



U.S. DEPARTMENT OF
ENERGY

OFFICE OF
**ENVIRONMENTAL
MANAGEMENT**



Los Alamos National Laboratory's Chromium Project

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ENVIRONMENTAL MANAGEMENT
SAFETY ♦ PERFORMANCE ♦ CLEANUP ♦ CLOSURE

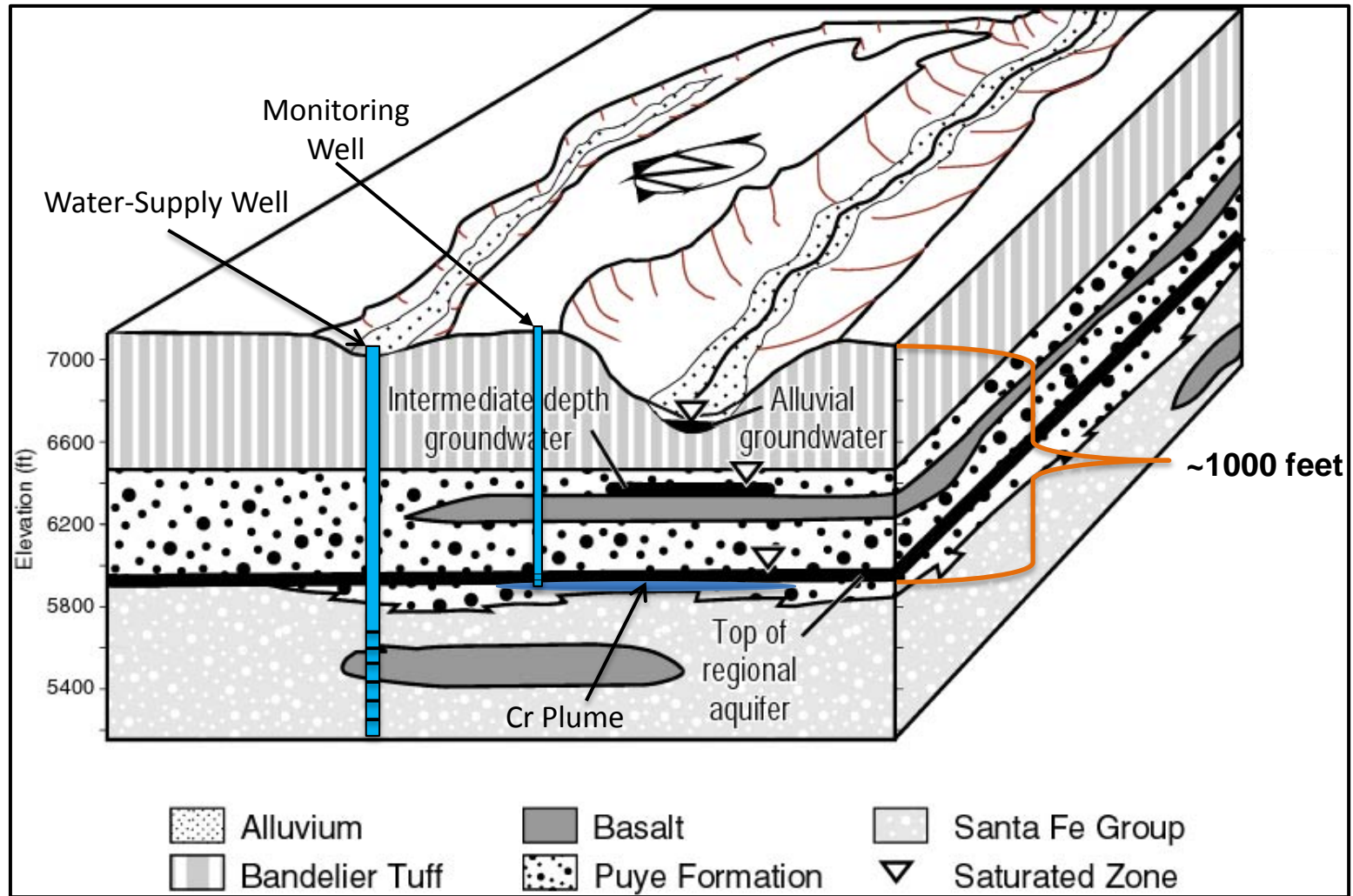


- **Groundwater Setting**
- **Where did the chromium come from and where is it now?**
- **What is being done to address the plume?**
- **Recent Changes**
- **Project Status**





