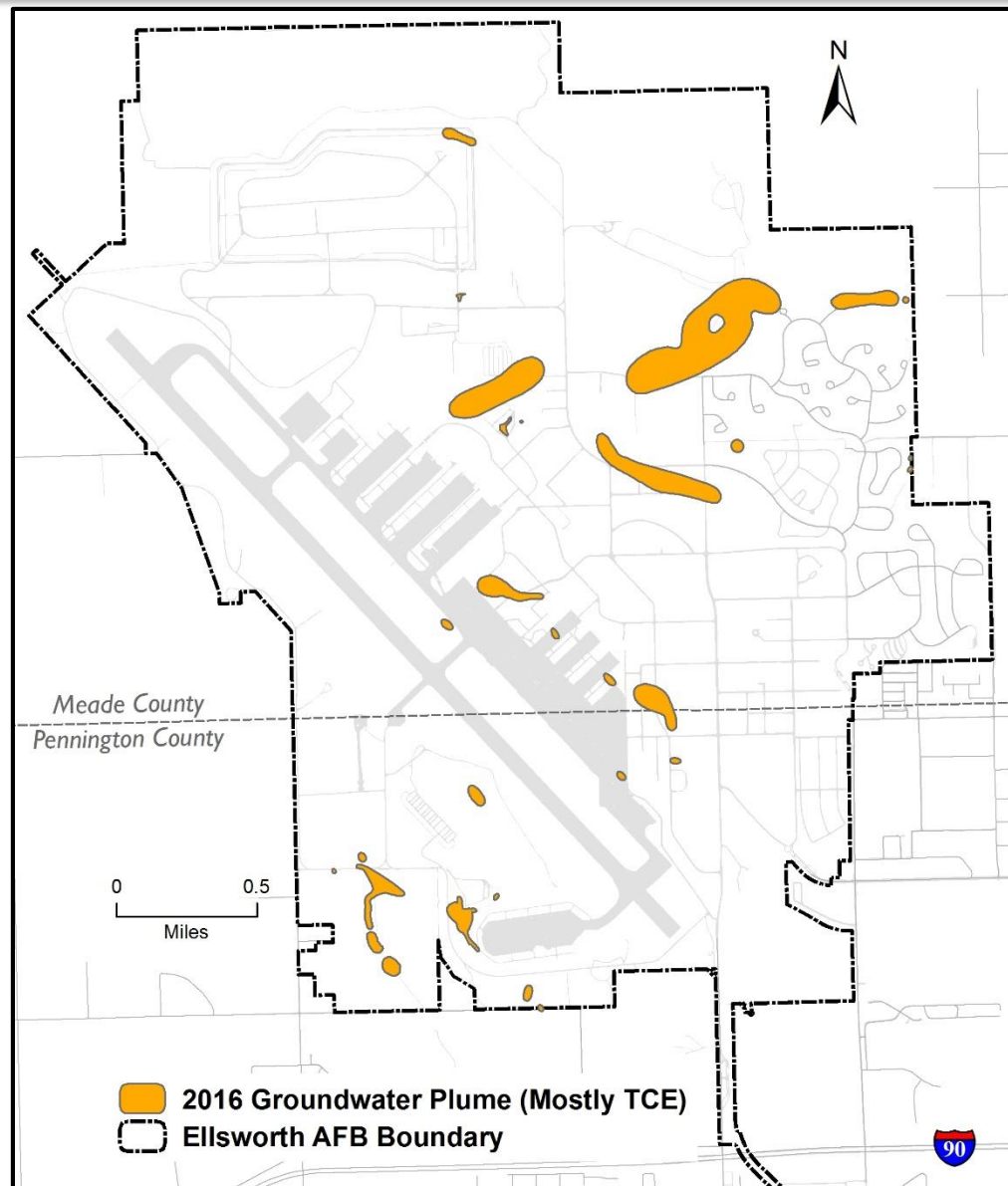


# Basewide Groundwater (TCE) Plumes in 2011





# Basewide Groundwater (TCE) Plumes in 2016





# Basewide Groundwater (TCE)

## 2017 IRT Injections

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- IRT injection in late 2017, RAWP – Addendum 9 & SS501 (Spill Site 88408)
- New sites to include:
  - SDM-IRT5
  - SS501 (Spill Site 88408)
- Reinjection sites include:
  - OU2-IRT1, OU2-IRT2
  - SDM-IRT1Ext
  - PH-IRT2
  - BG04-IRT10, BG04-IRT11
  - BG05-IRT3Ext





