

# Kirtland Air Force Base Fuel Leak Cleanup

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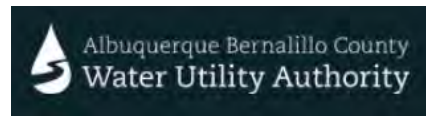


**WUA Governing Board  
Project Update  
March 22, 2017**



# A Partnership for Success

A collaborative technical team is solving the complex hydrogeologic and engineering challenges posed by the fuel leak with support from Albuquerque's neighborhood groups



US Army Corps of Engineers



Sundance Consulting Inc.

Westside Coalition  
Neighborhood Assoc.

Siesta Hills  
Neighborhood Assoc.



ABQ City Council  
District 6 Coalition of  
Neighborhood Assocs.



Elder Homestead  
Neighborhood Assoc.

Christ United Methodist Church

HAWLEY GEOMATTERS

Thomson and Associates

Citizen Action  
New Mexico

# 2016 Strategic Plan

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New Mexico Environment Department (NMED) Final 2016 Strategic Plan is available online ([www.env.nm.gov/kafbfuelplume/kafb-fuel-plume-documents/](http://www.env.nm.gov/kafbfuelplume/kafb-fuel-plume-documents/))

***Goal: Protect Albuquerque's aquifer and drinking water supply wells in the area of the fuel leak***

## Strategies to Achieve the Goal:

1. Implement a robust site monitoring & wellhead protection program
2. Characterize and remediate Light Non-Aqueous Phase Liquid (LNAPL), impacted soil, and associated dissolved phases in the source area
3. Collapse the dissolved ethylene dibromide (EDB) plume
4. Meet or exceed all requirements for providing public comment, information and involvement

# 2016 Strategic Plan Highlights

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## **Strategy #1 Highlights:**

- Quarterly monitoring of monitoring well network shows a relatively stable plume
- Sentinel wells show no detections of EDB
- Monthly testing of drinking water supply wells show no detections of any EDB

## **Strategy #2 Highlights:**

- Work plan approval of LNAPL interim measure for in situ bioremediation
- Working group discussions to evaluate data and scope 2017 pilot tests and LNAPL continuous coring locations