Groundwater beneath Los Alamos

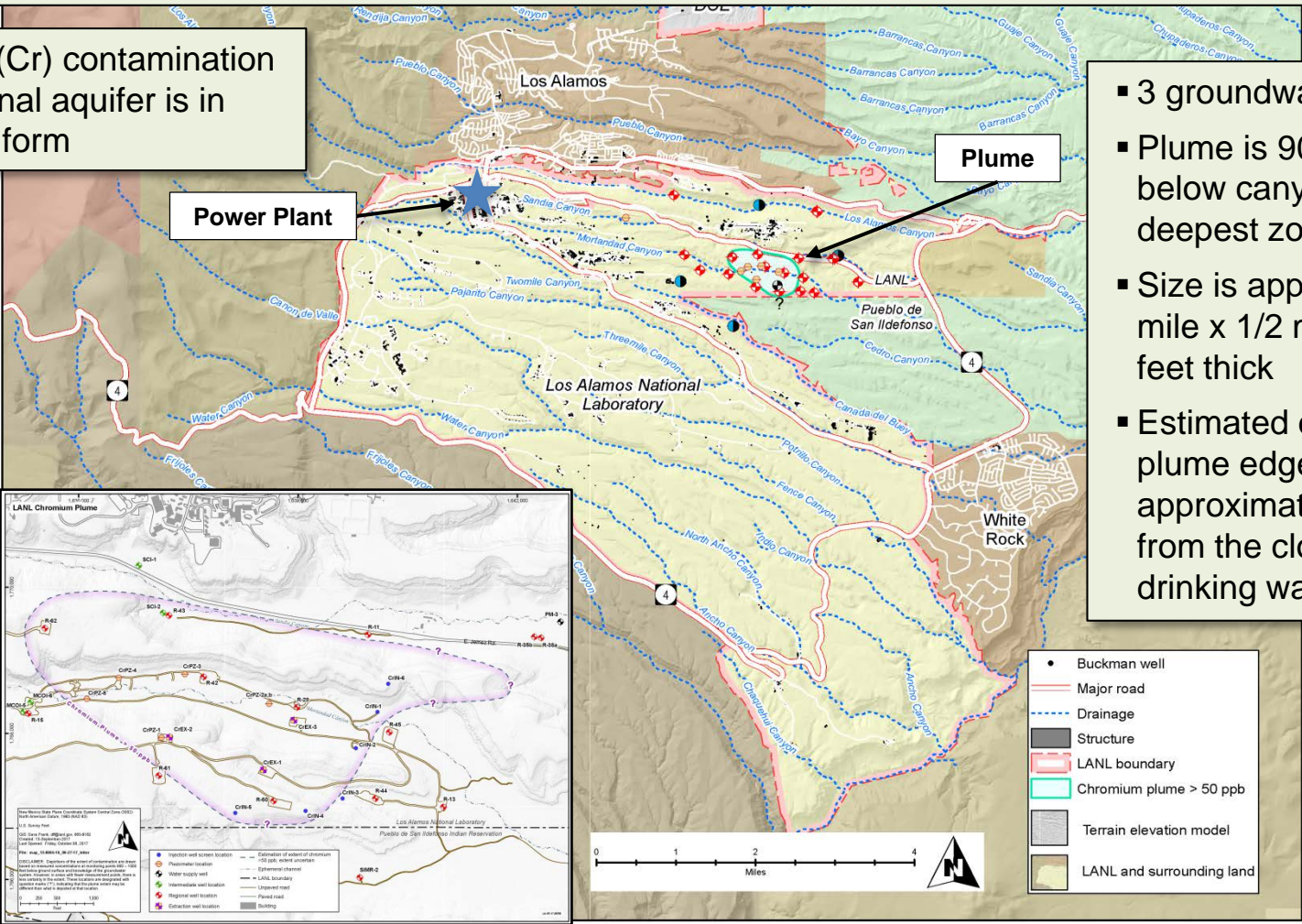




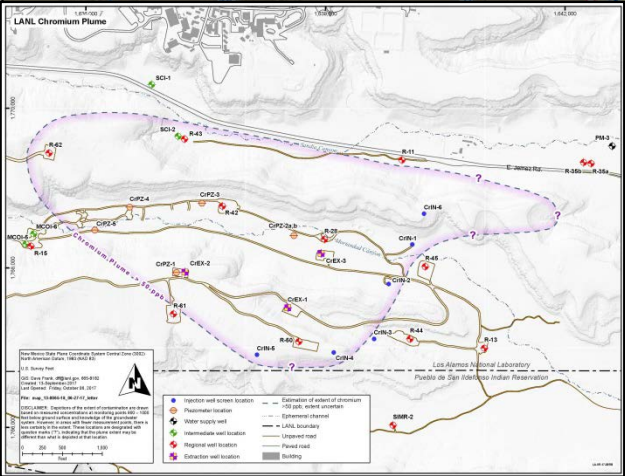
Chromium in Groundwater Beneath LANL

- 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



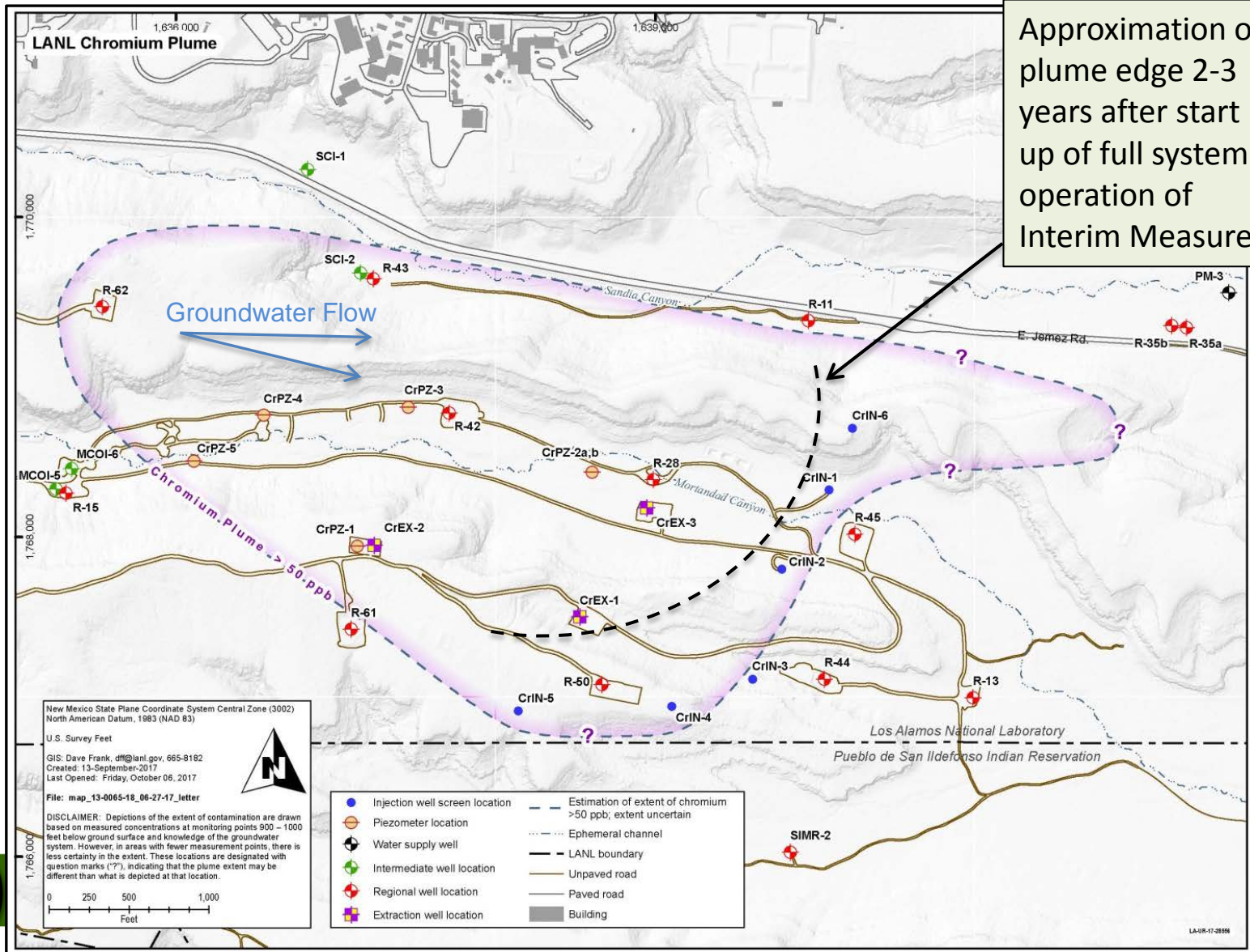
- 3 groundwater zones
- Plume is 900–1,000 feet below canyon bottom in deepest zone
- Size is approximately 1 mile x 1/2 mile x <50 feet thick
- Estimated downgradient plume edge is approximately 1/4 mile from the closest drinking water well