# 2017 IRT Injection



SS501

PH-IRT2

BG04-IRT10

BG04-IRT11

BG05-IRT3Ext

SDM-IRT1Ext

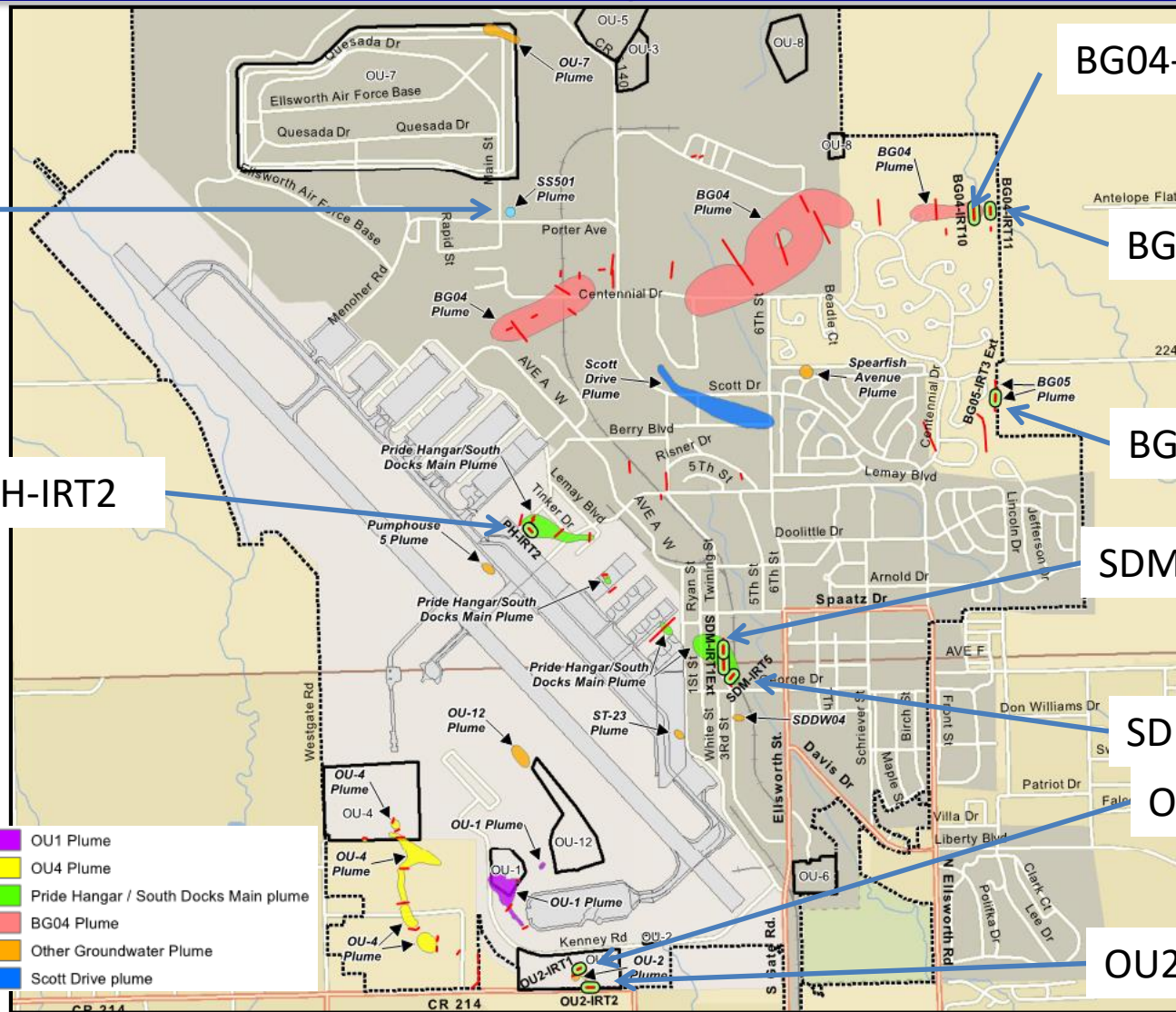
SDM-IRT5

OU2-IRT1

OU2-IRT2

- IRT Wall in Service
- IRT Wall Selected for Injection
- Major Roads
- Local Traffic
- Operable Unit Boundary
- Installation Boundary

- OU1 Plume
- OU4 Plume
- Pride Hangar / South Docks Main plume
- BG04 Plume
- Other Groundwater Plume
- Scott Drive plume







