# KAFB Bulk Fuels Facility Spill

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***Loma Linda Community Center***
***Albuquerque, New Mexico***
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# Fuel Storage and Distribution System

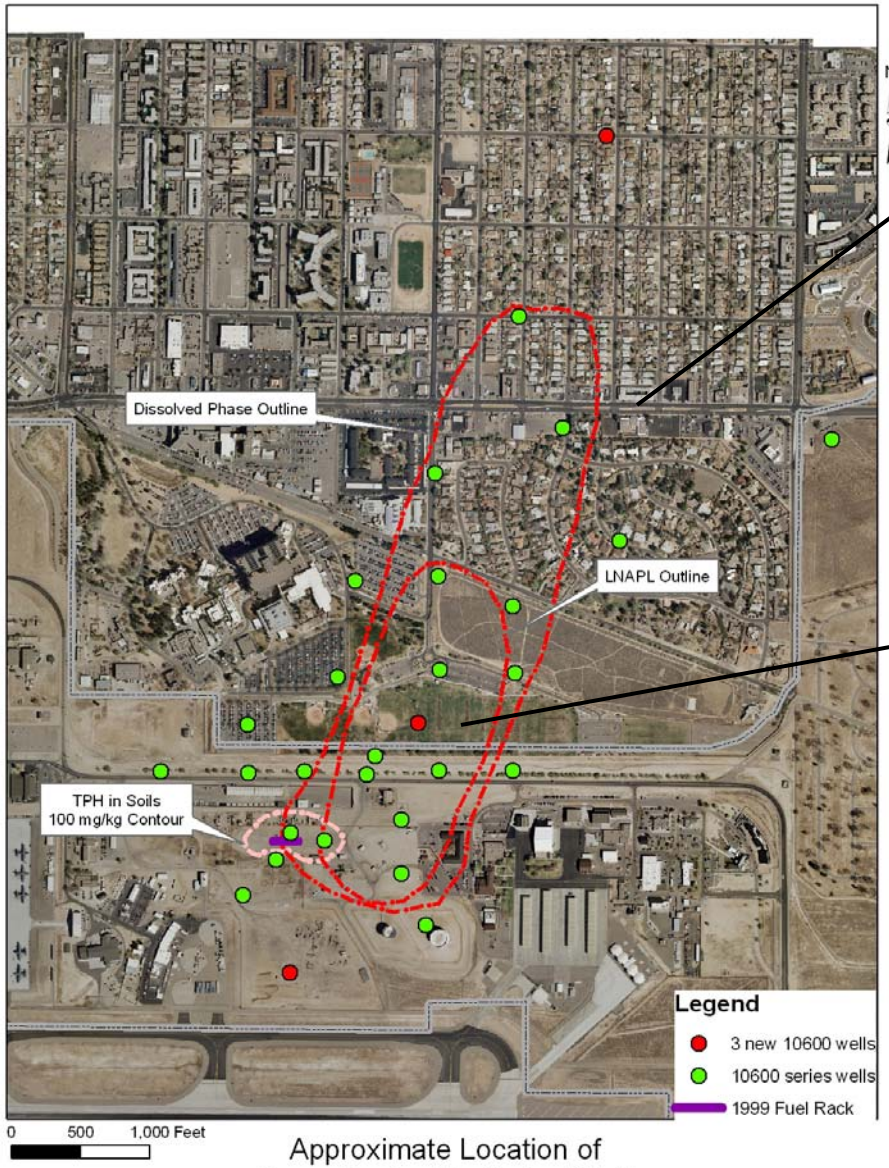
- Constructed in 1952
- Tank farm (2.1 and 4.2 MGal tanks jet fuel)
- Ancillary piping (underground and above ground)
- Fuel Offloading Rack (recently removed)
- Fuels: aviation gas (in the past) and jet fuel (JP-4 prior to 1993, JP-8 since 1993)

# Aerial Photograph of Bulk Fuels Facility

# The Problem

- Millions of gallons of fuel have leaked into the vadose zone, possibly for decades
- Jet fuel floating on groundwater (“LNAPL plume”) at 500 feet depth, extending north 0.5 mile
- Dissolved fuel constituents in contaminated groundwater plume extending north 0.9 mile
- Migration towards water-supply wells
- Until recently, KAFB had not demonstrated a sense of urgency to address problem

