NMED
New Mexico Environment Department

GOLD KING MINE SPILL
NEW MEXICO LONG-TERM IMPACT TEAM MONITORING UPDATE

April 13, 2017
DRAFT

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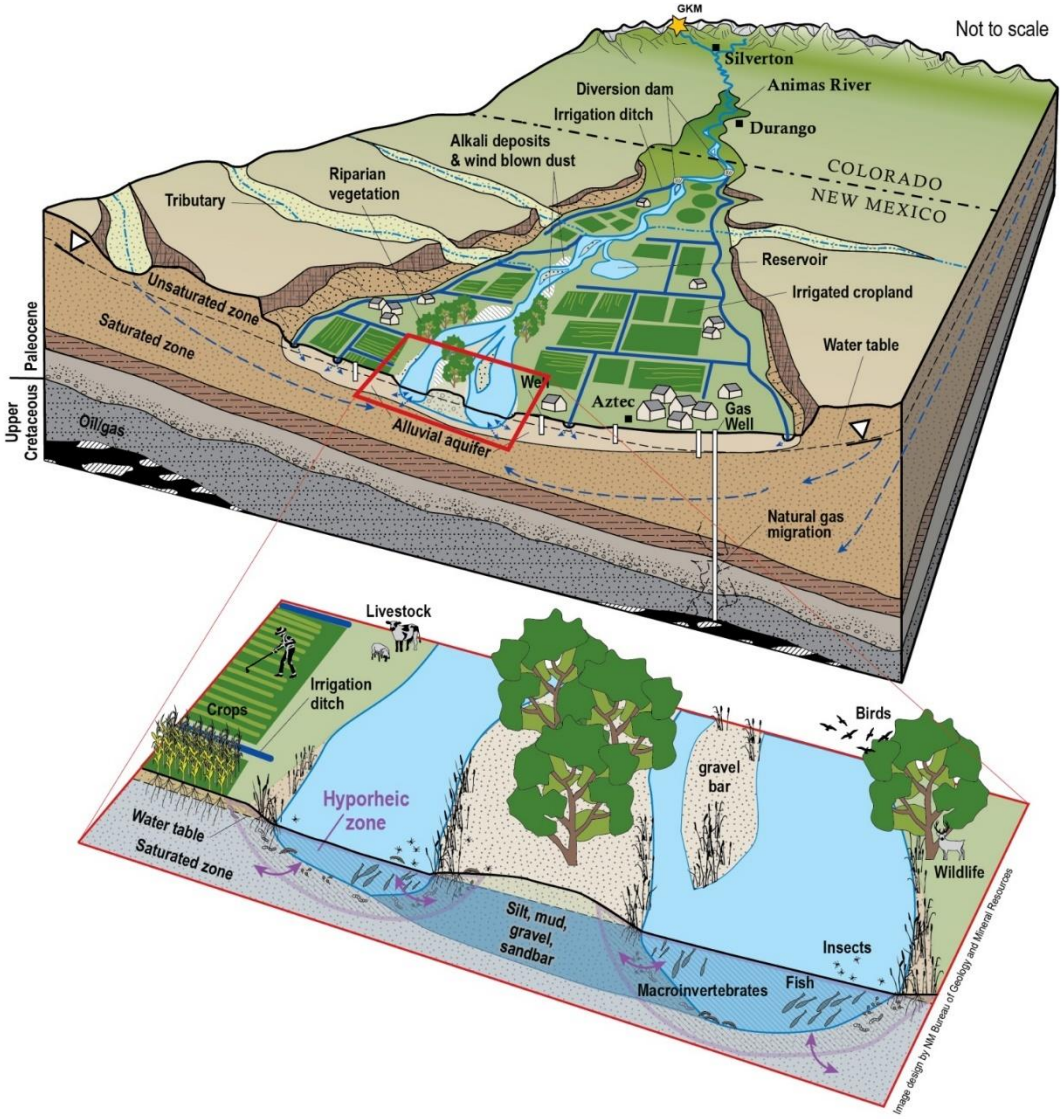
Animas River Watershed System