# East Off-Base Groundwater 2016 – 2017 Results

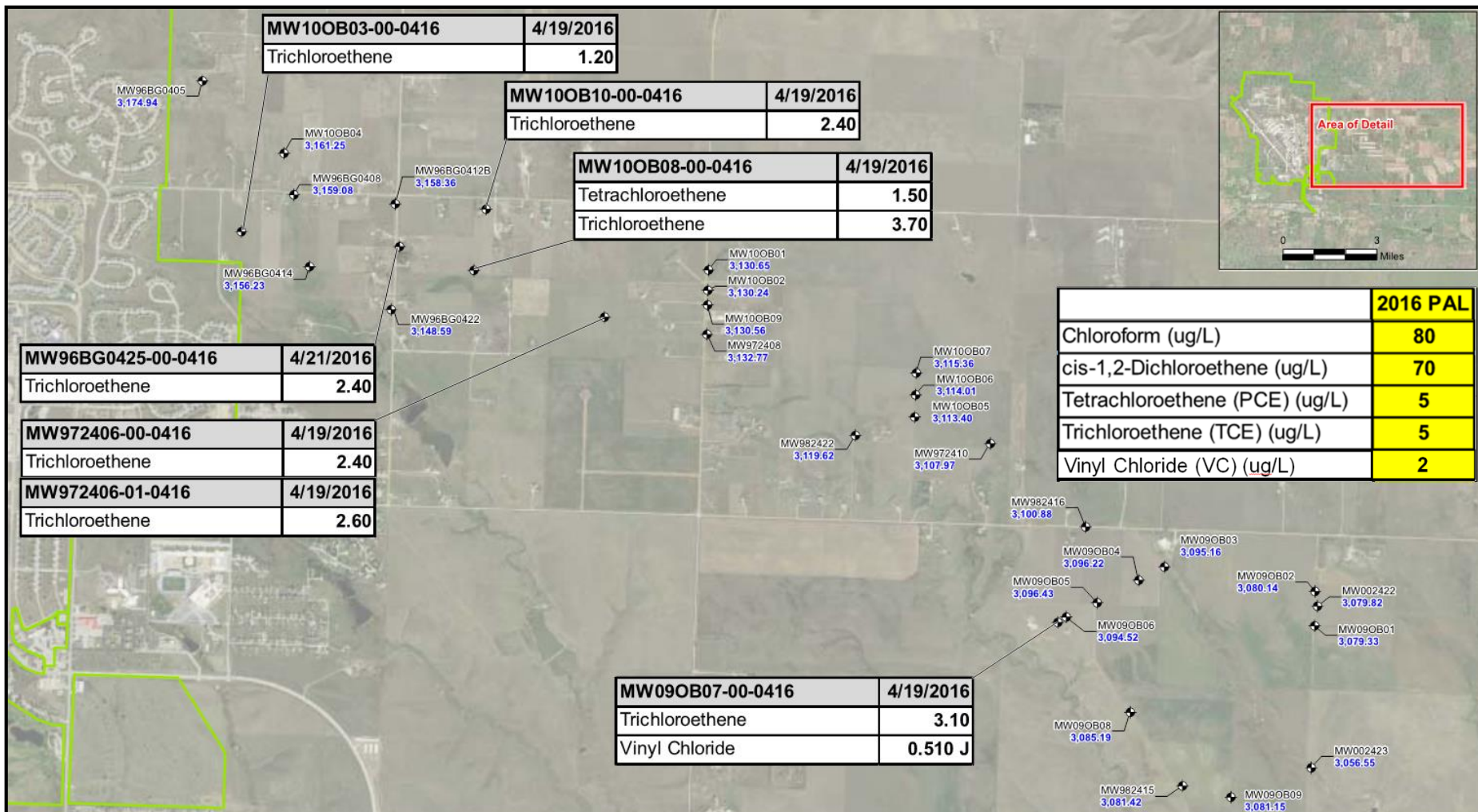
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- Six wells sampled in 2016 and three wells in 2017
- Followed Exit Strategy with professional judgment
- Two wells sampled due to TCE concentration above MCL in 2014 (MCL for TCE is 5 ug/L)
- Other wells sampled due to increasing TCE concentrations or regulatory concerns as TCE concentration was near MCL
- **TCE results below MCL for all wells in 2016 & 2017!**

