U.S. DEPARTMENT OF ENERGY | OFFICE OF ENVIRONMENTAL MANAGEMENT

Los Alamos National Laboratory's Chromium Project Update for Los Alamos County Board of Public Utilities

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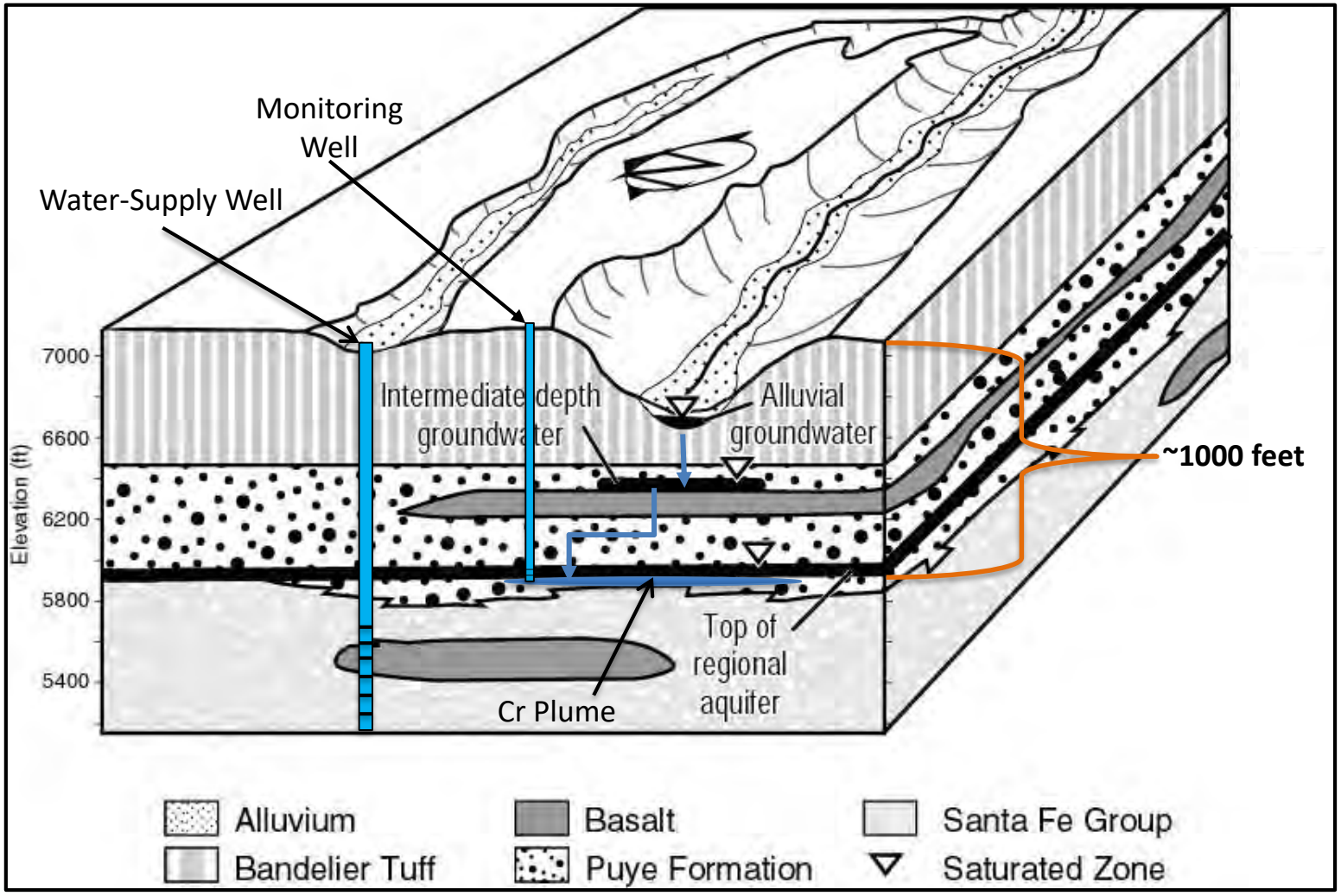
ENVIRONMENTAL MANAGEMENT
SAFETY ❖ PERFORMANCE ❖ CLEANUP ❖ CLOSURE

