

OS



ENTERED

LANL Sandia/Mortandid
Canyon
Groundwater ~~Plume~~
Chromium Plume

Cobrain, Dave, NMENV

From: Cobrain, Dave, NMENV
Sent: Thursday, July 05, 2012 4:30 PM
To: Davis, Jim, NMENV
Cc: Kieling, John, NMENV
Subject: reducing agent as a remedy for vadose zone chromium VI

Jim,

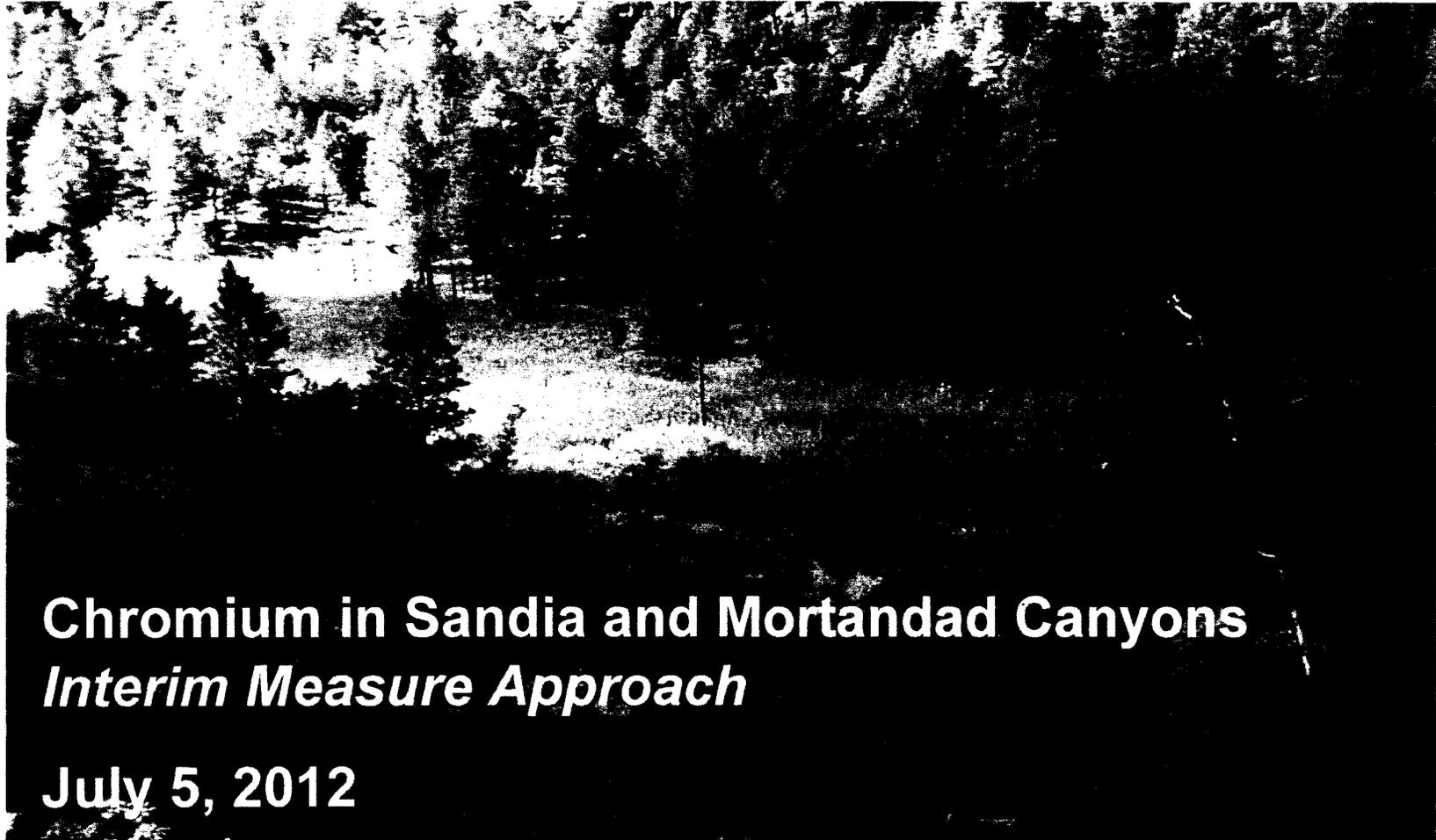
The meeting wasn't the appropriate time to bring this up but I'm pretty skeptical that introducing a reducing agent into surface water after restricting flow by some 83% and hoping it will have an effect on waters currently in the vadose zone migration pathways is practical. The water already in the vadose zone is moving downward under a head pressure that is currently six times higher than the pressures that would be induced by the proposed restricted flow rate in the infiltration zone. The downward velocity of the water containing the reducing agent will move downward more slowly under the reduced head pressures and not be able to overcome the existing head pressures in the perched aquifer(s). The reducing agent would have to be extremely soluble and with a density great enough to move at a significantly faster rate through water in the subsurface. We don't know where the drip points are to the regional aquifer water table (800-900 feet bgs) but we do know that the water at a depth of approximately 500 feet in the perched aquifer at SCI-2 in Sandia Canyon was released no later than 1972. There's up to 16 years of infiltration beneath that perched zone if that water represents the last of the Chromium-contaminated water discharged in 1972. If that perched zone does represent the youngest chromium-contaminated water released from the outfall, it's taken up to 40 years for that water to infiltrate to a depth of 500 feet. There's no reason to believe that a reducing agent introduced into surface waters would have any kind of short-term effect. The approach probably did well in South Carolina where the depth to ground water is somewhere in the neighborhood of +/- 30 feet. Let's hope they have a convincing argument.

