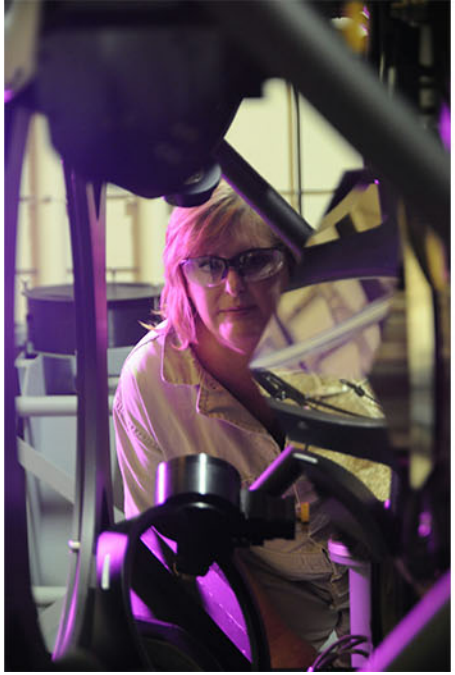


consolidated nuclear security, llc
PANTEX PLANT | Y-12 NATIONAL SECURITY COMPLEX

Long Term Stewardship Public Meeting

Tony Biggs

Manager of Environmental Programs
Consolidated Nuclear Security, LLC

Environmental Cleanup Progress

Reporting completed since July 2014

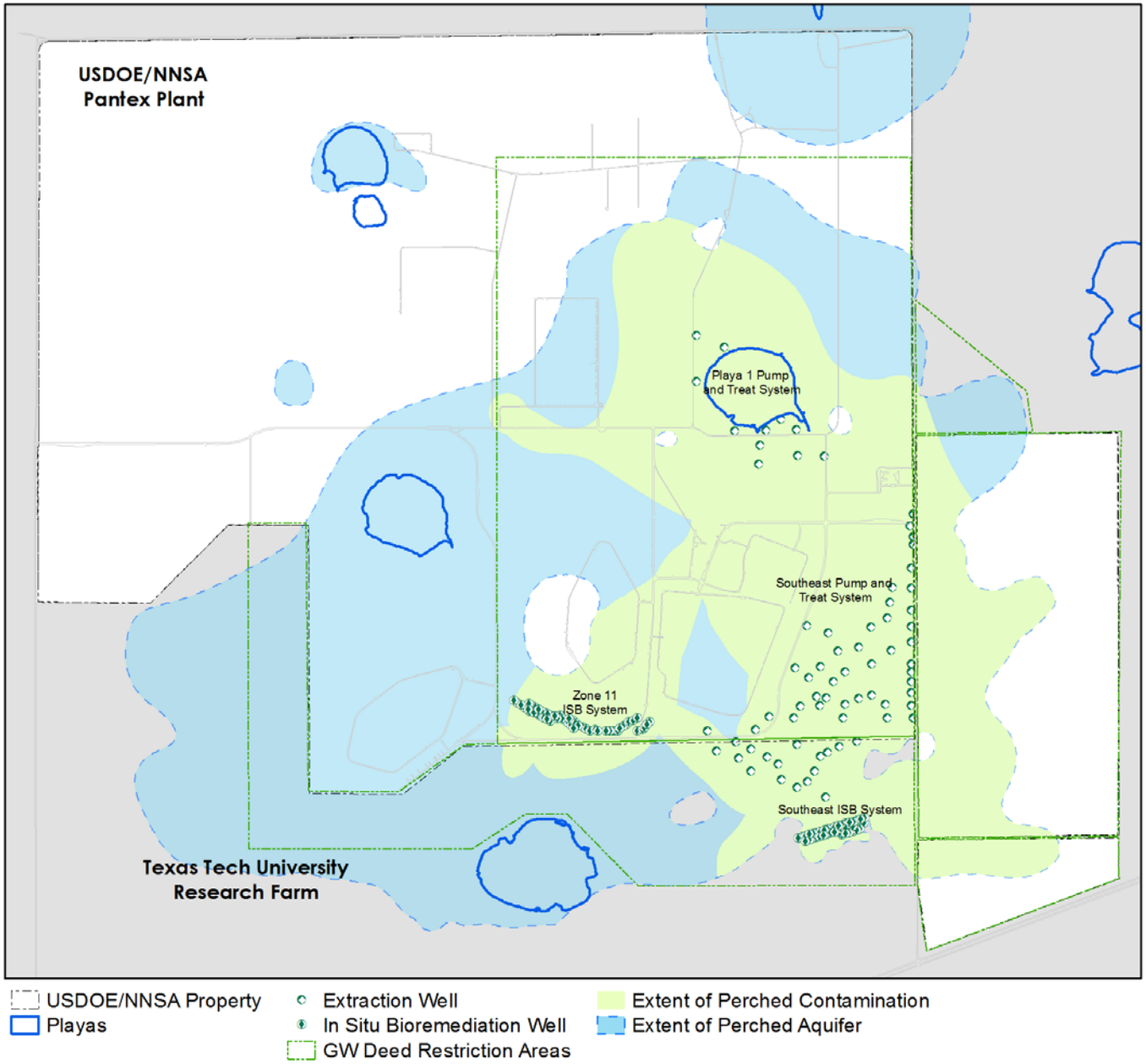
- Quarterly Progress Reports (3rd Quarter 2014 – 2nd Quarter 2015)
  - Provides a snapshot of groundwater systems operations, effectiveness of treatment, and summary of unexpected monitoring conditions
- 2014 Annual Report

Five-Year Review Recommendations

- Progress
- Reports can be found at www.pantex.com/mission/Pages/ Environmental-Cleanup-Documents.aspx

