



Kirtland Air Force Base Fuel Spill Geological Field Trip October 21, 2014

Introduction – Leakage of aviation gasoline and jet fuel from the Kirtland AFB bulk fuel facility migrated through ~150 feet of alluvial fan sediments, and into the underlying Sierra Ladrones Formation, a thick sequence of sediments deposited by the ancestral Rio Grande. The Sierra Ladrones Formation is a highly productive aquifer that contains NNE-SSW trending zones of high hydraulic conductivity corresponding to axial river deposits of sand and gravel. This field trip will examine outcrops of alluvial fan and Sierra Ladrones sediments exposed in lower Tijeras Arroyo, and visit a USGS monitoring well drilling site. Geologists and water professionals from the N.M. Environment Department, the U.S. Geological Survey, the N.M. Bureau of Geology, the Albuquerque Bernalillo County Water Utility Authority, the U.S. Air Force, the Air Force Civil Engineering Center and CB&I will be available for questions and discussion.

More detailed information on the investigation and cleanup of the fuel spill will be presented at a poster session and public meeting to be held on Thursday, October 23, 2014, starting at 5:30 p.m. at the African American Performing Arts Center, State Fair Grounds, 310 San Pedro NE, Albuquerque.

Logistics – Transportation to the field stops, departing from the Chavez Community Center, will be provided on a first-come, first-serve basis. You can also drive your own vehicle, but carpooling is recommended. Bring sunscreen, a hat, drinking water, a bag lunch, hiking boots, layers of clothing appropriate for fall weather, and a clip board for field trip handouts. Stop 1 will involve a roundtrip hike of about 1.2 mile, with about 180 feet of elevation climb and descent, sometimes on uneven terrain with loose sediment.

Sierra Ladrones river gravel



Alluvial fan sediment



Itinerary –

10:00 a.m. – Gather at the Chavez Community Center parking lot (south of the building), 7505 Kathryn Ave. SE. Participants will board vehicles and depart.

10:30 a.m. to 1:00 p.m., including lunch break

Stop 1 – Montessa Park, Off Road Vehicle Area, Los Picaros Road. Observe outcrops of axial Rio Grande deposits in the Sierra Ladrones Formation and overlying alluvial fan sediments.

KAFB bulk fuel facility tanks will be visible across Tijeras Arroyo to the NE. Discussion topics:

- Regional geology and stratigraphy (Dan Koning, NMBG)
- Regional hydrogeology (Nathan Myers, USGS)
- Water supply wells, water level changes, vertical hydraulic gradients (Rick Shean, ABCWUA)
- Regional groundwater chemistry and contamination (Dennis McQuillan, NMED)
- Reactive minerals (Adria Bodour, AFCEC)
- *In situ* bio-denitrification, Mountainview pilot project (Eric Nuttall, UNM, retired).

1:30 p.m. to 2:45 p.m.

Stop 2 – Bullhead Park, 1606 San Pedro Blvd. SE. The KAFB fuel spill area will be visible from across the fence, and we will be standing over the core of the groundwater contamination plume ~480 feet below ground surface. Discussion topics:

- KAFB fuel spill and soil vapor extraction (Wayne Bittner, USAF)
- LNAPL, petroleum hydrocarbon and EDB plumes; Stiff diagrams (Diane Agnew, CB&I)
- Intrinsic biodegradation of hydrocarbons and EDB (Patrick Longmire, NMED)
- Options for cleaning up drowned LNAPL (Stephen Reuter, NMED)
- Collapsing the EDB plume (Adria Bodour)

3:00 p.m. – 4:00 p.m.

Stop 3 – Return to Chavez Community Center. Drill cuttings and geophysical logs will be on display, and we will walk to the USGS well drilling site north of the building. For your safety please do not cross into the active drill-site area. Discussion topics:

- Geophysical logs (Sid Brandwein, NMED)
- Drill cuttings (Nathan Myers)
- Influence of sedimentary lithology on aquifer properties (Nathan Myers)
- Protection of water-supply wells:
 - ABCWUA Water Quality Protection Policy and Action Plan (Rick Shean)
 - Sentinel wells for early detection; monthly sampling of supply wells (Dennis McQuillan)