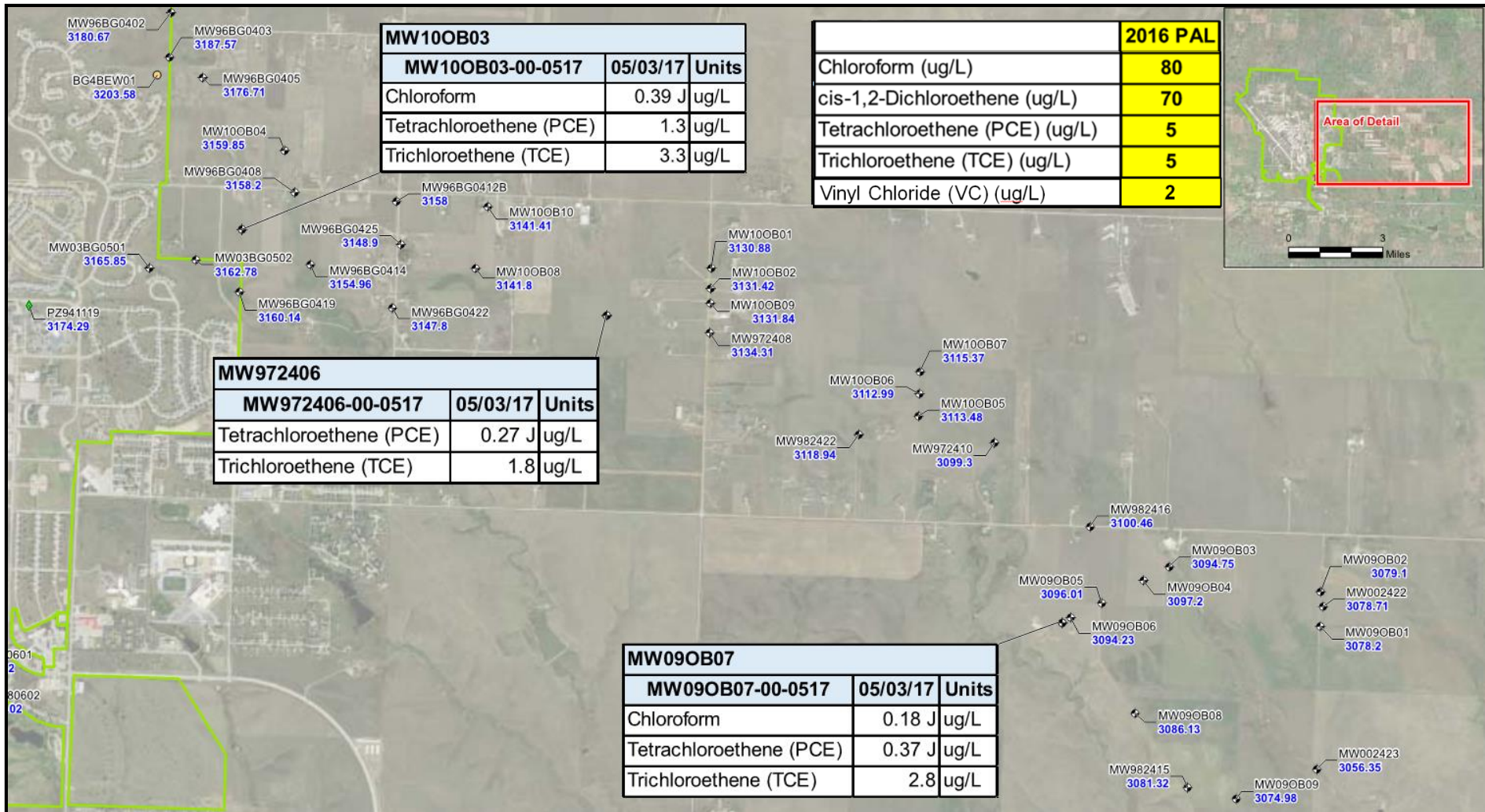


# East Off-Base Groundwater 2016 Results





# East Off-Base Groundwater 2017 Results





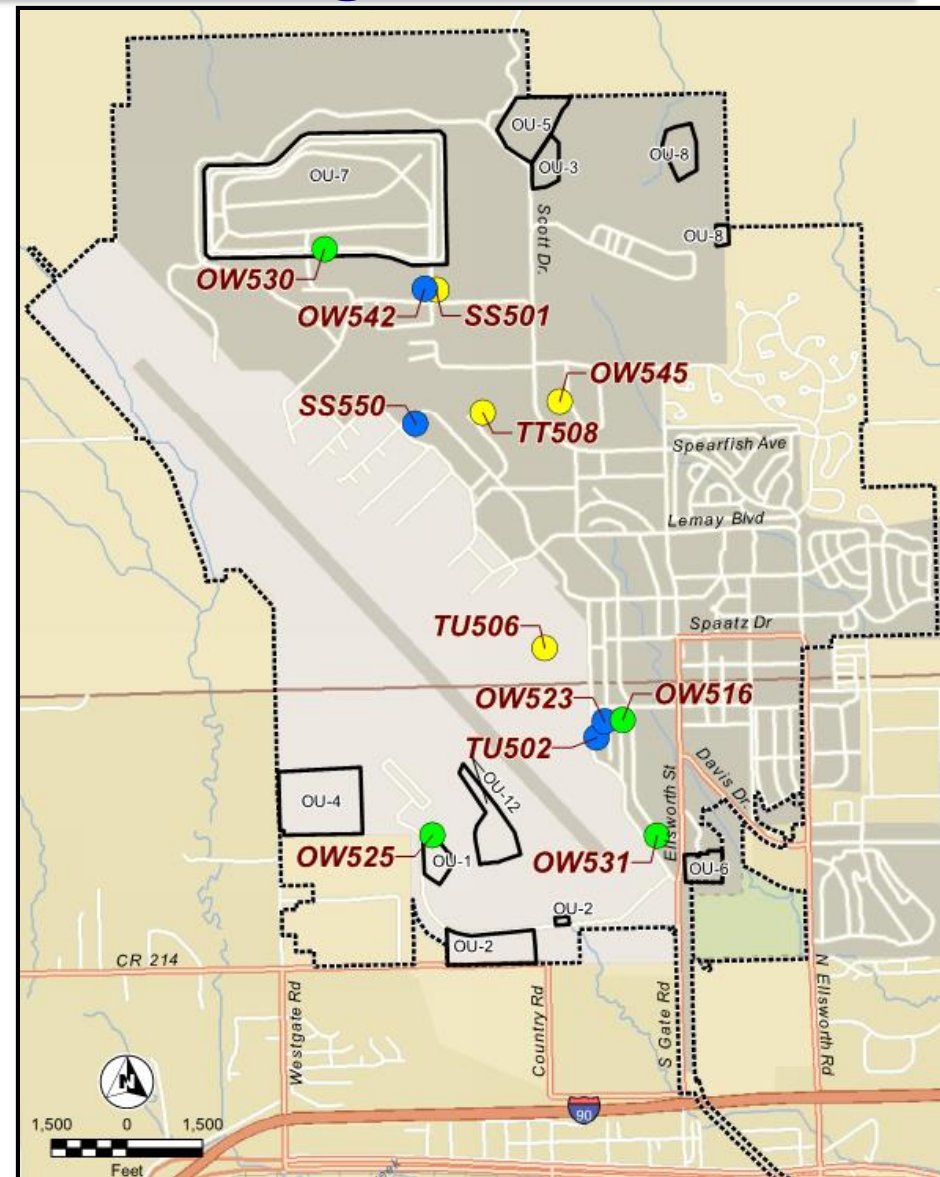


# Status of Former



## Compliance Restoration Program Sites

- Closed 2015 to 2017 ●
  - TU502 (UST Site 605)
  - OW523 (OWS 601)
  - OW542 (OWS 88409)
  - SS550 (Building 7253 JP-8 Spill)
- Final reports under review ●
  - OW516 (OWS 1500)
  - OW525 (OWS 6909)
  - OW530 (OWS 88240)
  - OW531 (OWS 1709)
- Additional field work ●
  - OW545 (OWS 8115)
  - TT508 (Fuels Area D)
  - TU506 (UST Site 7618)
  - SS501 (Spill Site 88408)