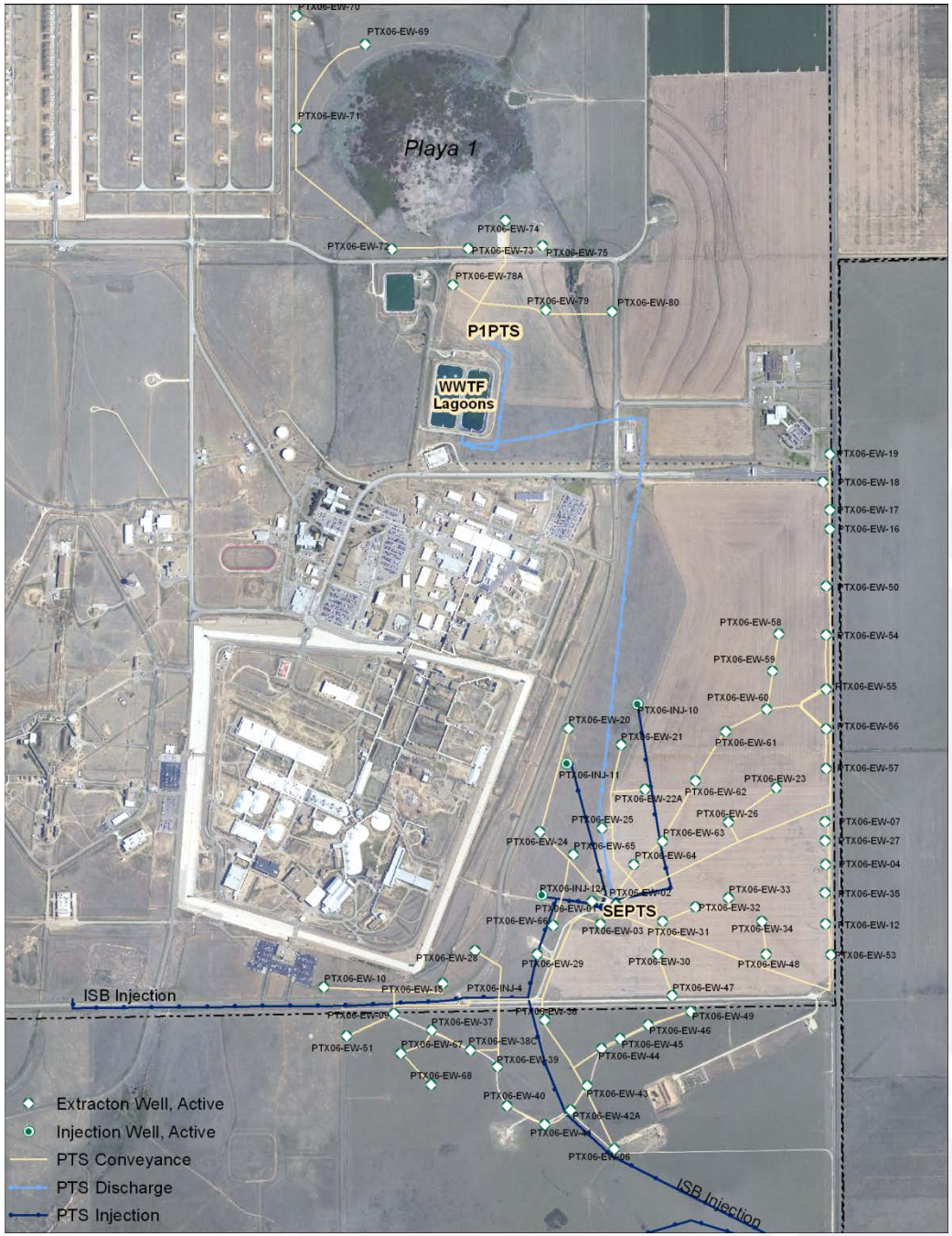
Groundwater Remedial Actions

- Remove water
- Remove contaminant mass



Pump & Treat Action

- **Playa 1 Pump and Treat and Southeast Pump and Treat**
- **71 Extractions Wells**
- **3 Injection wells, if needed**
- **Treated water use:**
  - 1st priority: beneficially used according to Texas permit (irrigation, in situ bioremediation [ISB] injection, limited Plant use)
  - 2nd priority: injection into perched aquifer



Pump & Treat Upgrades

- Southeast Pump and Treat System upgrade completed June 2015
  - Improved system operations and maintenance
  - Removed production bottlenecks
  - Increased system capacity
  - Created system redundancy

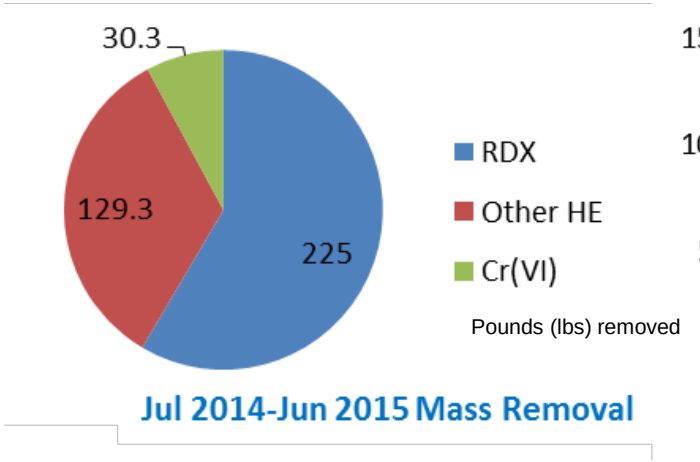
Before: (Left)

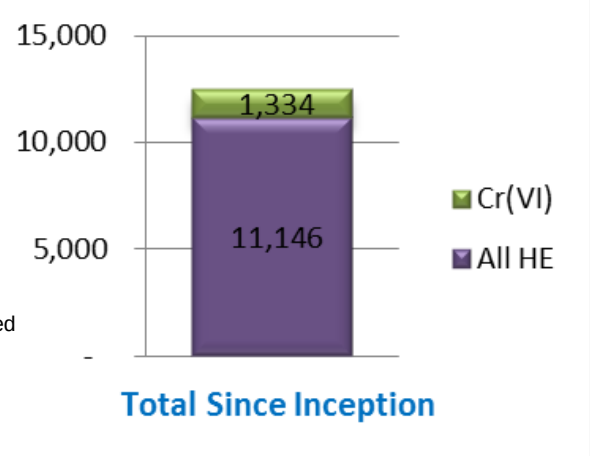
- **After: (Right)**
- **Booster with Variable frequency drives**