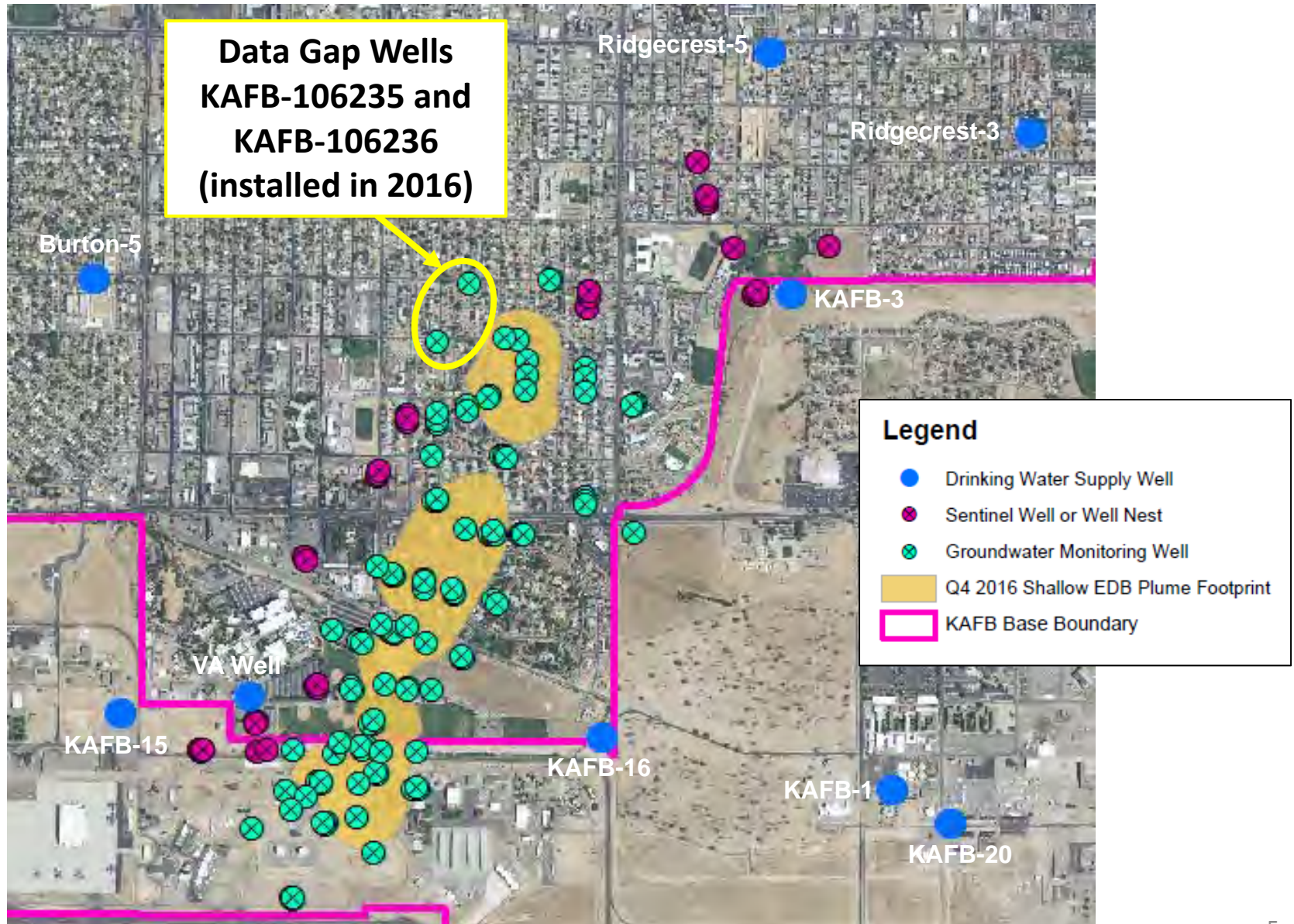
## **Strategy #3 Highlights:**

- Treated groundwater contains no detectable fuel constituents
- Expanded groundwater treatment system (GWTS) capacity to 800 gallons per minute (gpm)
- 2-3 extraction wells operational throughout 2016

## **Strategy #4 Highlights:**

- NMED and the Air Force conducted a total of 20 presentations or outreach events