# Upcoming Field Work

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- RAWP – Addendum 9 and SS501 (Spill Site 88408) IRT Injections
- TT508 (Fuels Area D) and TU506 (UST Site 7618) Injections
- RW028 Low Level Radioactive Waste Burial Site Removal Action and Investigation
- Complete Remedial Investigation for PFCs at the former fire training area
- Basewide Site Inspection for PFCs

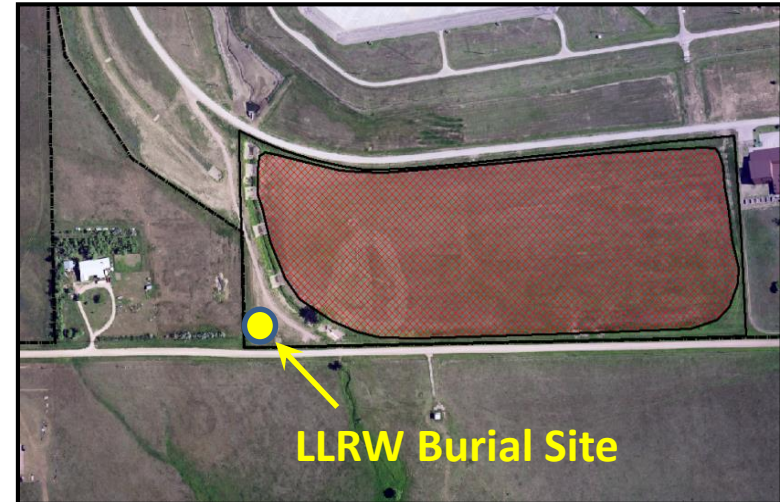


# RW028



## Low Level Radioactive Waste Burial Site

- 1997 Removal Action
  - Two concrete burial monoliths presumed to contain Low-Level Radioactive Waste
  - Chemical Agent Identification Sets (training aids)
  - No soil contamination
- 2011 Geophysical Investigation identified one and potentially a second concrete burial monolith
- Removal Action planned for Fall 2017
  - Excavate the area of two potential concrete burial monoliths
  - Chemical Agents are not anticipated but a safety plan will be in place
  - Investigate other geophysical anomalies over 0.75 acre area





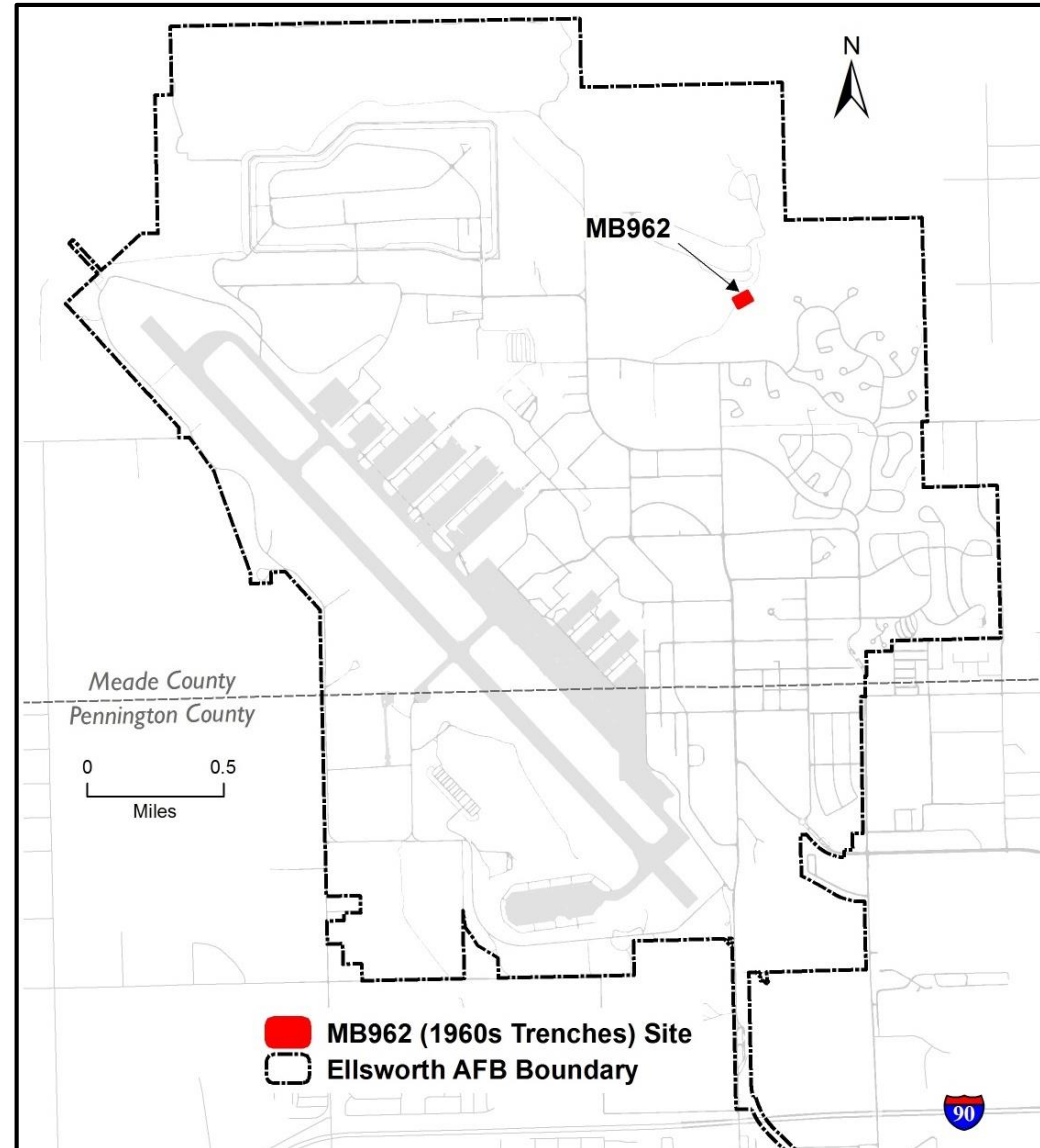


# Military Munitions Response Program

## Jet-Assisted Take-Off Bottle Site MB962



- Upcoming remedial investigation of Site MB962
  - Burial trenches visible in 1960s era photograph
  - Nine empty jet-assisted takeoff (JATO) bottles were removed in 2004