N3B Los Alamos

Presentation Topics

- Groundwater occurrences at Los Alamos
- Where did the chromium in groundwater come from and where is it now?
- What is being done to address the plume?
- Project update
  - Interim Measure
  - Characterization

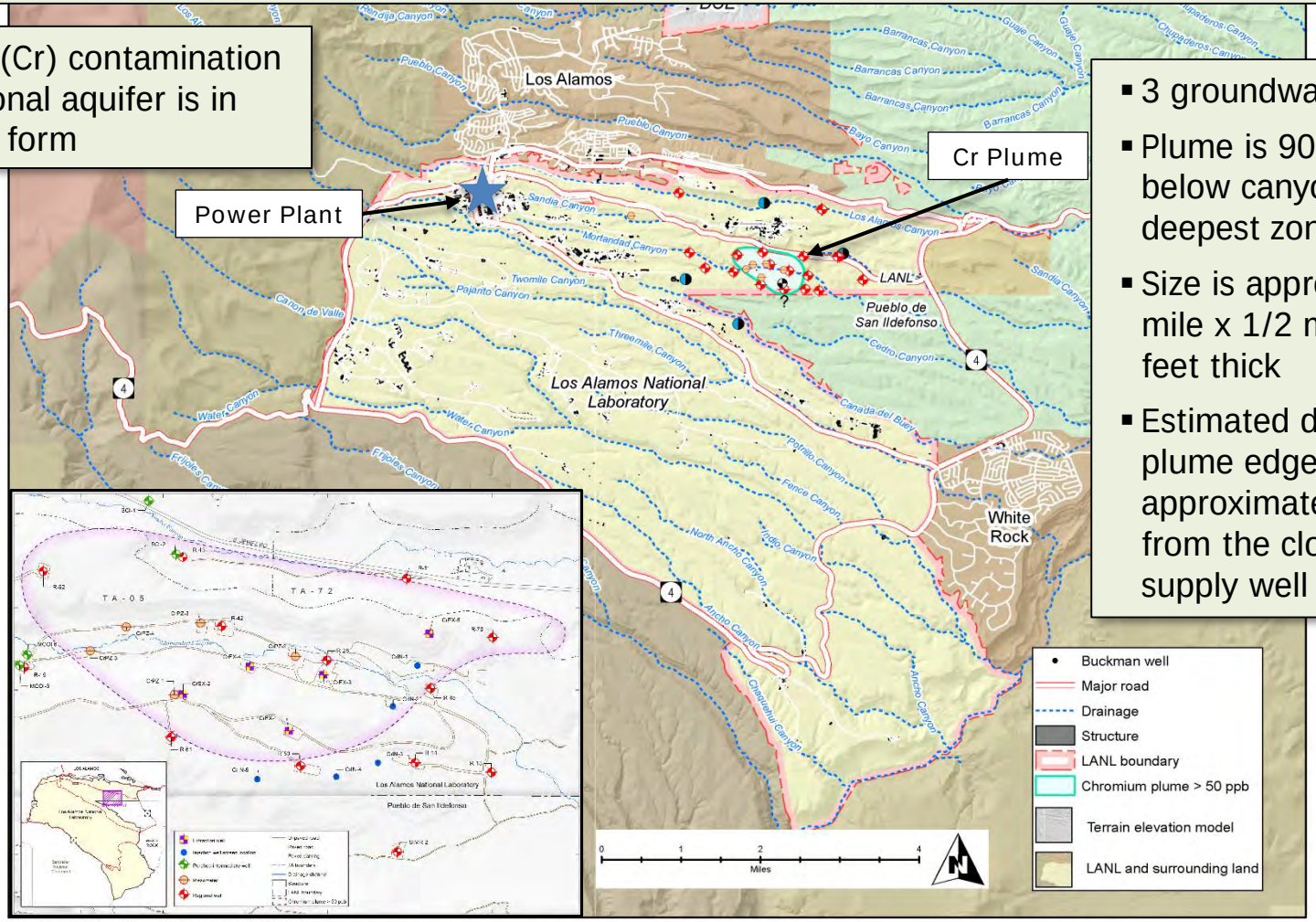
Simplified Depiction of Groundwater at Los Alamos