# Known Horizontal Extent of Contaminant Plumes

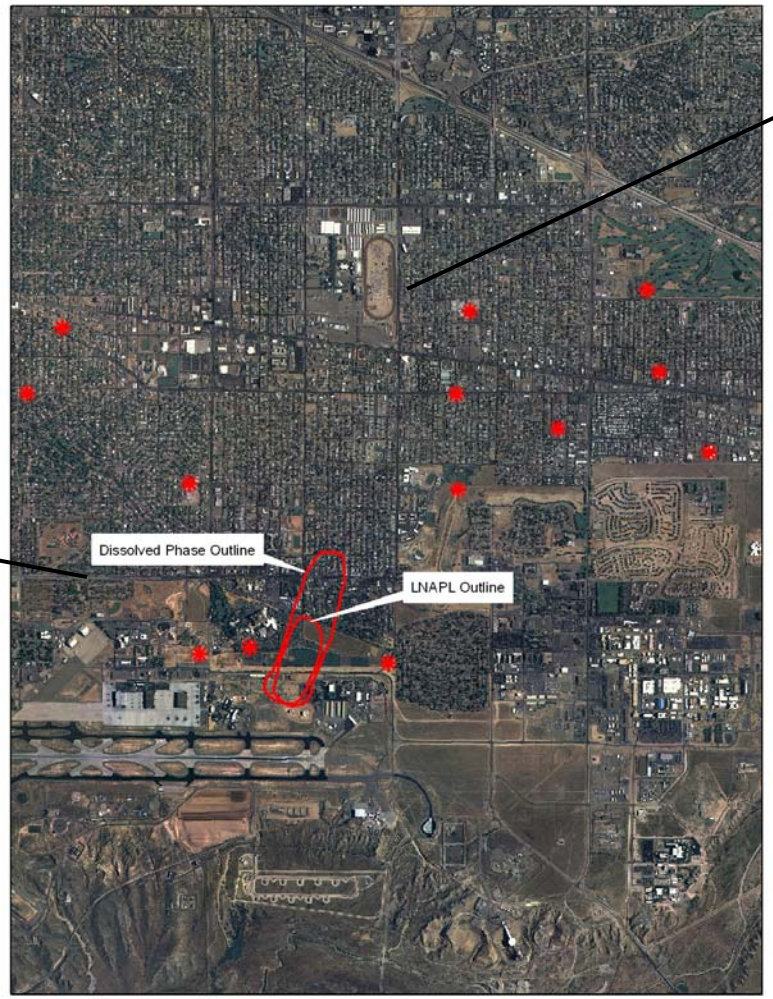



Approximate Location of
Groundwater Monitoring Wells

Gibson Blvd

Bullhead Park

# Contaminant Plume Locations Relative to Water Supply Wells



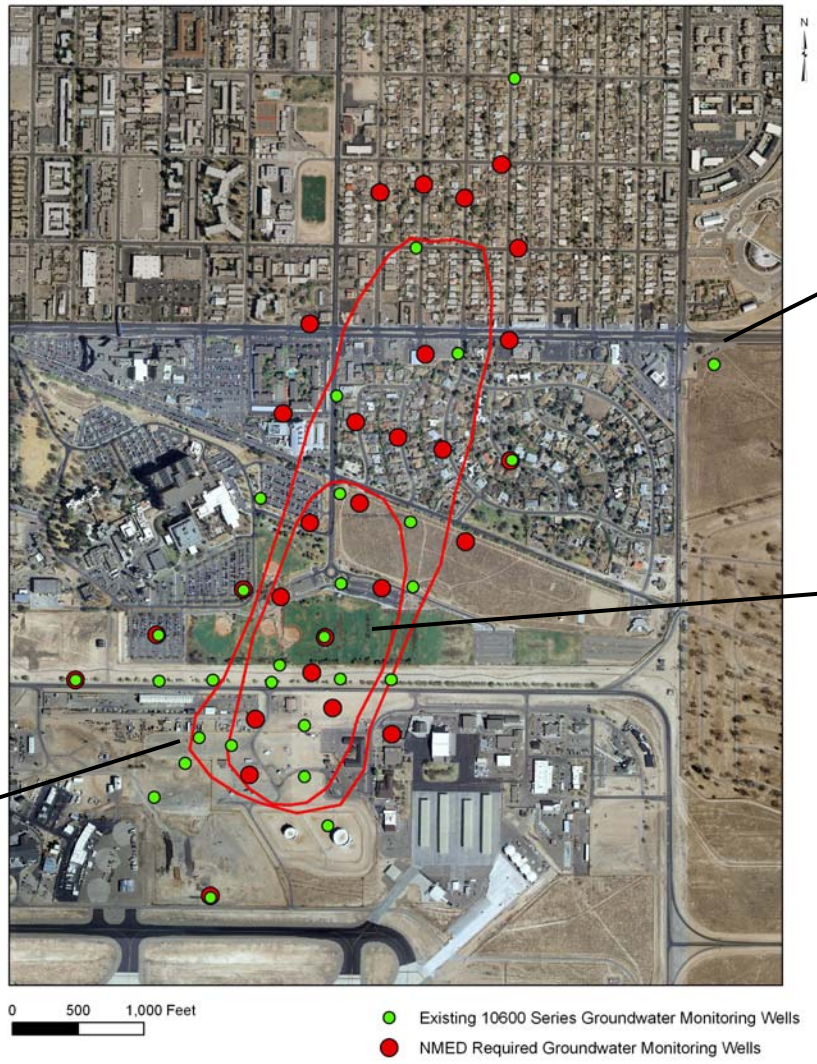
# Work To-Date Inadequate

- Vadose Zone
  - Characterization insufficient
  - Path of contamination from source to groundwater not determined
  - Amount of fuel released unknown
- Groundwater
  - Leading edge, margins, migration rates of dissolved-phase groundwater contamination unknown
  - Vertical extent of dissolved-phase contamination unknown
  - Geologic and hydrologic conditions poorly understood
- Remediation efforts
  - 4 Soil Vapor Extraction (SVE) Units operating
  - Without changes, could take >50 years to remove fuel from vadose zone and LNAPL plume; however, SVE will not remove all LNAPL constituents

# NMED Technical Directives

- Accelerate completion of characterization of vadose zone and groundwater
- Require Interim Measures (IM)
- Require KAFB to submit work plans for vadose zone and groundwater characterization
- Floating fuel (“LNAPL”) plume mitigation

# Existing Groundwater Monitoring Wells and Well Clusters Required by NMED




Gibson Blvd

Bullhead Park

Former Fuel Offloading Rack

# KAFB Work Plans

- November 4, 2010 – Revisions of 3 work plans submitted
  - IM Plan – contains provisions to excavate former Fuel Offloading Rack, to complete shallow boreholes to characterize ancillary piping, and to conduct various tests
  - Vadose Zone Investigation Plan – contains provisions to complete soil borings and soil-vapor wells directed by NMED
  - Groundwater Investigation Plan – contains provisions to complete groundwater monitoring wells directed by NMED

# KAFB Work Plans

- Vadose Zone and Groundwater Investigation Work Plans substantially contain what NMED has directed

- IM Plan does not provide for control and remediation of LNAPL Plume.