# Site Monitoring & Wellhead Protection

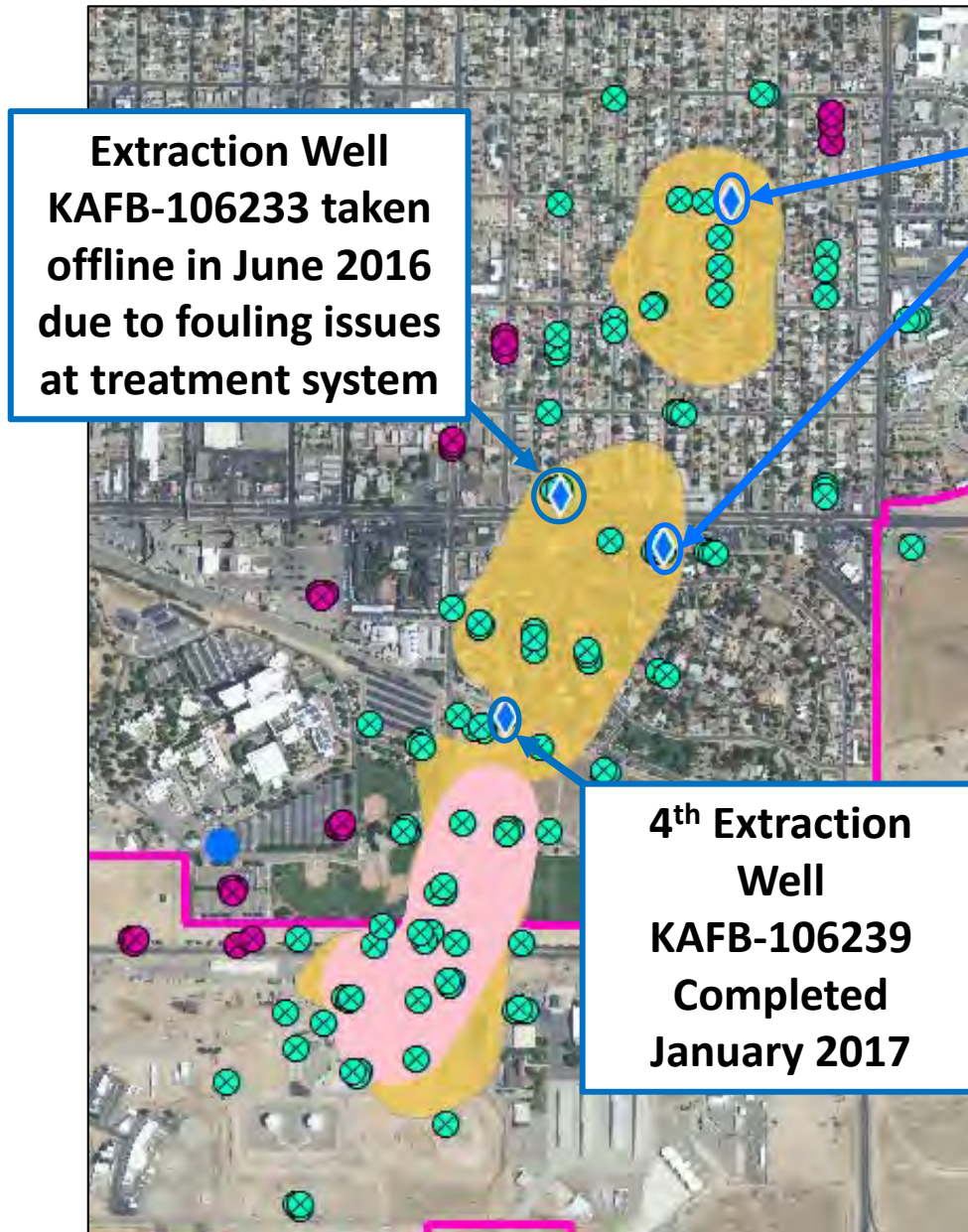


# EDB Plume Data Gap Wells

- Installed two data gap groundwater monitoring wells nests
- Nested well design provides:
  - Better vertical definition
  - Reduced impact to neighborhoods
  - Installation of “contingency well” to account for continued rising water table
- 1st samples collected January 2017; no EDB was detected