Before: (Left)

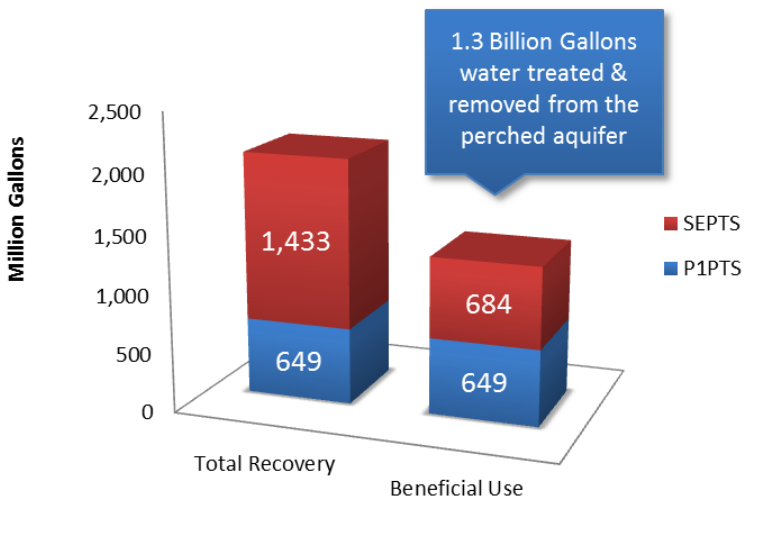
- **After: (Right)**
- **New pump and filters**

Pump & Treat Progress



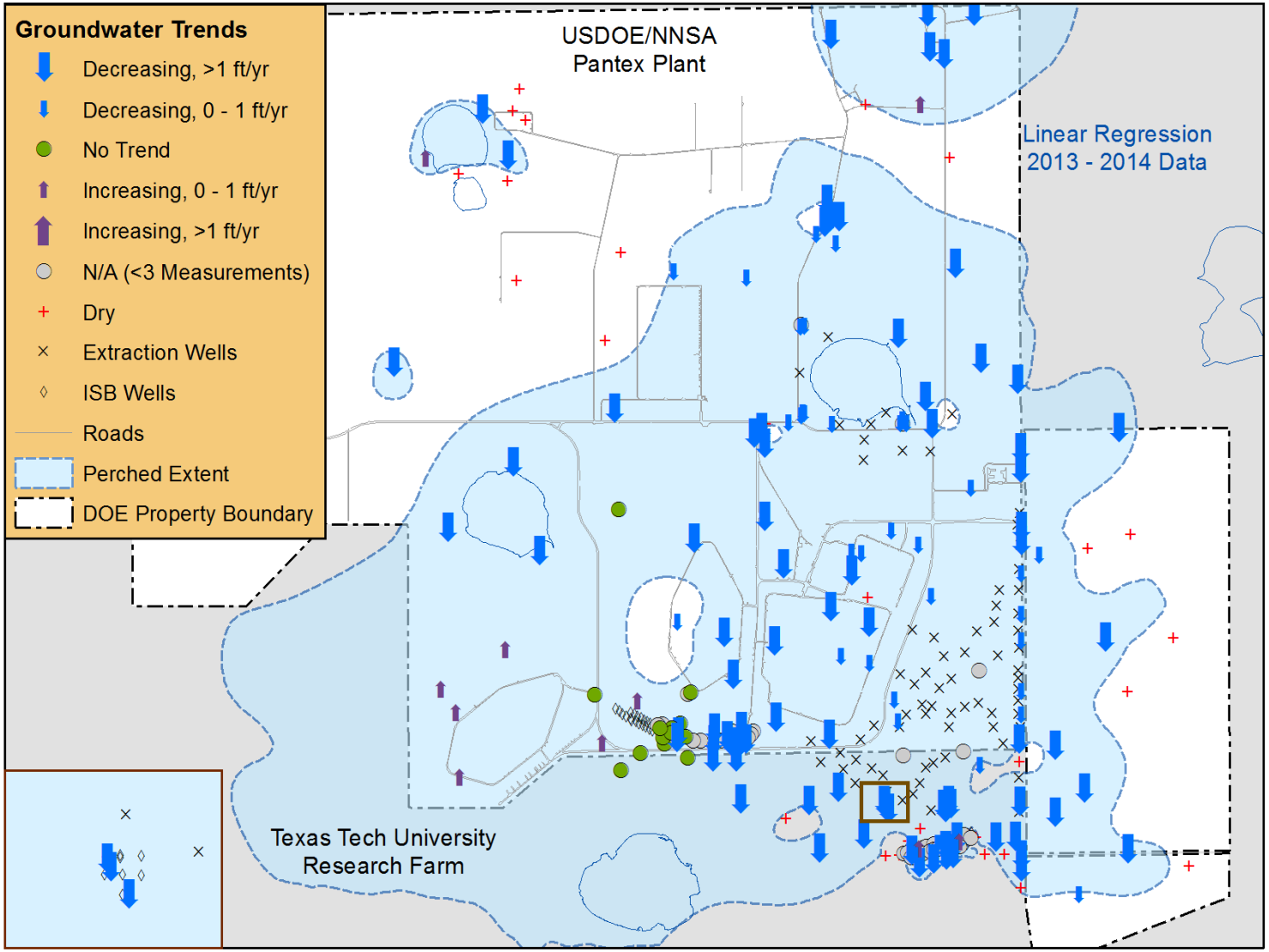


Treated 167 Million Gallons of perched groundwater from July 2014 through June 2015