Chromium in Groundwater Beneath LANL

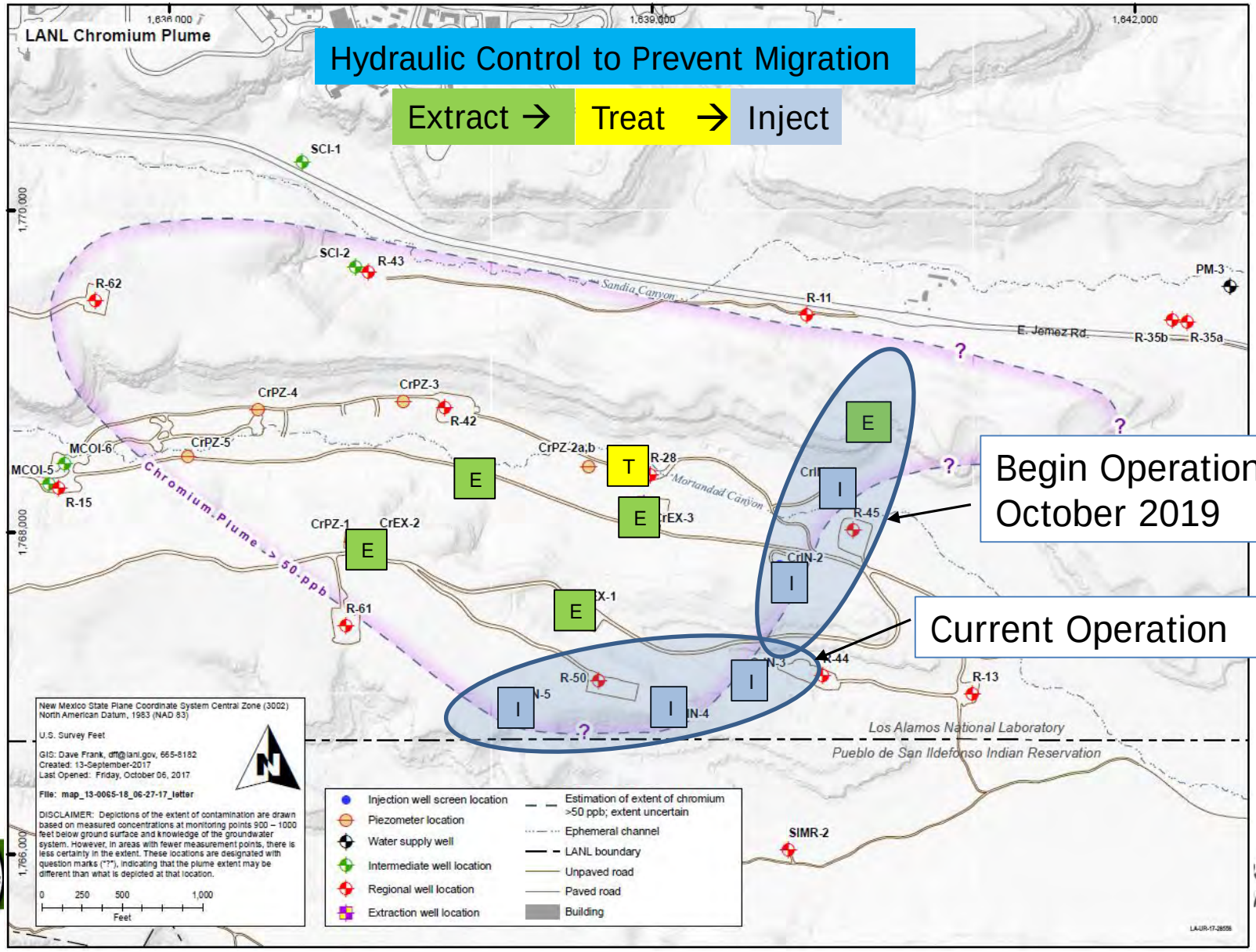
- Potassium dichromate used in cooling towers at a Laboratory power plant
- Up to 160,000 lb released from 1956-72 in hexavalent form [Cr(VI)]