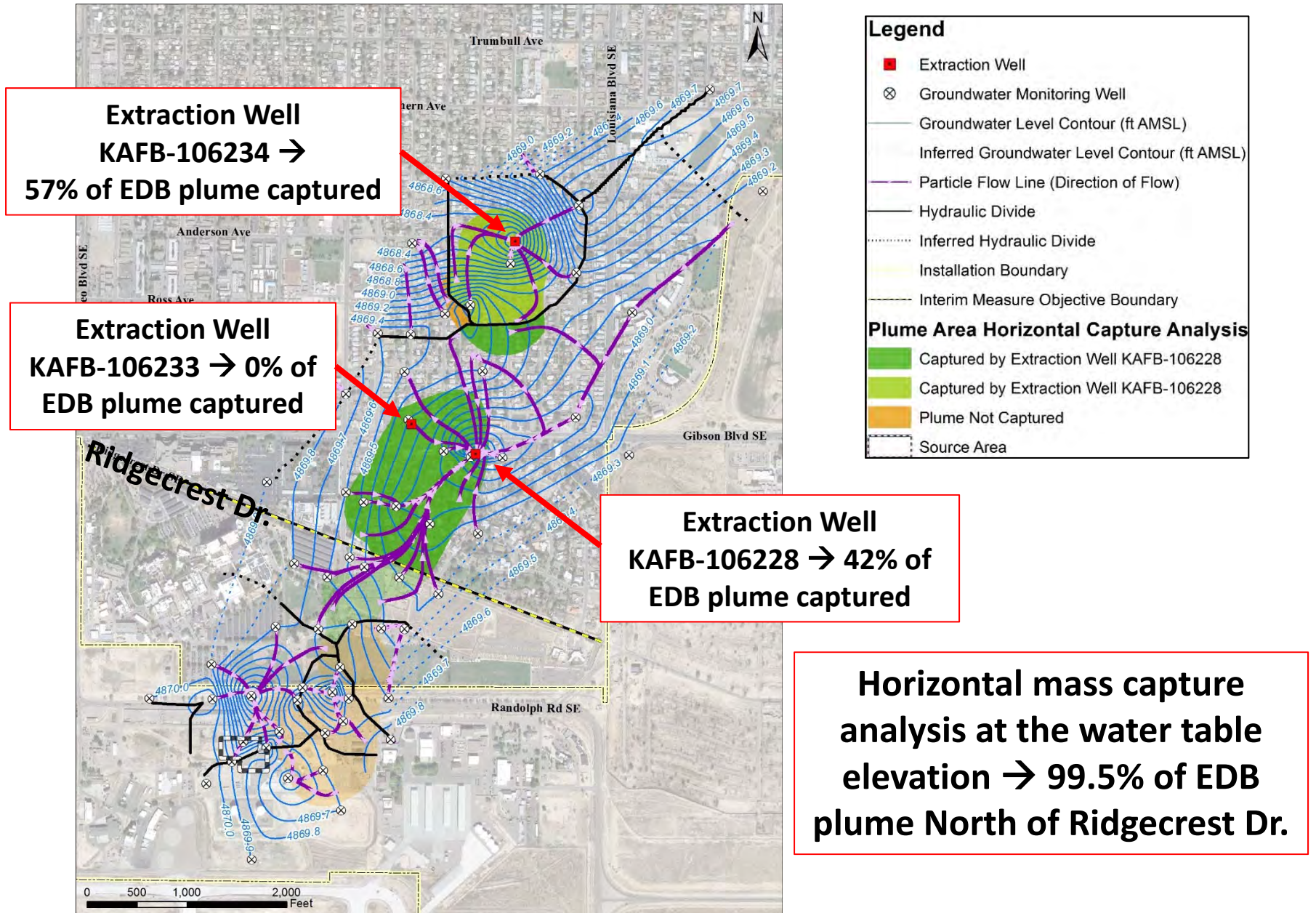
# EDB Plume Collapse



- 2 extraction wells operational – total rate of 300 gpm
- 151.7 million gallons of groundwater has been treated, with 48.4 grams of EDB removed

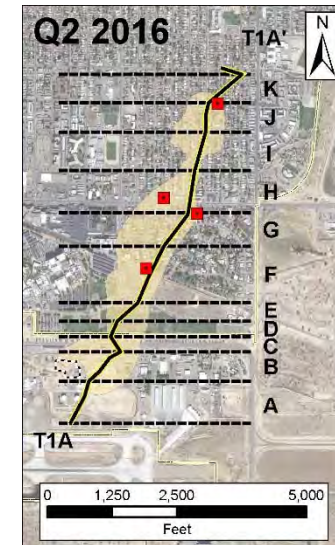
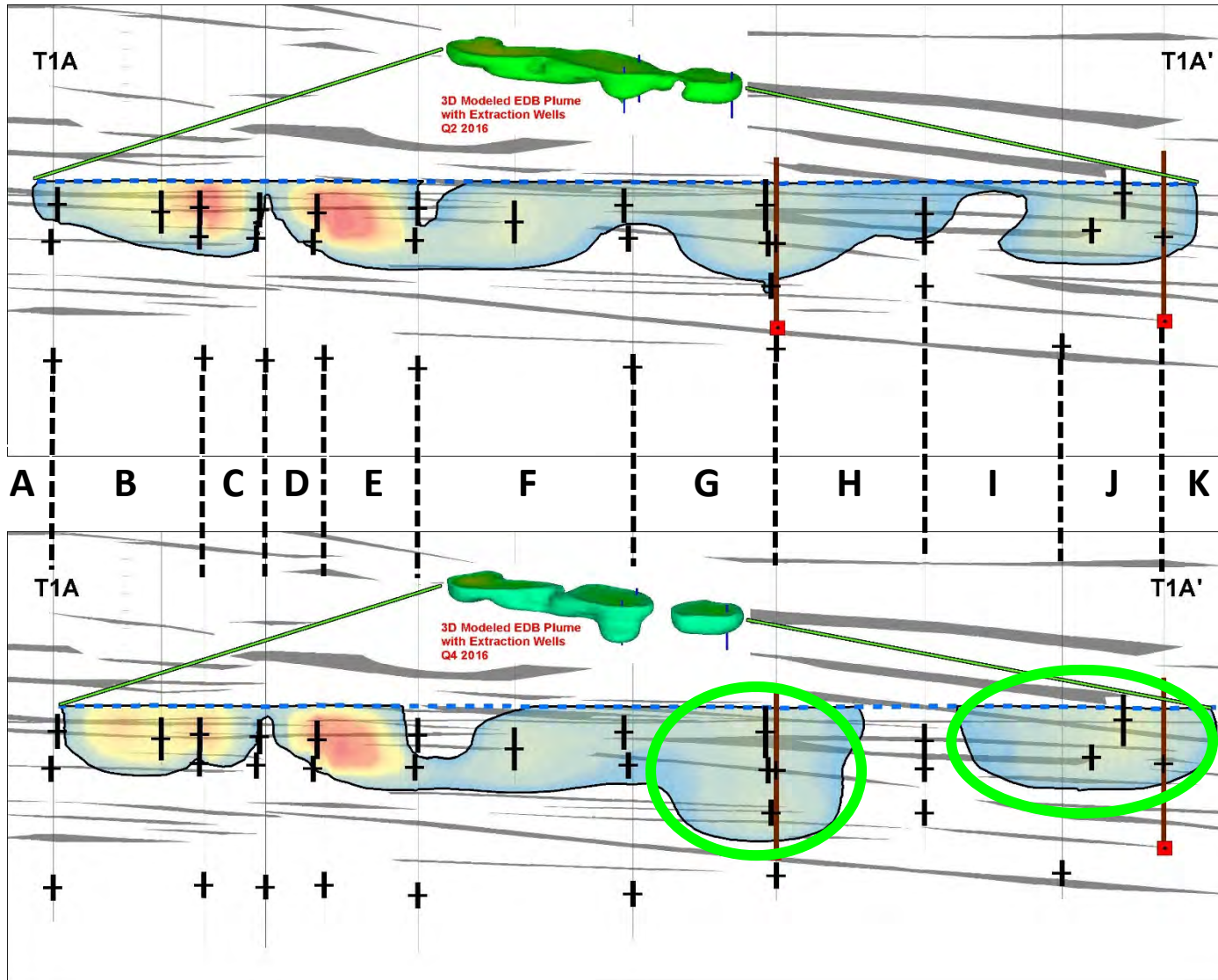