Pump & Treat Progress

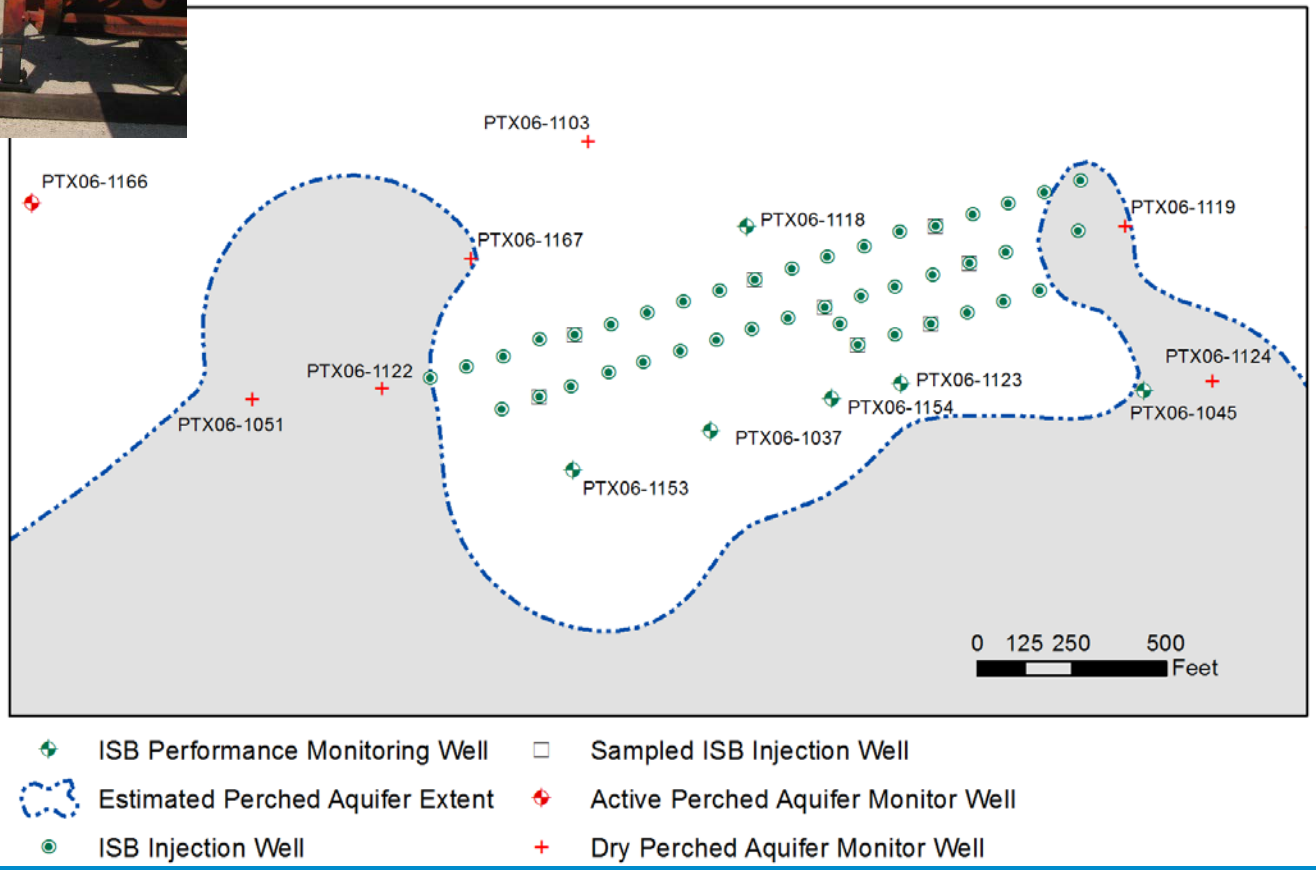
Water levels declining



SE In-Situ Bioremediation Project

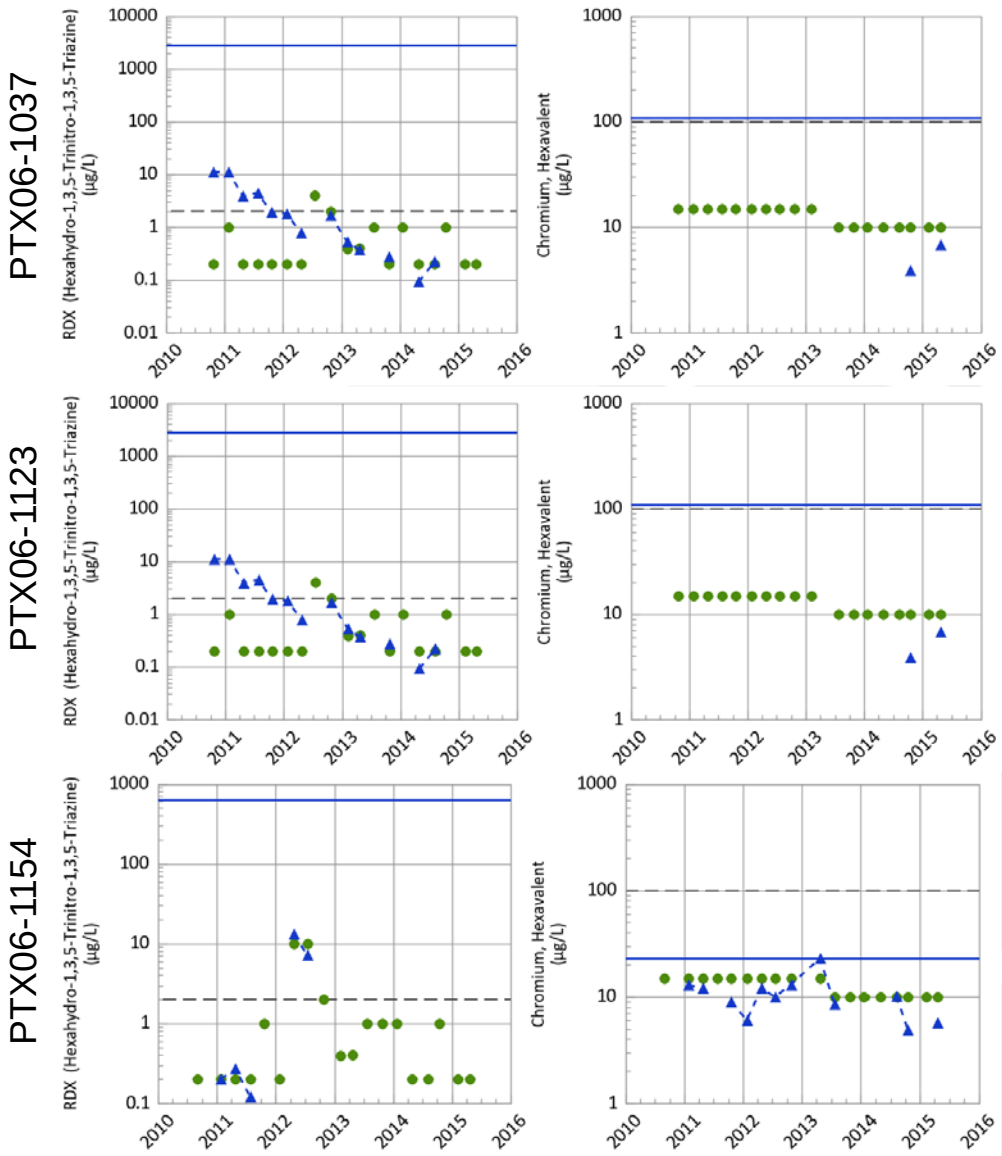
System Treats:

- High Explosives
- Hexavalent Chromium
- 42 Injection Wells



SE ISB System Progress

- Effectively reducing contamination below the groundwater protection standard in the closest downgradient wells

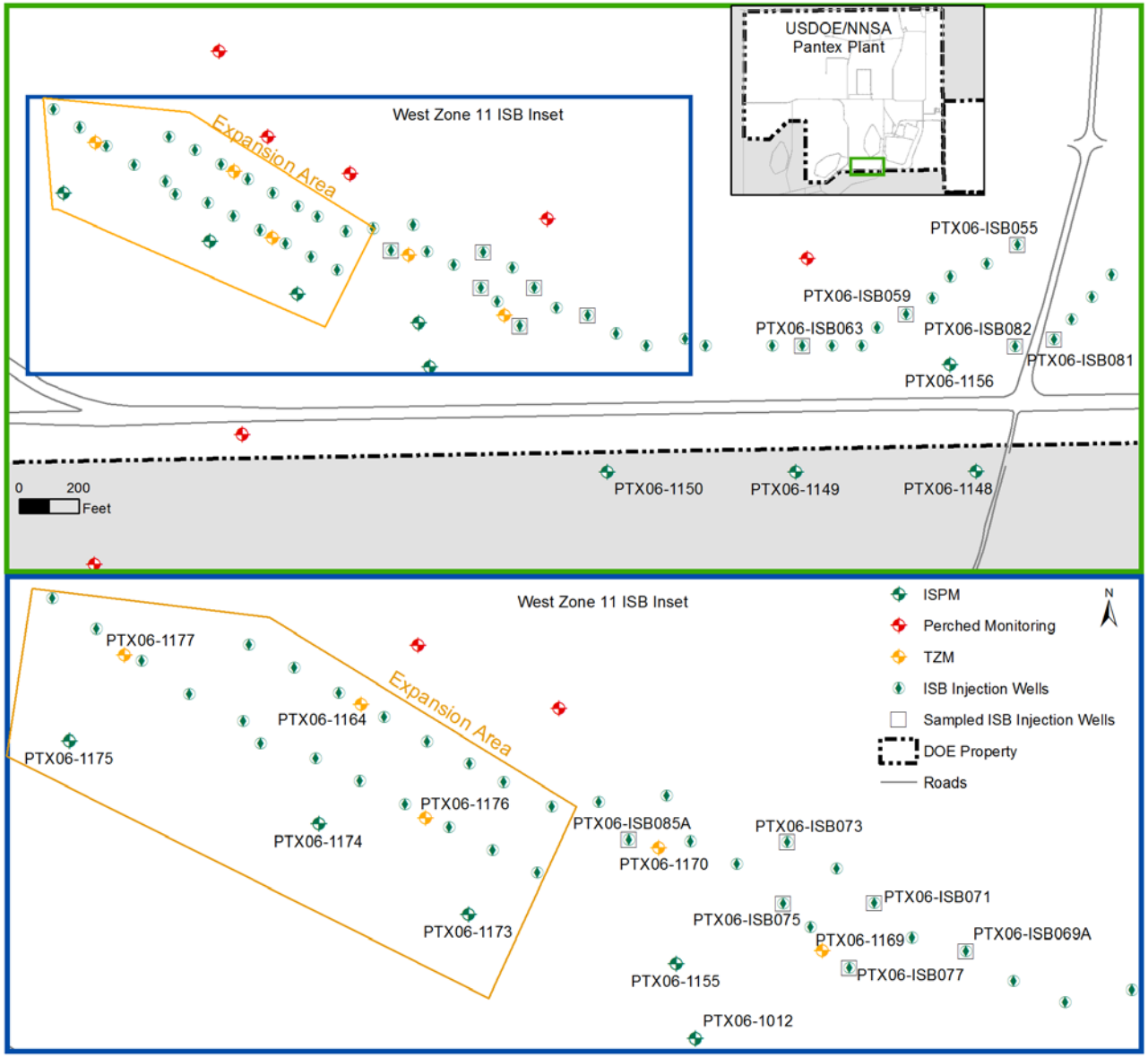


Maximum Concentration
GWPS (RDX - 1.2 ppb, Cr(VI) – 100 ppb)
Measured Value
Detection Limit

Zone 11 In-Situ Bioremediation Project

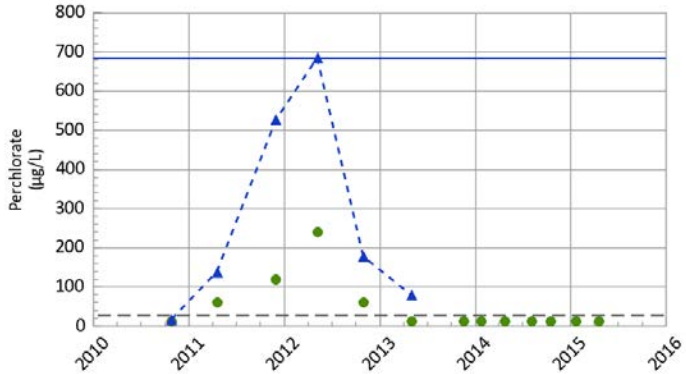
Consists of a total of 50 injection wells