Chromium (Cr) contamination in the regional aquifer is in hexavalent form



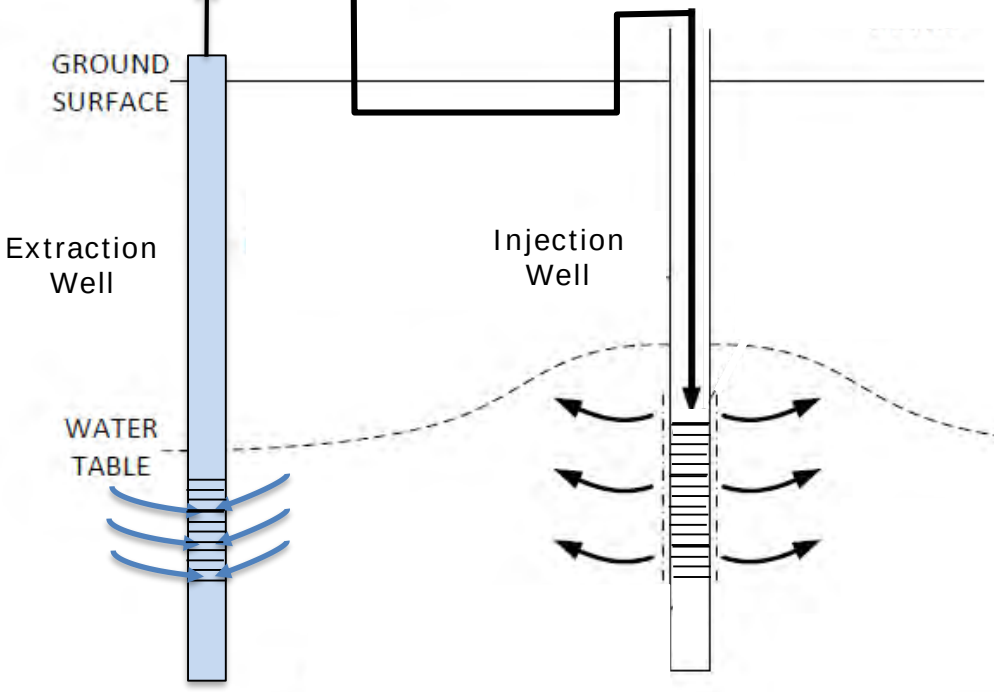
- 3 groundwater zones
- Plume is 900–1,000 feet below canyon bottom in deepest zone
- Size is approximately 1 mile x 1/2 mile x <75 feet thick
- Estimated downgradient plume edge is approximately 1/4 mile from the closest water-supply well

What is being done to address the plume? "Interim Measure"