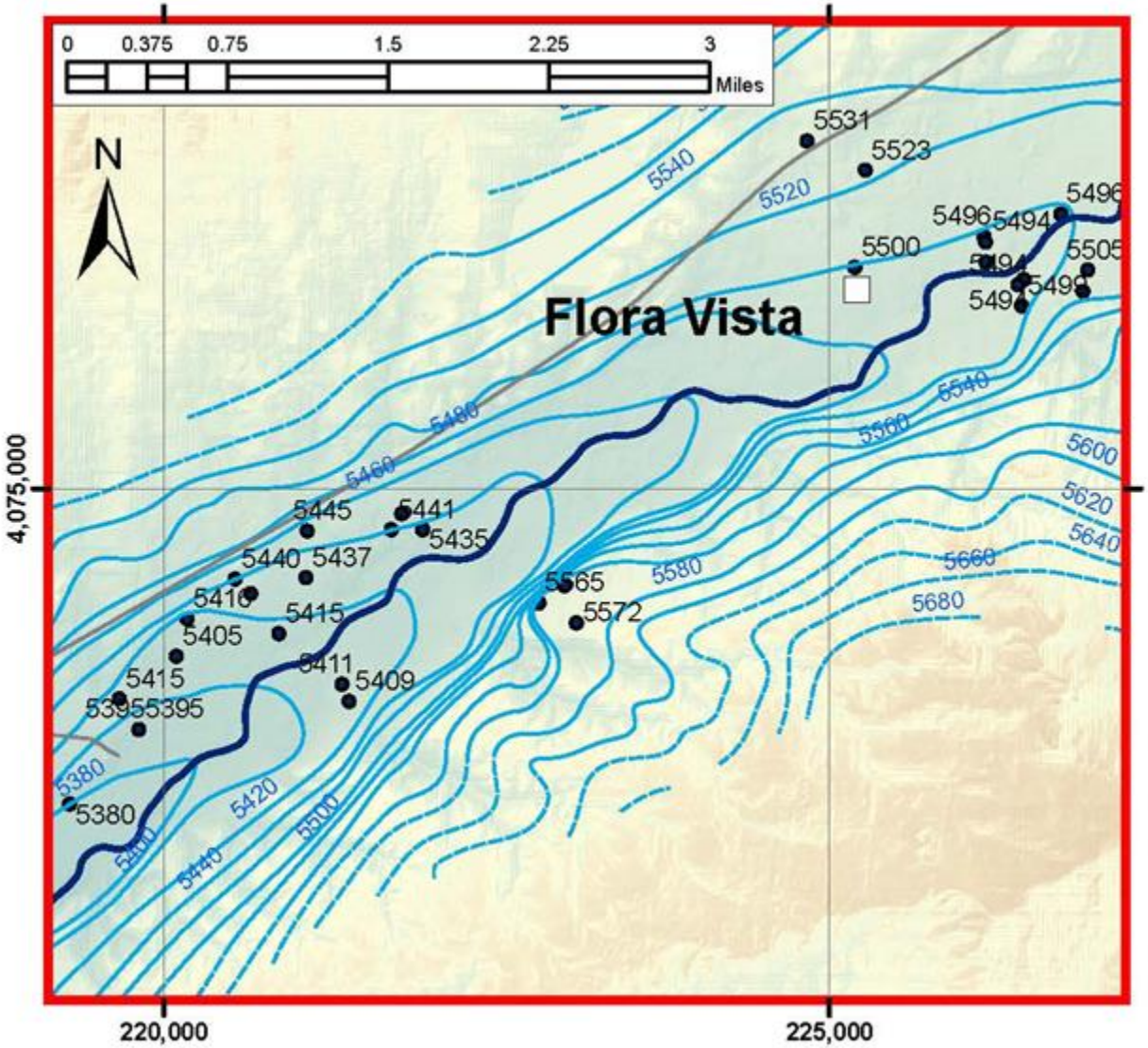


Progress in 2016 - Monitoring

- Alluvial aquifer mapping and well sampling
- Continued river-water and sediment sampling
- Installation of multi-parameter sondes in rivers
- X-ray fluorescence (XRF) survey of metals in sediment
- Solids analysis for minerals
- Crop tissue survey
- Fish-tissue and benthic macroinvertebrate surveys
- Lead-contaminated aquifer sediment investigated
- Biomonitoring of metals in urine and well water

Aquifer Characterization

- On a seasonal basis, water levels measured in 80 wells, water quality samples collected in 20 wells
- Animas is a gaining stream regionally, with potentially losing segments locally, particularly in winter when water table is lowest.