# Required vs. Completed Field Work Since April 2010

**What was Required**

- Vadose Zone Investigation – install 7 soil-vapor wells, conduct geophysical logging of wells
- Groundwater Investigation – install dozens of wells within a year (3 immediately), develop existing wells within LNAPL plume, conduct geophysical logging of wells
- Interim Measures – Expand SVE to 10 other locations on KAFB, continue operating 4 existing SVE Units, begin excavation of soil and removal of piping at former Fuel Offloading Rack

**What Actually got Done**

- 3 wells installed, sampling of all wells
- Former Fuel Offloading Rack partially excavated and infrastructure removed
- Continued operation of existing 4 SVE Units.

# Pressing Needs

- A viable plan to stop migration of LNAPL plume, and remediate within 5 years. Now.
- SVE should be expanded. Now.
- More than 1 sentry well needs to be installed. Now.
- Travel time estimates unreliable and flow paths unknown due to lack of site-specific characterization data.  Get good data. Now.

# What NMED will do Next

- Provide direction on revised work plans
  - Target – December 15, 2010
- Direct KAFB to immediately install groundwater and soil-vapor monitoring wells, and complete soil borings
- Direct (again) Air Force to implement IMs and sentry wells

# Future Interim Measures

- Significant IMs include
  - Stop migration of LNAPL plume
  - Clean up vadose zone and LNAPL plume to remove source of groundwater contamination
    - Includes SVE
- Significant IMs may include
  - Control of dissolved-phase plume
    - In meantime, sentry wells needed
  - Aggressive clean up of dissolved-phase contamination if natural attenuation proves inadequate

# Involving the Public

- Quarterly reports
- KAFB and NMED documents posted on Hazardous Waste Bureau's web site for review by public
- NMED to hold public informational meetings on periodic basis
- Public participation in remedy selection

# Contact Information

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