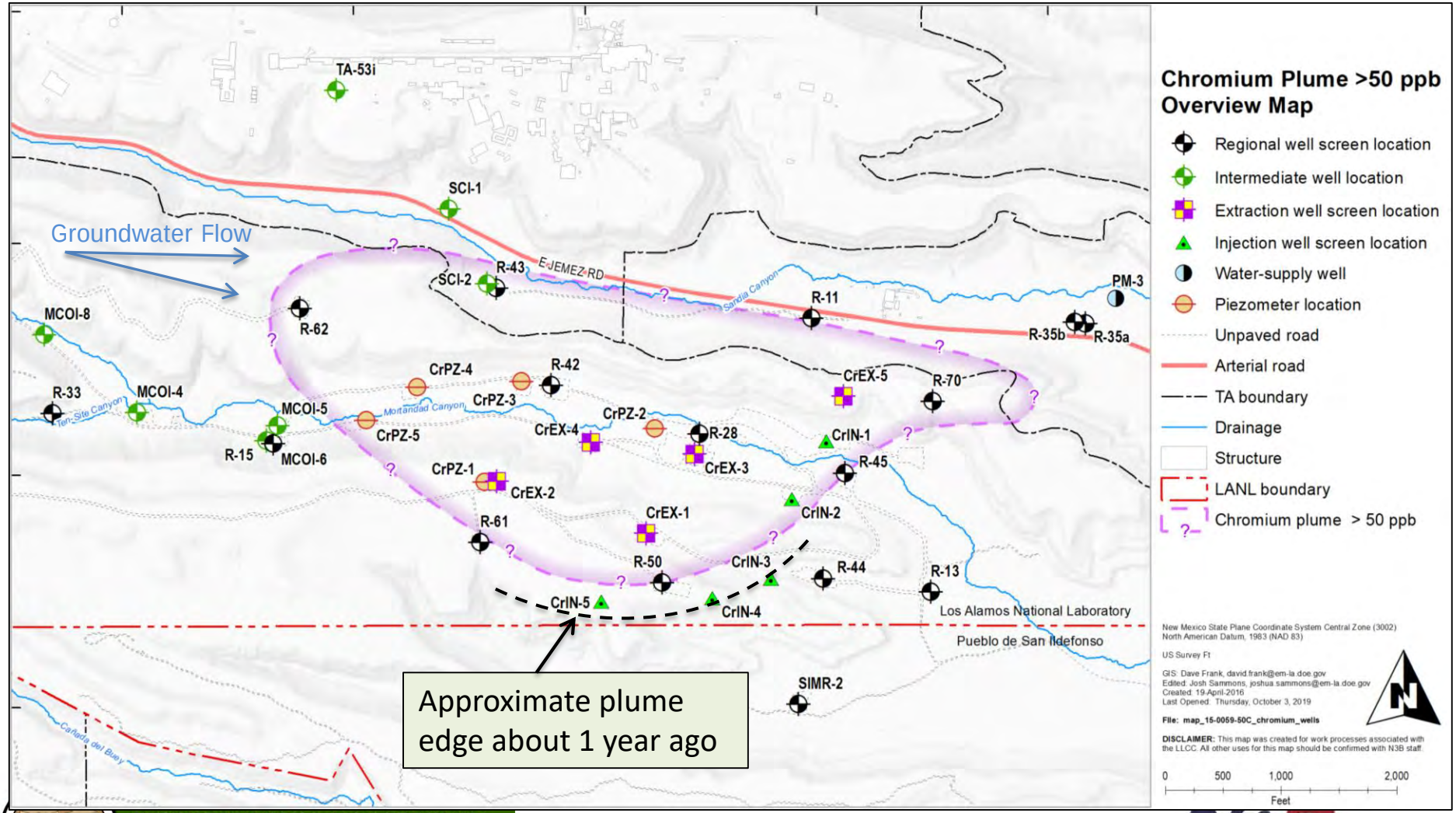
Extraction, Treatment & Injection Loop

Ion Exchange Treatment Unit



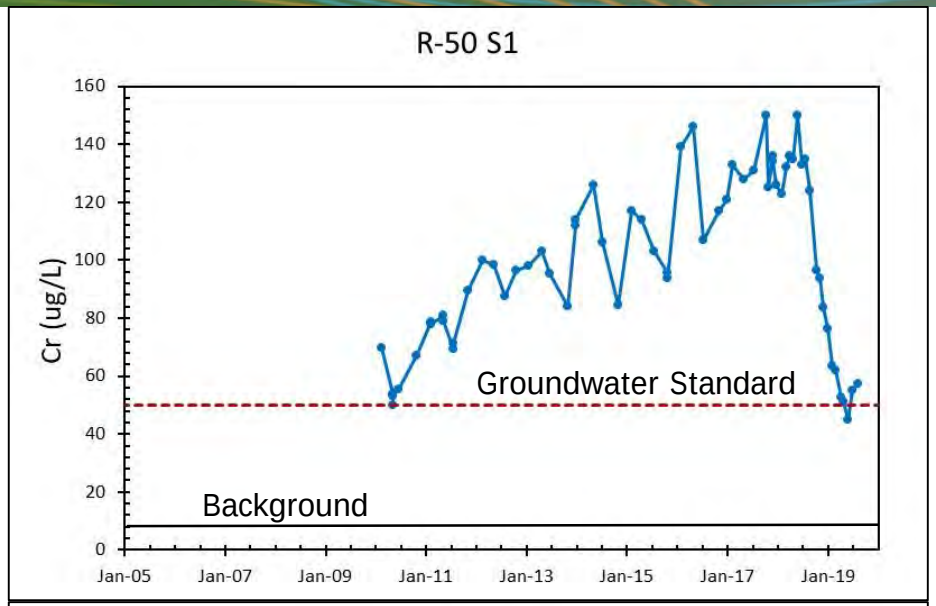
- Contaminated groundwater is pumped from extraction wells
- Groundwater is treated using a method called ion exchange
- Clean water is delivered via buried thick-walled piping to injection wells
- Water exits the injection wells within the aquifer