# Plume Capture Update





# Plume Reduction Analysis



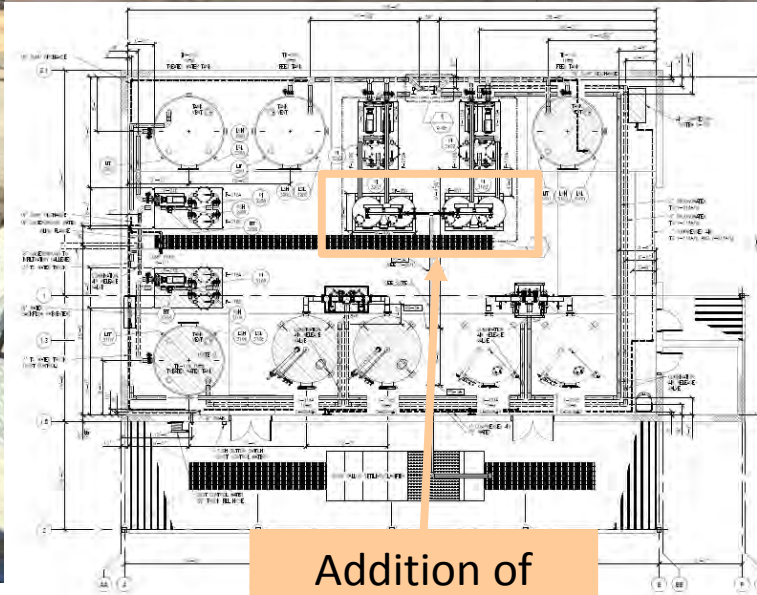
- Data Demonstrates**
- EDB mass is moving towards extraction wells
  - Increased mass concentrations at extraction wells