System treats perchlorate and trichloroethene (TCE)



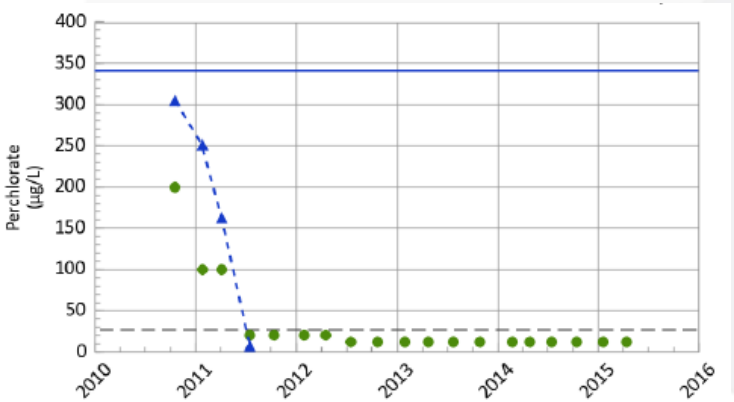
Zone 11 ISB System Progress

- Effectively reducing perchlorate concentrations to non-detect in four downgradient wells
- PTX06-1148 and PTX06-1150 further downgradient



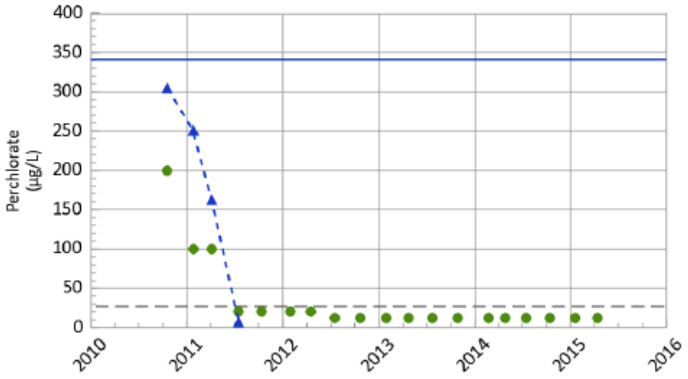
PTX06-1149

PTX06-1012



PTX06-1155

PTX06-1156

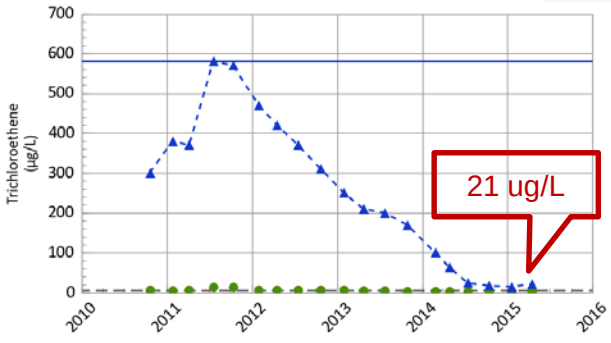


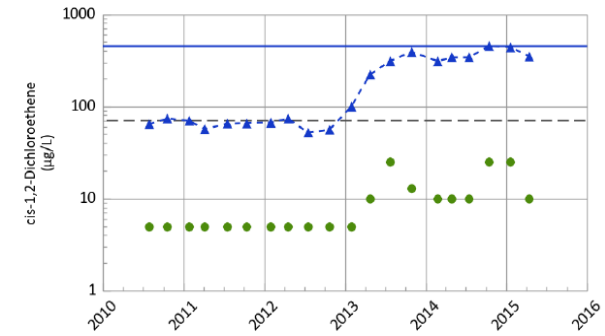
Measured Value
Sample Detection Limit
Concentration Trend
Maximum Concentration
Groundwater Protection Standard

Zone 11 ISB System Progress

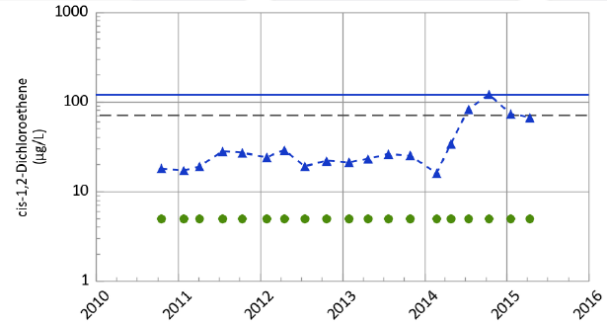
TCE concentrations are declining in both downgradient wells on the western side where the TCE plume is present

TCE breakdown, 1,2-dichloroethene, continues to be present at high concentrations





PTX06-1012



PTX06-1155

GWPS
TCE 5 ug/L
1,2-DCE 70 ug/L

Maximum Concentration
GWPS
Measured Value
Detection Limit

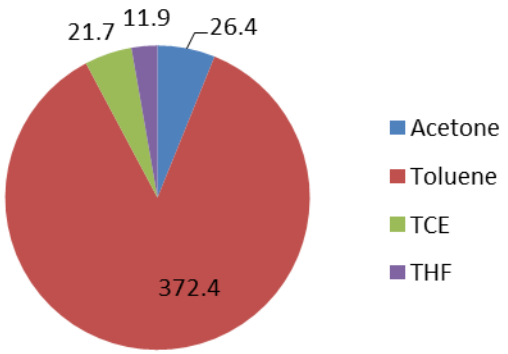
ISB System Progress

2015 Injection Event

- Southeast ISB complete May 2015
- Zone 11 underway – expected completion in November
  - Bioaugmenting original wells on western side to address break-down products of TCE
  - Bioaugmentation of new wells after conditions for growth and survival of *Dehalococcoides* bacteria are established

Burning Grounds SVE (Soil Vapor Extraction)

- **System consists of a small catalytic oxidation (CatOx) treatment unit**
- **Extraction focuses on one well, SVE-S-20 near the source area**