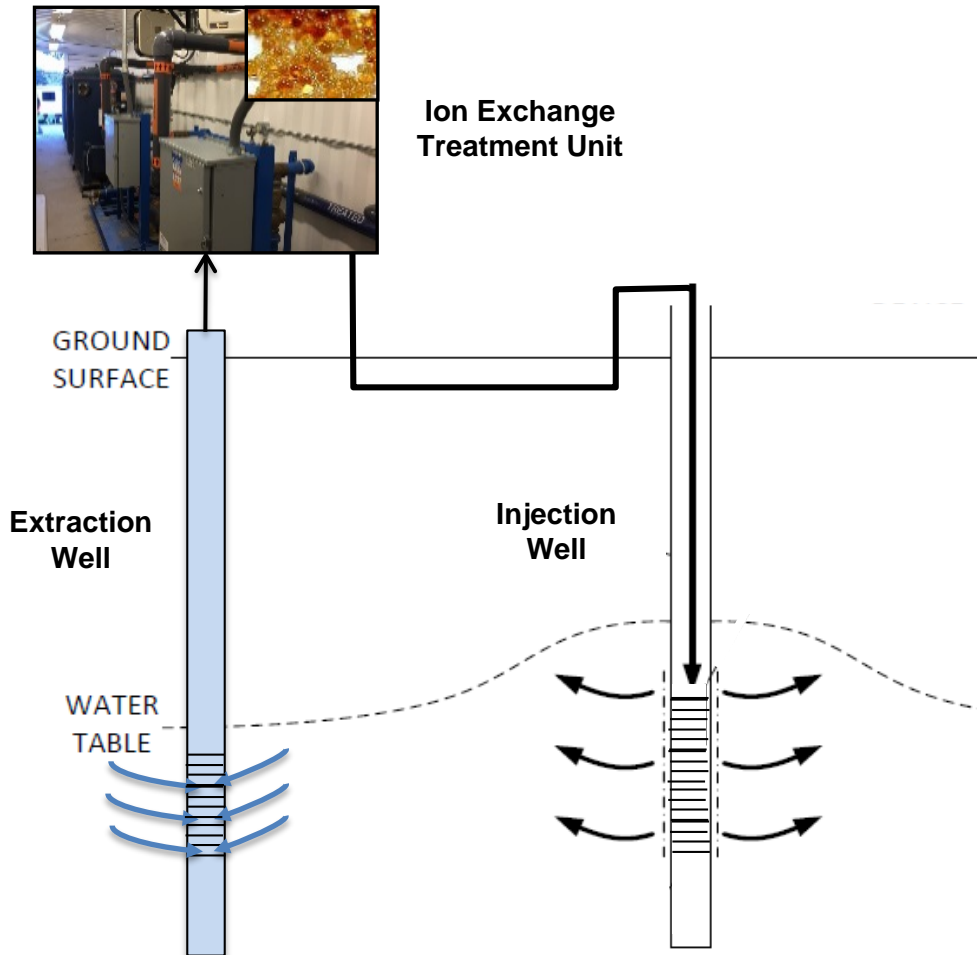
Goal of the Interim Measure

Approximation of plume edge 2-3 years after start up of full system operation of Interim Measure