# GWTS Expansion

2 New 20,000 pound granular activated carbon (GAC) Tanks added



Sacrificial anode added to extraction wells to prevent corrosion



Addition of Sand Filters Pre-Treatment



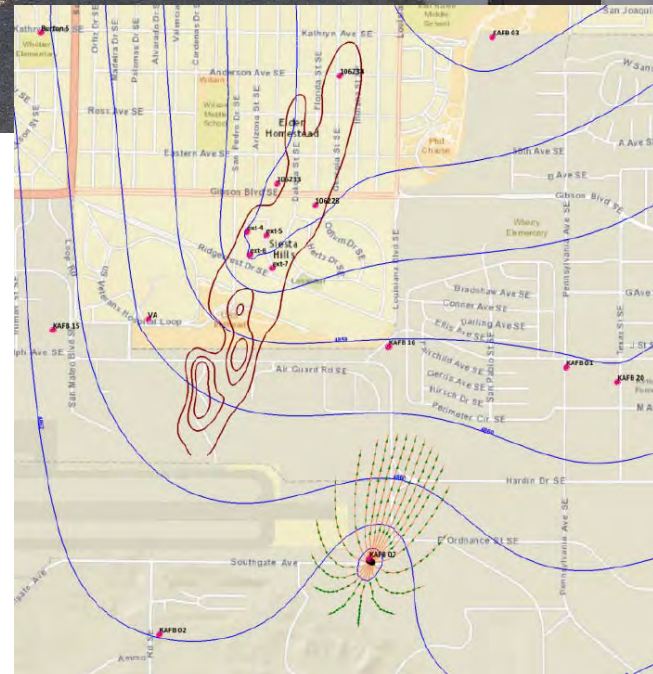
# What's next for EDB Plume Collapse?

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- Rehabilitate and redevelop extraction well KAFB-106233 on California St./Gibson Blvd.
- Design and construct conveyance pipeline from new extraction well KAFB-106239 on Ridgecrest Dr. to GWTS
- Operate GWTS with all 4 extraction wells
- Continue plume capture evaluation through tracking multiple lines of evidence which will feedback to GWTS operations

# KAFB-7 Injection Pilot Test

- Pilot test gravity-fed injection at KAFB-7 from February 20 thru June 21, 2016
- No contaminants in treated effluent
- Initial vs. steady-state operations during injection
  - Groundwater rose with injection into KAFB-7
    - 2-14 feet vs 3-6 feet
- Minimal aquifer response to observation wells surrounding KAFB-7



# UIC Discharge Permit

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- Air Force has applied for a Class V Underground Injection Control (UIC) discharge permit from the NMED Ground Water Quality Bureau (GWQB) for KAFB-7 and up to four additional UIC wells
- Draft permit was out for public comment which ended on February 13, 2017 for 90-day public comment period
- Revised draft permit was streamlined and re-posted on March 3, 2017 for a additional 30-day public comment period
- Air Force is currently discharging to KAFB-7 under a Temporary Permission issued by the NMED GWQB

# RFI Report

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Air Force officially submitted the RFI Report on January 31, 2017:

- Describes nature and extent of contamination in the soil and groundwater
- Provides a comprehensive evaluation of site data from discovered release 1999 to December 2015
- Follows regulatory process to define nature and extent
- Presents data based on media (soil, vapor, and groundwater)
- Presents the conceptual site model (CSM) showing the fate and transport of contamination through media

# RFI Key Findings

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- Fuel contamination nature and extent has been defined for soil, soil vapor, and groundwater
- Underground pipelines associated with former offloading rack were the sources of the jet fuel release
- Data gaps that need to be resolved
  - EDB dissolved-phase plume delineation in the northwest toe of the plume
  - Vertical extent of the LNAPL

# RFI Path Forward

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- RFI Addendum Report expected 2018 to include:
  - Data from recently installed data gap groundwater monitoring wells
  - Continuous cores from source area to fill LNAPL data gap
- Risk assessment to be submitted as a separate document