Burning Ground SVE Mass Removal
3rd Quarter 2014 – 2nd Quarter 2015

Total volatile organic compounds (VOCs) removed since startup:
17,951 lbs

Total VOCs removed Jul 2014 – Jun 2015:
432.4 lbs

Unexpected Conditions/Contingency Plan

One aspect of groundwater monitoring is evaluation for unexpected conditions

- If an unexpected condition is identified, follow up actions and notifications are implemented as defined in the Contingency Plan
- The Contingency Plan was developed to specifically address potential issues with the Ogallala or perched aquifers
- Actions depend on how the results compare to the practical quantitation limit (PQL) or groundwater protection standard (GWPS)

Unexpected Conditions (cont'd)

3rd Quarter 2014 – 2nd Quarter 2015

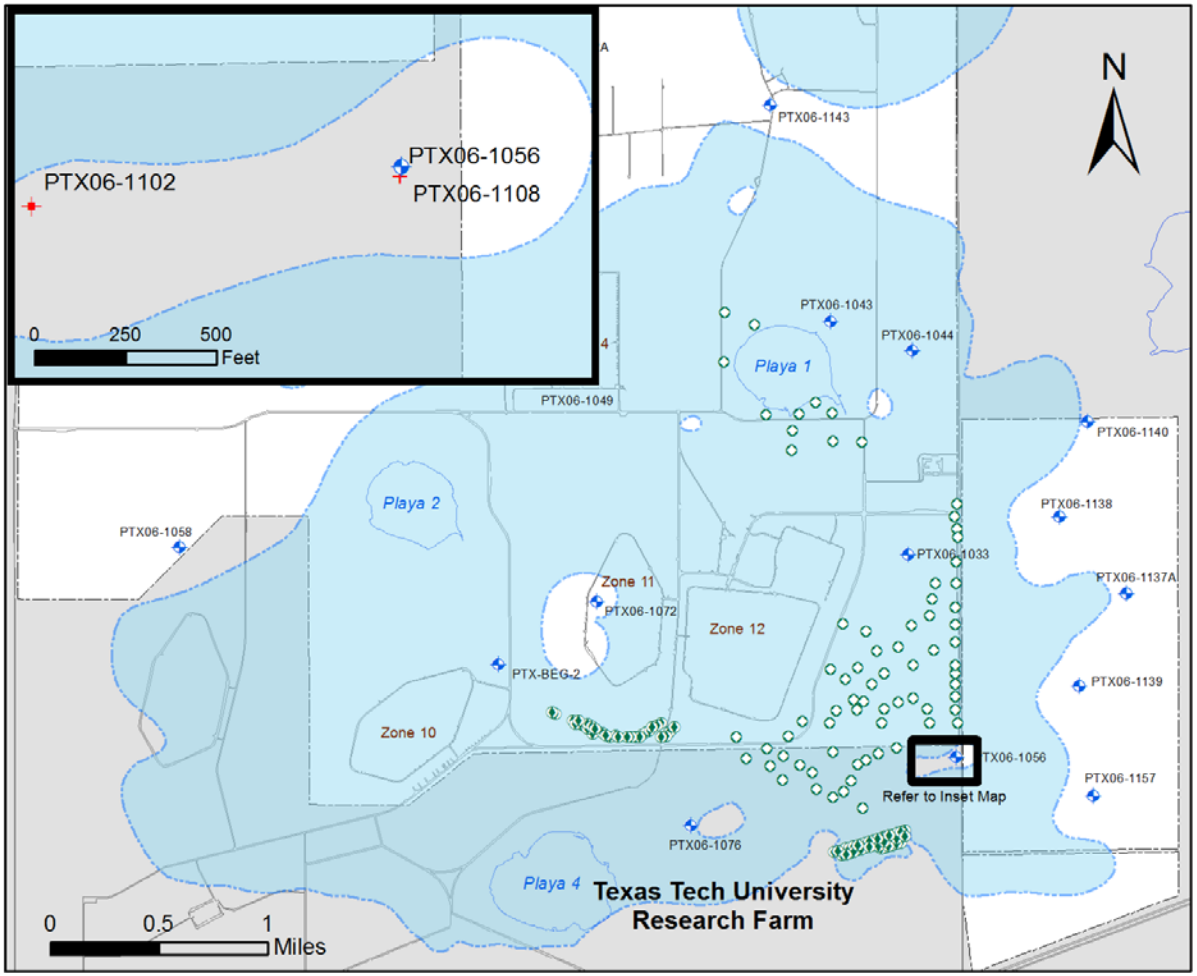
- Continued detects of boron slightly above background in a few wells
  - Likely result of variability in background
- Low-level detects of hexavalent chromium [Cr(VI)] continue in Ogallala monitoring wells
  - Levels were below GWPS (100 ppb)
  - Continue monitoring according to the Sampling and Analysis Plan and Contingency Plan to determine if concentrations persist or increase
- Pantex evaluating Cr(VI) backgrounds
  - Sampling started in February 2015
  - Sampling scheduled for completion by December

Unexpected Conditions (cont'd)

Ogallala Well PTX06-1056 Past High Explosive (HE) Detections

HE (4-amino-2,6-dinitrotoluene) detected in April 2014 at 0.171 ppb, below the PQL & GWPS

- **Based on high volume purge sampling, likely due to localized impact**
- **PTX06-1108, which may be a conduit, plugged in November 2014**



Unexpected Conditions (cont'd)

Ogallala Well PTX06-1056 Current HE Detections

- 4-amino-2,6-dinitrotoluene continues to be detected at low concentrations
  - All detections below PQL until August 2015
    - Detect of 0.329 ppb, slightly above the PQL of 0.255 ppb, below GWPS of 1.2 ppb
- 1,2-Dichloroethane detected (0.34 ppb) below the PQL (1 ppb)
- Confirmation sample collected in October
- Continue to monitor and follow Contingency Plan
- Long-term detections expected

CERCLA 5-Year Review - Recommendations

Completed Actions 2014/2015

- **Improvements to sampling methods**
  - Transitioned to micropurge methods in January 2015
  - Installed diverters in Ogallala wells without diverters December 2014

Actions in Progress

- **Design and construction of EW-81 tie-in at Playa 1 Pump and Treat System (P1PTS)**