Extraction, Treatment & Injection Loop

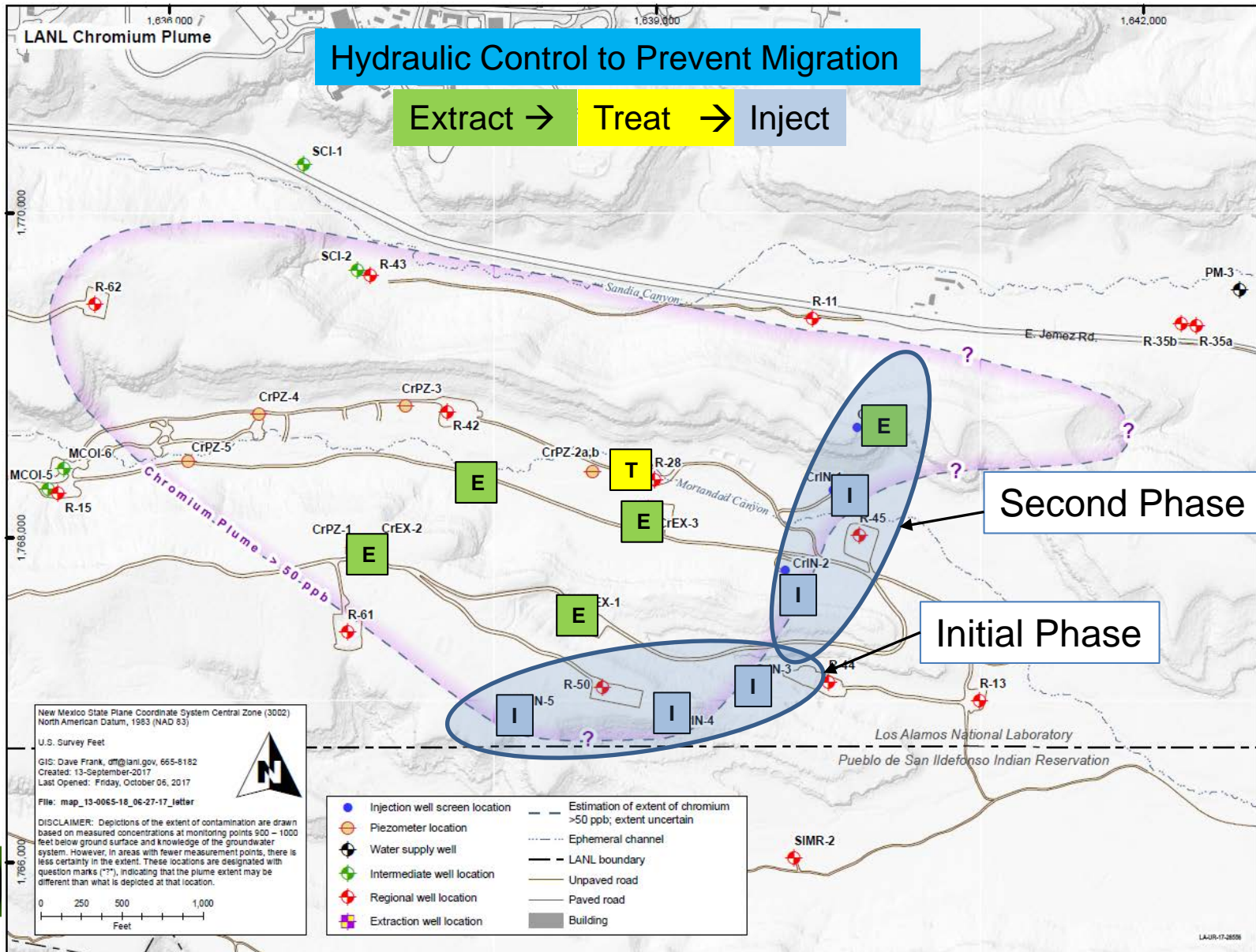


- Contaminated groundwater is pumped from extraction wells
- Groundwater is treated using a method called ion exchange
- Clean water is delivered via buried thick-walled piping to injection wells
- Water exits the injection wells within the aquifer





What is being done about the plume? "Interim Measure"