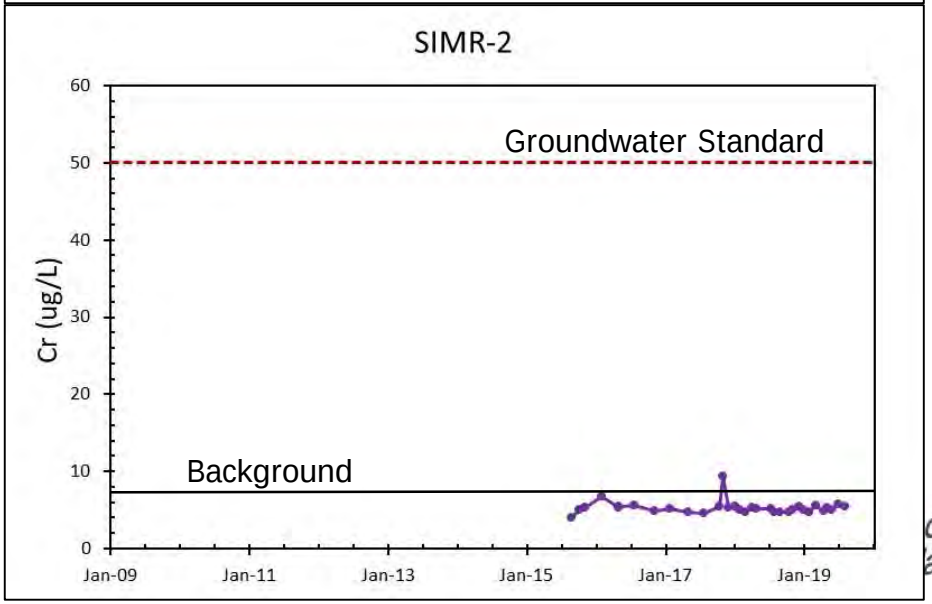
Current Plume Depiction



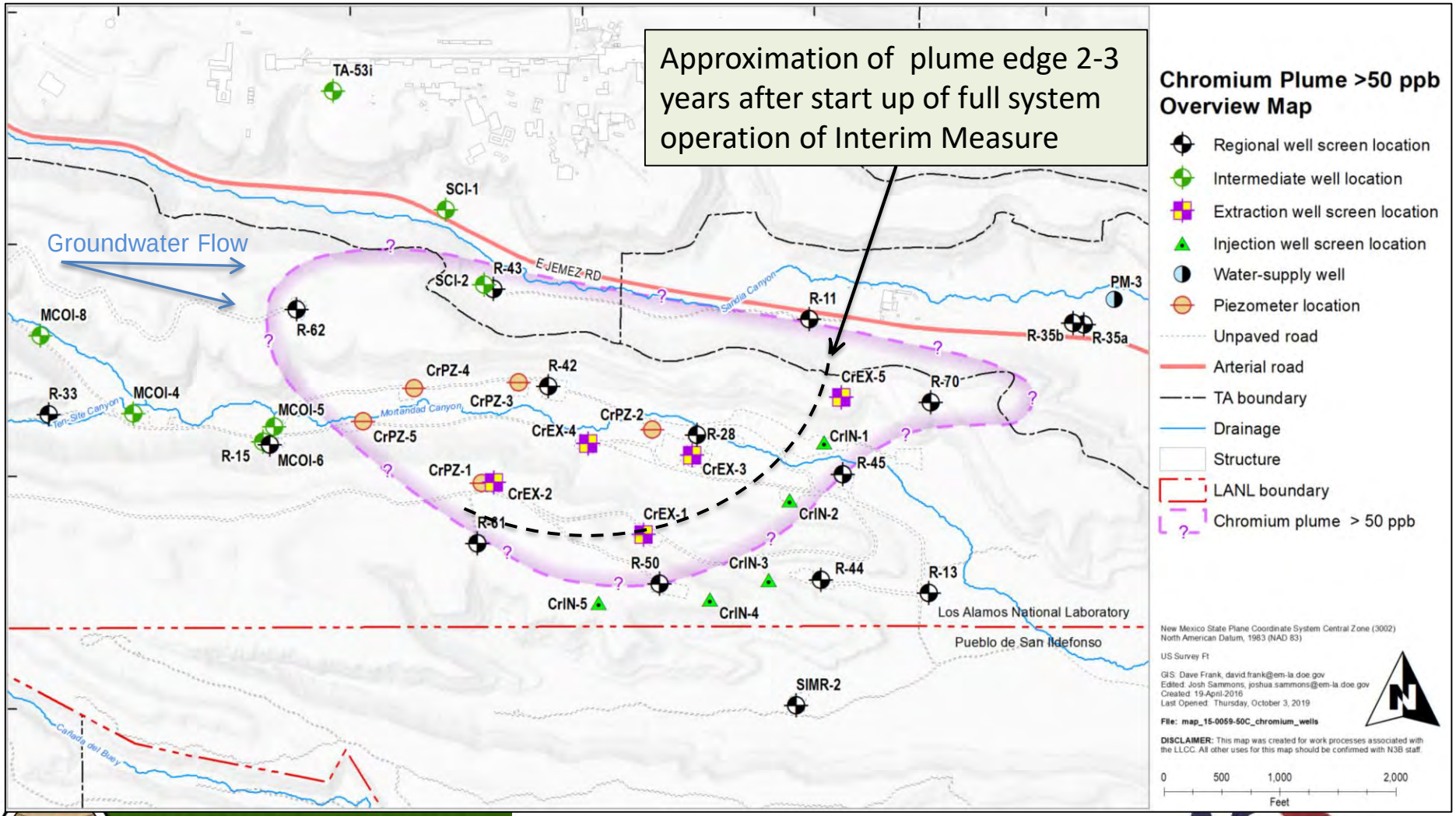
Performance Monitoring Data

- Pumping and injection has been occurring along the southern edge of the plume near the boundary with the Pueblo de San Ildefonso for about a year
- The most recent samples at regional aquifer well R-50, near the Laboratory boundary with the Pueblo de San Ildefonso, show decreased chromium levels to around 50 parts per billion (ppb)
- This indicates that the Interim Measure's hydraulic plume control approach is effective
- Chromium concentrations in SIMR-2 remain below background concentrations for chromium