CERCLA 5-Year Review - Recommendations

Actions In Progress

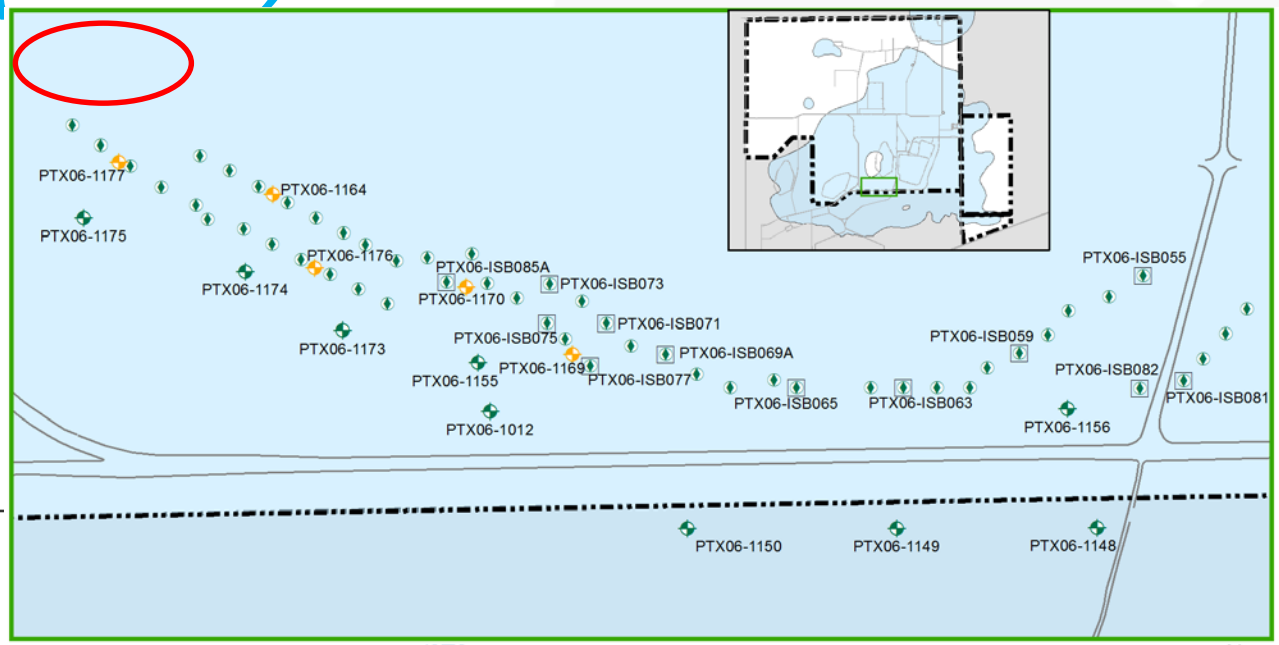
- Continue to assess Landfill reseeding
  - Annually through 2016
- Develop a path for closure of the SVE system
- Other ongoing actions
  - Continue long-term monitoring and evaluation in annual reports

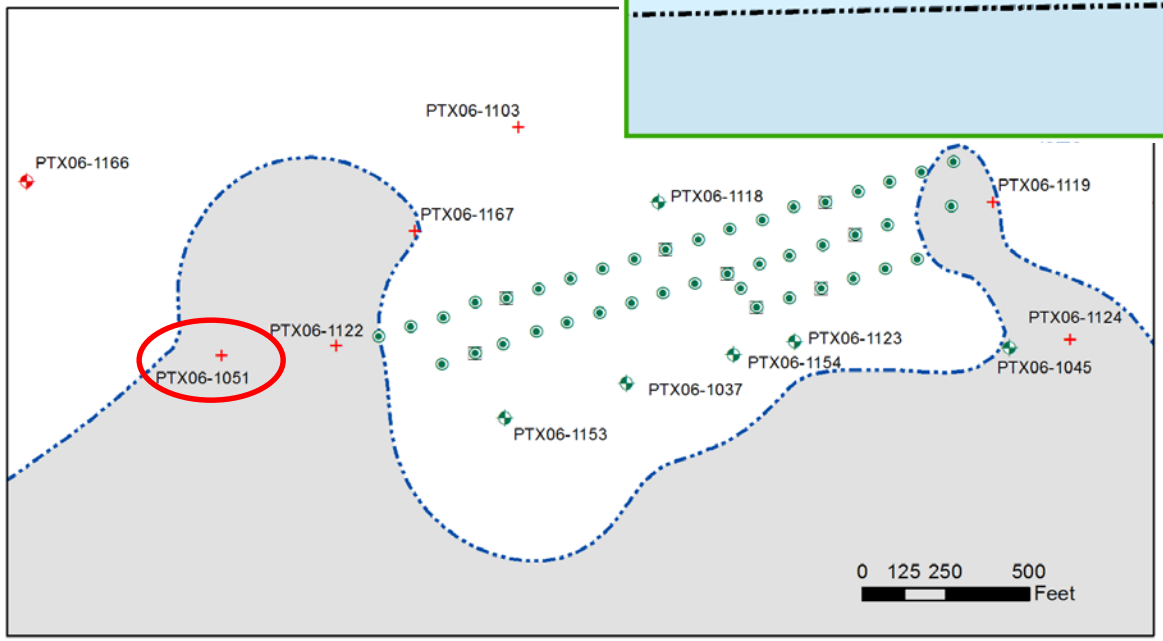
FY16 Plans

- Continue operation of existing systems
- Install EW-81 electrical and conveyance
- Evaluate pump test results at two newly installed wells east of FM 2373
- Evaluate results of sampling for Chromium Background Study
- Inject amendment at Zone 11 ISB
- Report progress (Quarterly and Annual reports)
- Apply for permit to extend beneficial use of treated water to Texas Tech property

FY16 Plans (cont.)

Install well north of Zone 11 ISB to evaluate plume





ISB Performance Monitoring Well
Estimated Perched Aquifer Extent
ISB Injection Well
Sampled ISB Injection Well
Active Perched Aquifer Monitor Well
Dry Perched Aquifer Monitor Well

Replace PTX06-1051 to confirm dry conditions