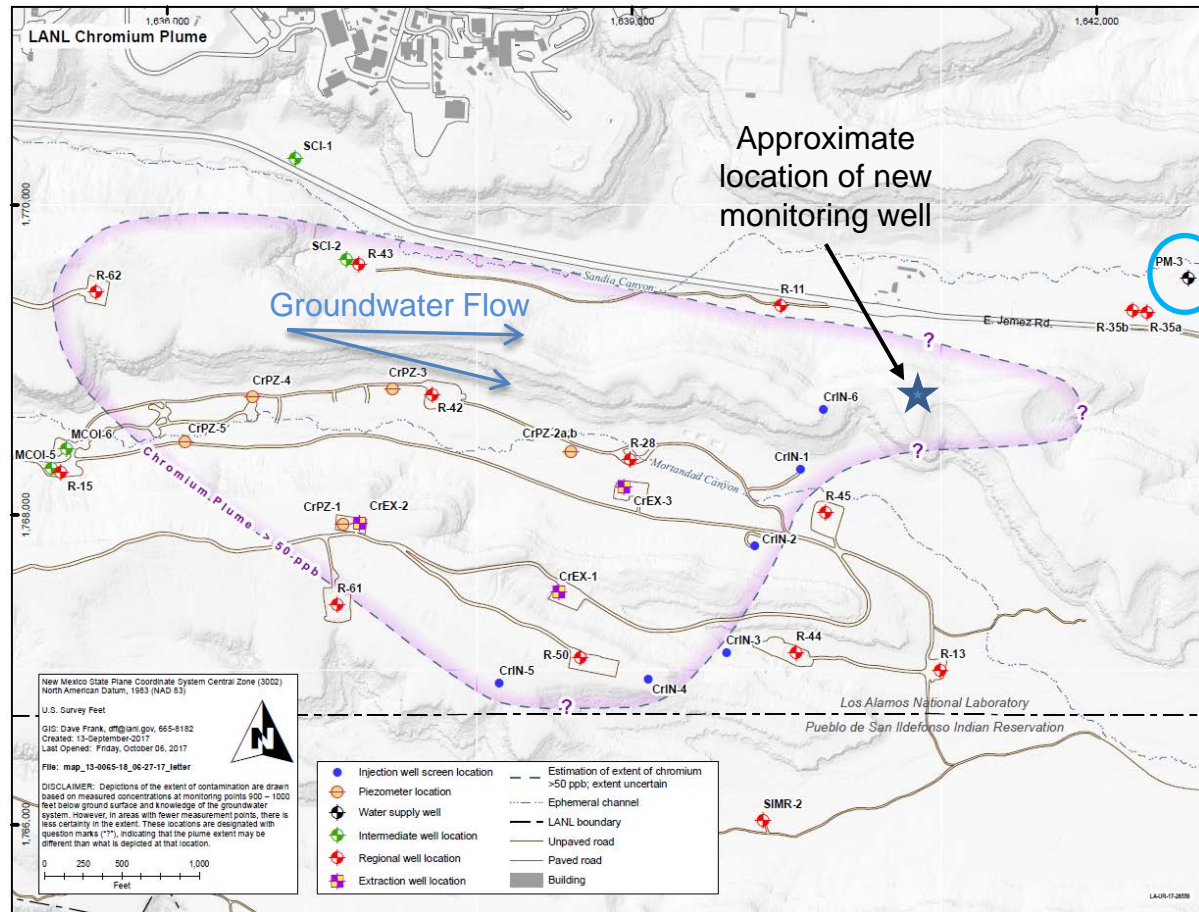




April 26, 2018 Submittal to NMED - Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6

- Evaluated injection vs. extraction scenarios for CrIN-6
- Primary considerations:
 - Establish control of plume edge
 - Protect PM-3
 - Rate of reduction of Cr downgradient (east) of CrIN-6
- Conclusion:
 - Convert CrIN-6 to extraction well
 - Install additional monitoring well