# 2017 Strategic Plan

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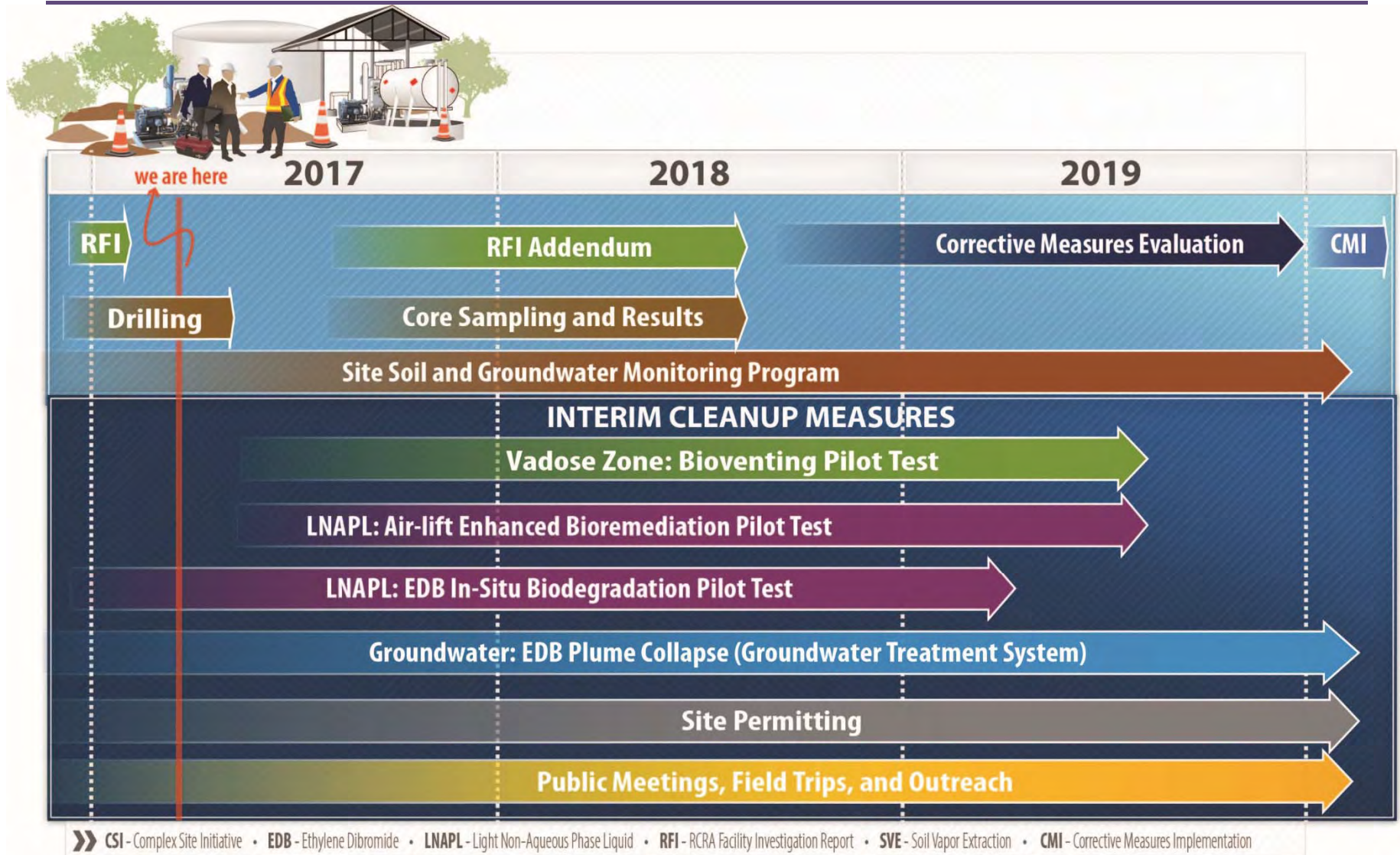
NMED Final 2017 Strategic Plan will be posted by the end March 2017 with comments received ([www.env.nm.gov/kafbfuelplume](http://www.env.nm.gov/kafbfuelplume))

***Goal: Protect Albuquerque's aquifer and drinking water supply wells in the area of the fuel leak***

## Strategies to Achieve the Goal:

1. Implement a robust site monitoring & wellhead protection program
2. Deploy multiple cleanup strategies, both simultaneously and sequentially, to cleanup soil and groundwater
3. Meet or exceed all requirements for providing public comment, information and involvement

# Current Project Timeline



# What to expect in 2017?

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- Continue monitoring soil vapor, groundwater, and drinking water supply wells including rising water levels
- Continue operations of the GWTS
- Obtain continuous cores from source area to address LNAPL data gaps
- Construct EDB in situ bioremediation pilot test
- Design and implement bioventing pilot test to target residual fuel hot spots in vadose zone
- Design and implement air-lift enhanced bioremediation pilot test
- Continued public outreach at public meetings, and with neighborhood associations and various community groups

# QUESTIONS?

Field Trips



Well installation in neighborhoods



Source Area Cleanup



GWTS Operation & Expansion