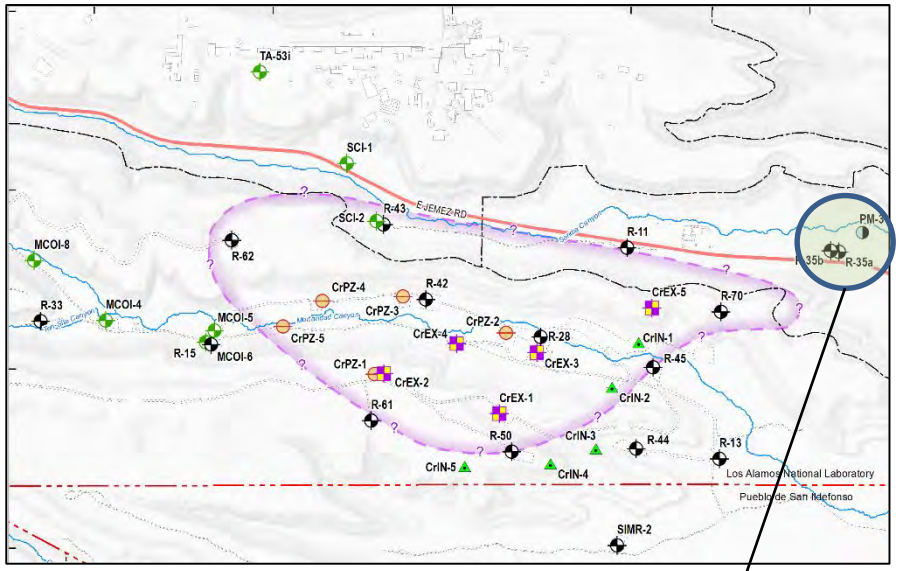


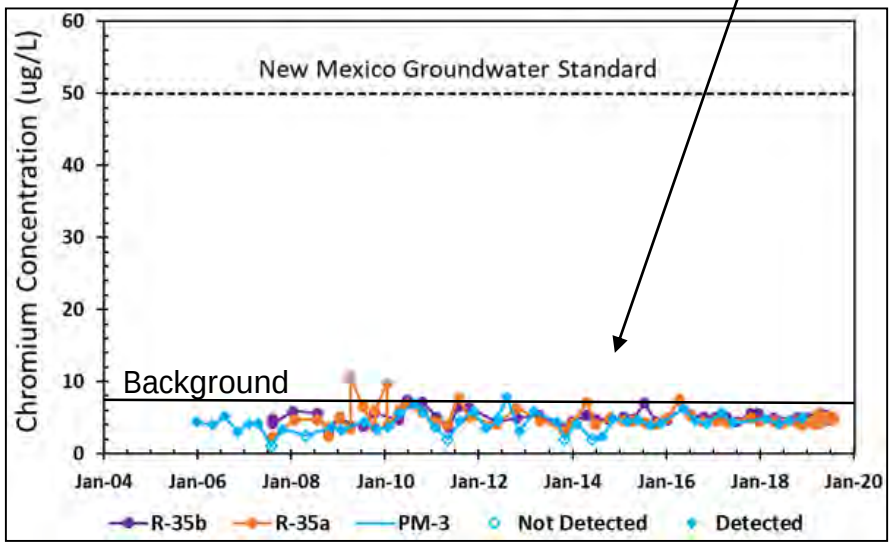
Goal of the Interim Measure



Project Update – Interim Measure

- IM along the southern Laboratory boundary with San Ildefonso operational since May 2018
- Converted injection well CrIN-6 to the 5th extraction well (CrEX-5) in July 2019
- Received Emergency Authorization from NM Office of the State Engineer for use of additional points of diversion in the Cr plume area
- Full implementation of the IM (enabled by Emergency Authorization) is scheduled to begin in October 2019
- New monitoring well R-70 was installed in May 2019 to supplement monitoring of IM performance along the eastern portion of the plume





Project Update – Characterization

- Initial sampling results from R-70 have helped better characterize the distribution of chromium in that portion of the plume
- Continue studies to evaluate final remedy
- Two new groundwater monitoring wells (R-71 and R-72) planned for additional characterization of extent of contamination
- Corrective Measures Evaluation Report scheduled for September 2021

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Questions

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