June 6, 2018 NMED Approval to convert CrIN-6 to CrEX-5





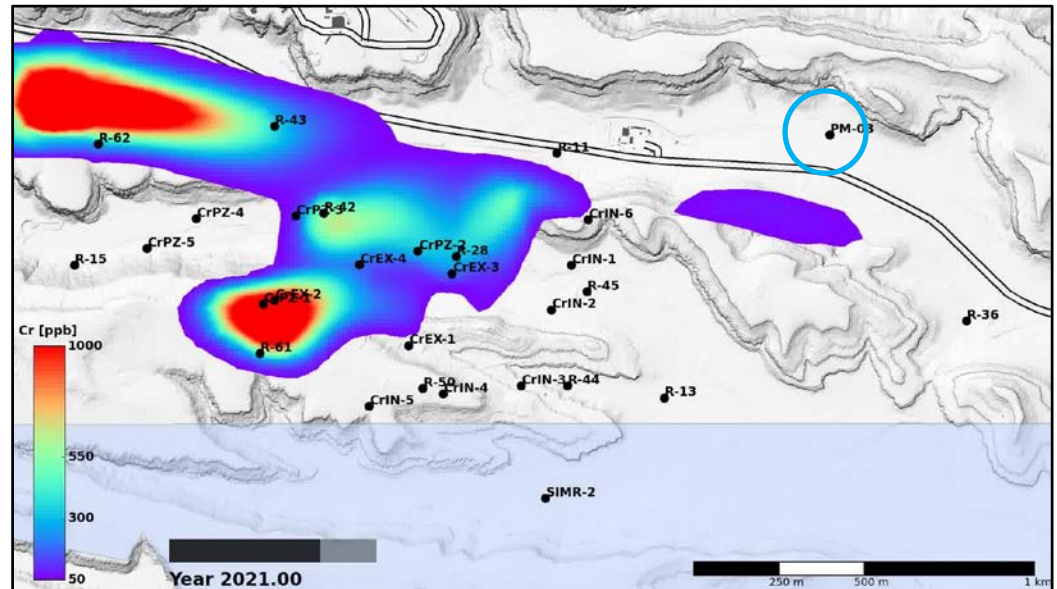
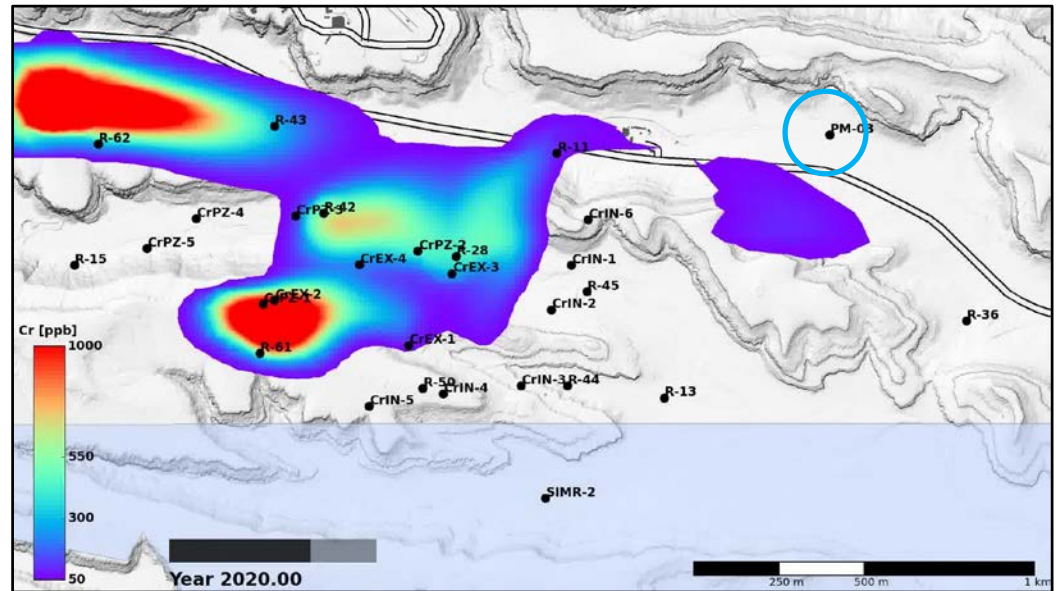
Scenarios evaluated included continuous extraction at CrEX-1, -2 and -3, and continuous injection at all injection wells

Injection Scenarios

- “Pushes” contamination to the north and possibly towards the Los Alamos County well PM-3

Extraction Scenarios

- “Captures” contamination from the north
- More protective of PM-3





- **Operated pumping and injection system for ~ 5 months in early 2017**
- **Full-time operations along Laboratory boundary with Pueblo de San Ildefonso restarted late May 2018 and will run continuously for foreseeable future**
- **CrIN-6 reconfiguration activities July – December 2018**
 - ❑ **Converting CrIN-6 into an extraction well (“CrEX-5”)**
 - ❑ **Design/install infrastructure to connect to treatment system**
- **Full system operation (inclusive of CrEX-5) expected to start in early 2019**
- **Continue studies to evaluate final remedy**



A landscape photograph of a sunset or sunrise over a mountain range. The sky is filled with soft, wispy clouds in shades of orange, yellow, and blue. The mountains in the foreground are silhouetted against the bright horizon. The word "Questions?" is written in a large, bold, black sans-serif font in the center of the image.

Questions?