# Perfluorinated Compounds (PFCs)

## ➤ Man-made chemicals found in commonly used products

- Fire fighting foam
- Nonstick cookware (Teflon)
- Stain-resistant fabric/carpet
- Some food packaging

## ➤ In 1970, the Air Force began using aqueous film forming foam, or AFFF



## ➤ Two PFCs have Health Advisories for Drinking Water

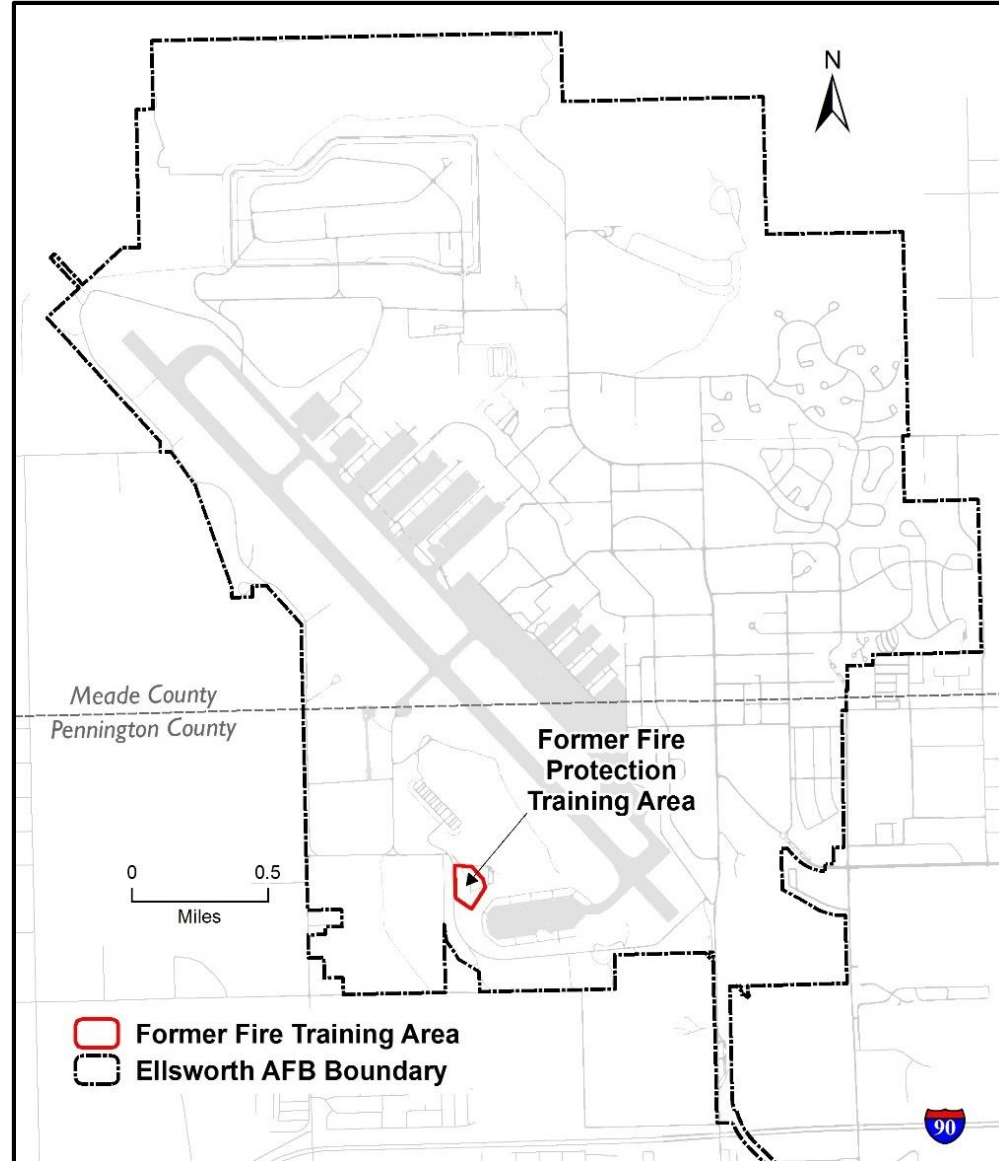
- Perfluorooctane Sulfonate (PFOS)
- Perfluorooctanoic acid (PFOA)

## ➤ On May 19, 2016, the Environmental Protection Agency established lifetime health advisory levels of 70 parts per trillion for PFOS and PFOA (combined)



# PFCs – Remedial Investigation

- PFOS and PFOA were first detected in soil and groundwater in 2012 at the former fire training area
  - Stage 1 of the Remedial Investigation was completed in 2016
  - Upcoming Stage 2 will delineate the extent of the affected area