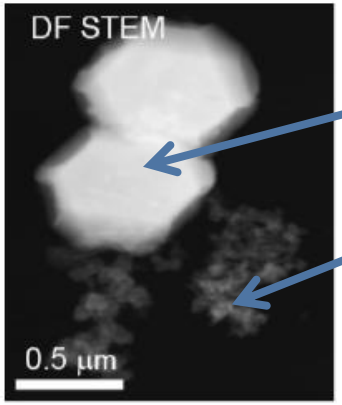


XRF Survey

- Provides direct reading of heavy metals in sediment
- Ten % samples also collected for NM Department of Health, State Lab, to confirm field tests

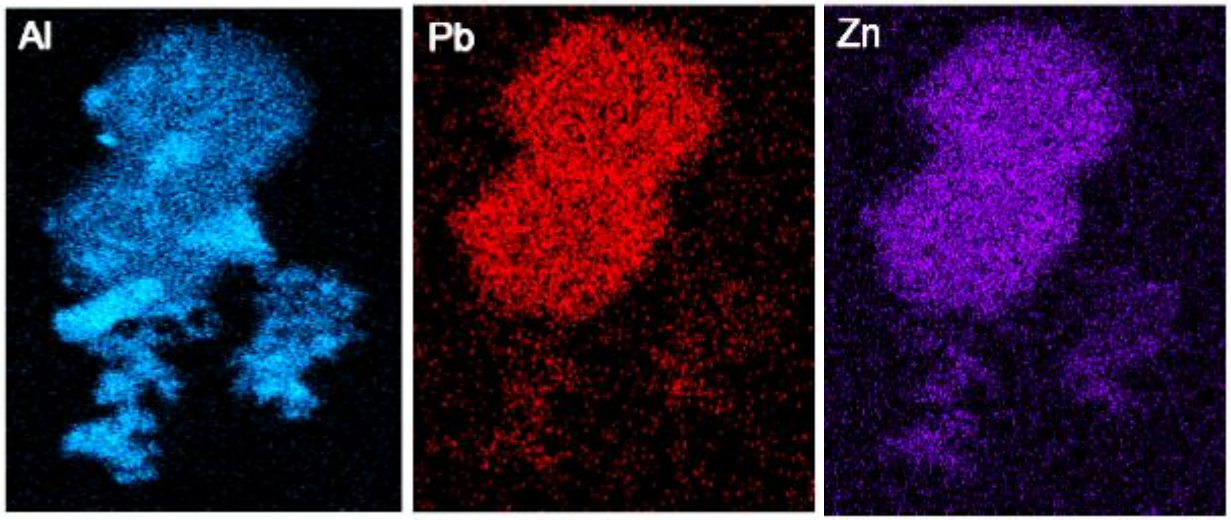
Solids Analysis

- **Jarosite grains contain aluminum, lead, zinc, and other metals that can be released as jarosite becomes unstable at higher pH.**



Jarosite crystals

Clay-rich material



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NEW MEXICO ENVIRONMENT DEPARTMENT

Water-Table Mineralization at Aztec Drinking Water Diversion Channel

2,400 mg/kg lead in mineral layer

Evidence that surface water contaminants entered groundwater near the river

Monitoring Results, So Far

- Heavy metal concentrations in river water are safe for both irrigation and livestock watering
- High flow continues to stir up metals in the Animas River, creating treatment concerns for public water systems
- Alluvial aquifer contained high iron and manganese before GKM spill
- No evidence that GKM spill contaminated water wells
- Sediment survey from GKM into Navajo Nation shows high metals still in Colorado, decreasing downstream
- Crop and fish tissue testing shows no high metals
- No unusual livestock or wildlife distress, illness, or mortality observed

Spring Runoff Preparedness Plan

March 24, 2016

https://www.env.nm.gov/riverwatersafety/documents/animasspringrunprepplan.pdf

Comments on draft plan for 2017 runoff season are due on April 14.

Monitoring Priorities for 2017

- Solids characterization
- Riverbed and shallow alluvium interactions
- Investigation of Aztec water-table mineralization
- Targeted sampling of well water and crops in the area north of Aztec, east of Animas River
- Continue testing surface during high stream-flow events
- Conduct independent transport and fate analysis of metals in the watershed

Other Priorities for 2017

- Pursue full funding for all elements of Long Term Monitoring Plan
- Perform a Natural Resource Damage Assessment and Pursue Restoration Funds
- 2nd Annual Animas Watershed Conference scheduled for June 20-22, 2017 https://animas.nmwrri.nmsu.edu/2017/
- Support Bonita Peak Mining District Superfund investigation and cleanup, while demanding that EPA:
  1. use sound science;
  2. be honest with the public; and
  3. treat residents downstream from Colorado as stakeholders throughout the Superfund process.