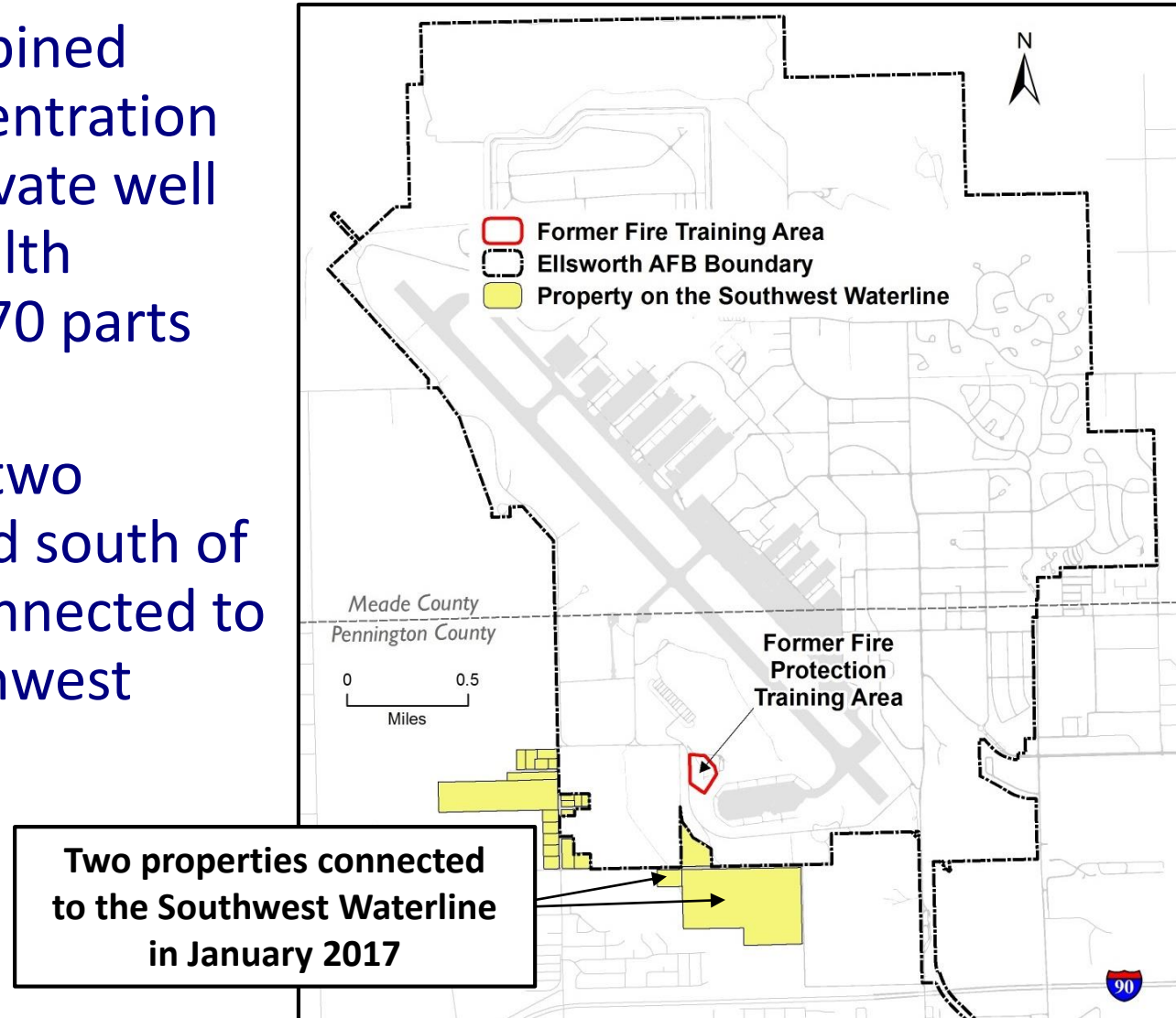


# PFCs – Rapid Response

## New Waterline Hookups



- In 2016, the combined PFOS/PFOA concentration at an off-base private well exceeded the health advisory level of 70 parts per trillion
- In January 2017, two properties located south of the base were connected to the existing Southwest Waterline





# PFCs – Rapid Response

## Sample Activities South of the Base






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- Samples collected May-June 2017
  - Soil
  - Sediment
  - Groundwater
  - Surface water
- All soil and sediment sample results are below screening levels
- PFOS and PFOA were detected in groundwater and surface water
  - Highest groundwater detection (combined PFOS/PFOA) = 33,900 parts per trillion
  - Highest surface water detection (combined PFOS/PFOA) = 24,800 parts per trillion





- ### Legend
-  Existing Groundwater Well Sampling Location  
(6 Locations)
-  DPT Groundwater Sampling Locations  
(well depth 20 - 40 ft bgs)  
(13 Locations)
-  Conceptual Groundwater Flow  
model for PFOA and PFOS
-  (dashed where inferred)
-  Groundwater Flow Direction
- |        |                                      |
|--------|--------------------------------------|
| DPT    | direct-push technology               |
| EPA    | U.S. Environmental Protection Agency |
| ft bgs | feet belowground surface             |
| PFOA   | perfluorooctanoic acid               |
| PFOS   | perfluorooctanesulfonic acid         |
- Data Qualifiers:
- J Analyte positively identified, the reported  
value is estimated
- U Analyte is not detected
- Notes:
- All sample results are reported in nanograms per liter.
- Sample results greater than EPA Health Advisory Level  
are shown in red.
- Sample results less than EPA Health Advisory Level are  
shown in green.

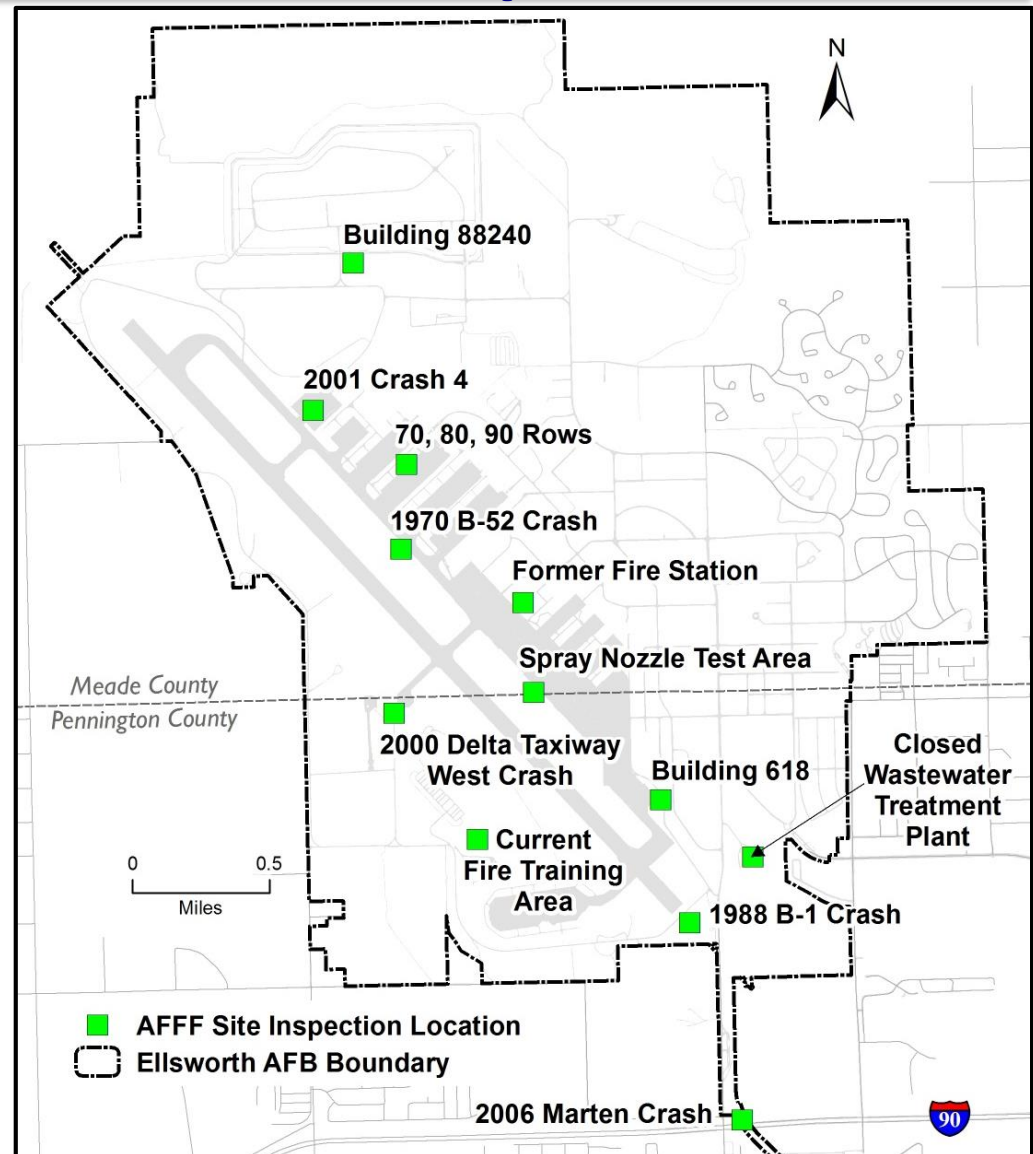




# Perfluorinated Compounds (PFCs) Upcoming Basewide Site Inspection



- 12 locations were identified for further investigation in the 2015 Preliminary Assessment
- The upcoming Basewide Site Inspection will investigate the 12 locations





# Web Based Administrative Record

- Ellsworth's administrative records are now available electronically \*
- The online database is easily accessible to the public from a computer with internet access

**<http://afcec.publicadmin-record.us.af.mil>**

\*A hard copy of the administrative record is still maintained at Ellsworth and available to the public by contacting Ellsworth AFB



# Future Plans

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- Continue with basewide groundwater monitoring program and IRT reinjections as needed
- Inject sites SS501, TT508, & TU506
- Complete RW028 LLRW Interim Removal Action and investigation
- Complete Jet Assisted Take-Off Bottle Site MB962 Remedial Investigation
- Complete Remedial Investigation for PFCs at the former fire training area
- Complete a basewide Site Inspection for PFCs



## **Future Plans - continued**

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- Complete 1,4-Dioxane Remedial Investigation
- Complete Vapor Intrusion Study
- Release the 2015 Five Year Review
- Continue to update MOAs when requested by landowners in the east off base plume
- Continue to monitor the east off-base plume using the approved Exit Strategy as a guide; all 30 wells to be sampled in 2018
- Report sample results and Exit Strategy status at future public meetings



**Questions?**