Dave

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Los Alamos National Laboratory



Chromium in Sandia and Mortandad Canyons *Interim Measure Approach*

July 5, 2012

Interim Measures - Proposed Objectives

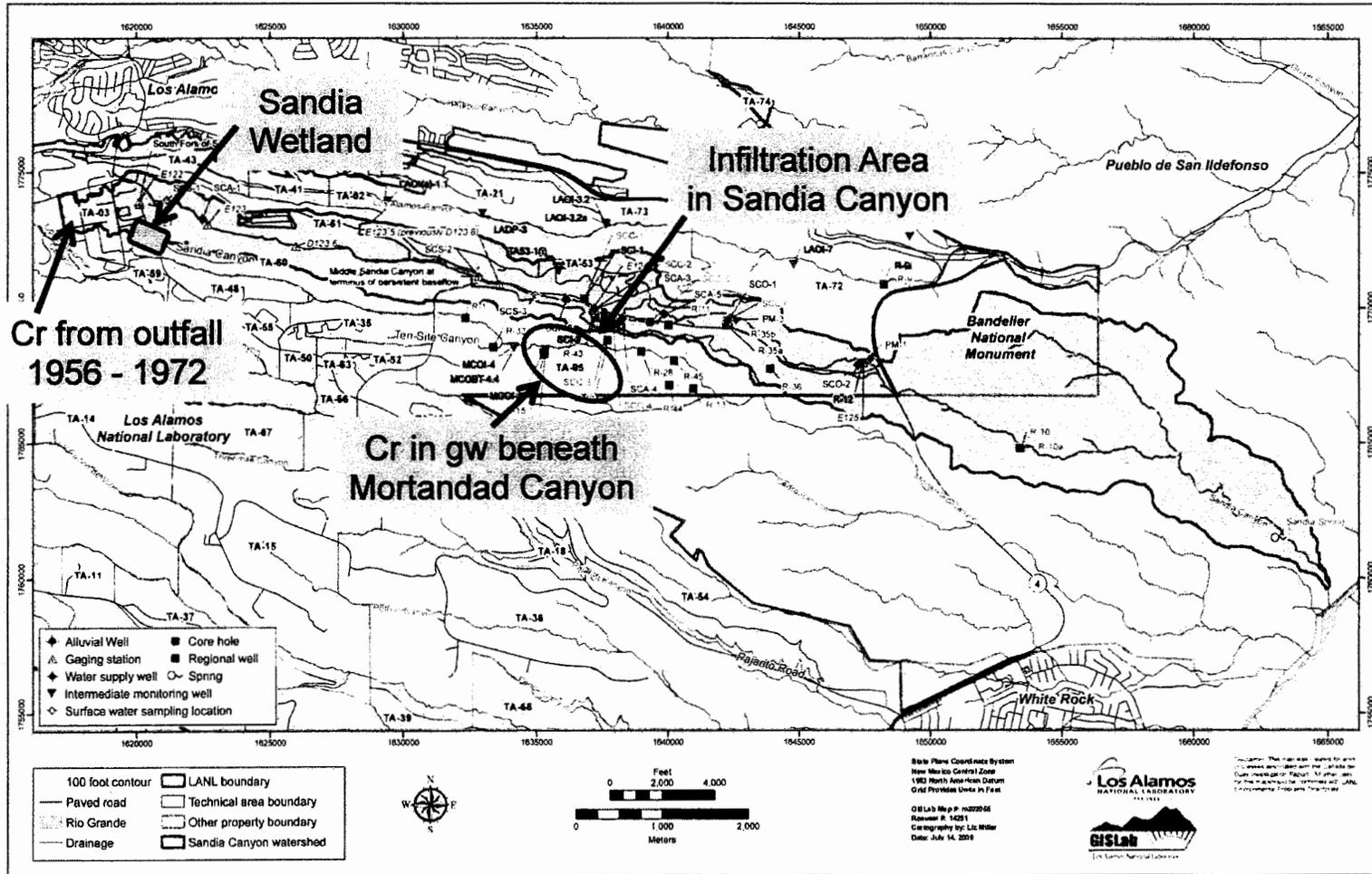
The Objective of the Interim Measure is to:

- Contain the plume at the Laboratory boundary with the Pueblo de San Ildefonso.
- Measures implemented for this objective should have the metric of reduction of Cr concentrations at R-50 to 50 ppb or less over a period of no greater than two years from the time of post-construction operation. If data from R-50 are determined to be insufficient to evaluate the performance of interim measures, an additional well may be installed downgradient of R-50 as part of performance monitoring, if allowed by the Pueblo de San Ildefonso.

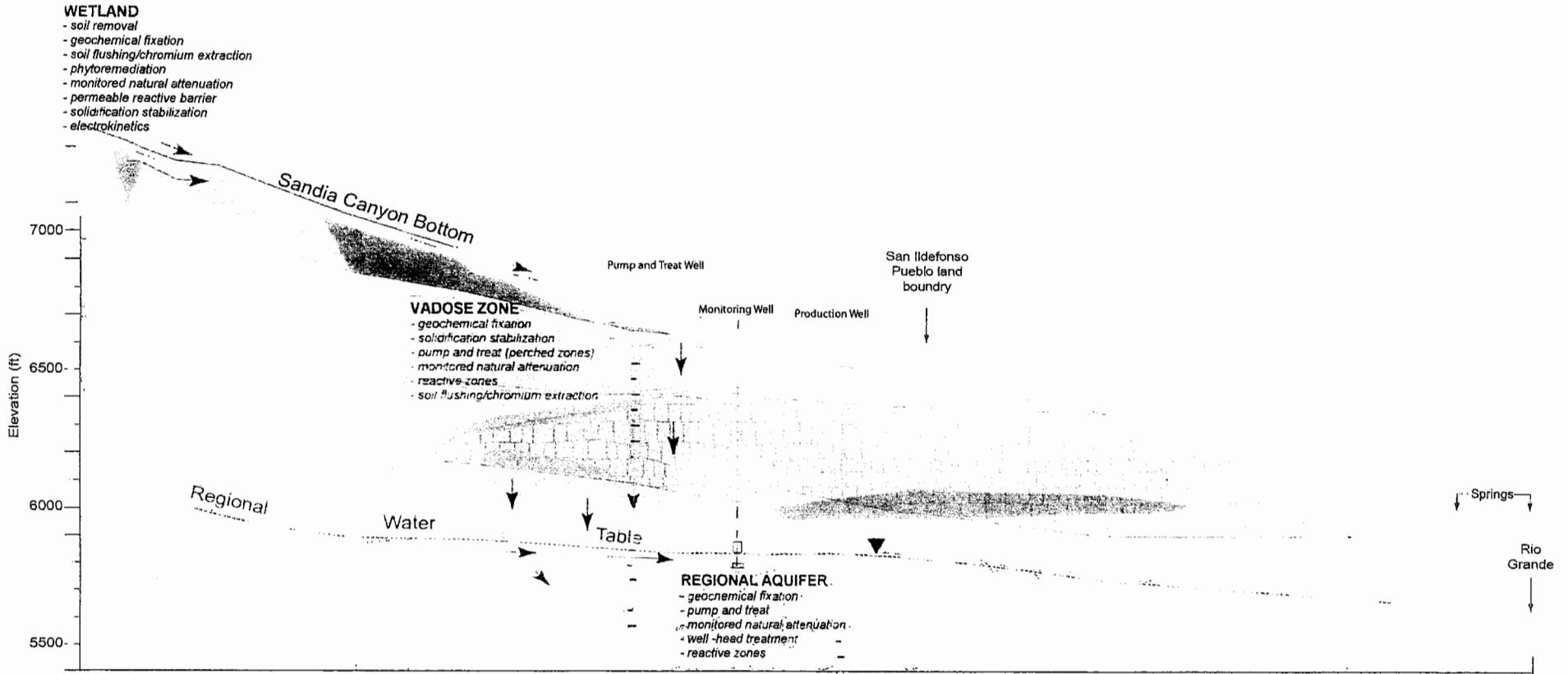
Approach:

- Discuss the interim measure objective with NMED.
- Conduct a review of technologies with an external review team. The review should be focused on the interim nature of the objective, but may consider longer-term objectives.
- Conduct hydraulic analysis to identify the approach to meet the interim measures objective.
- Submit an interim measures work plan to NMED in December 2012.
- Design and implement.

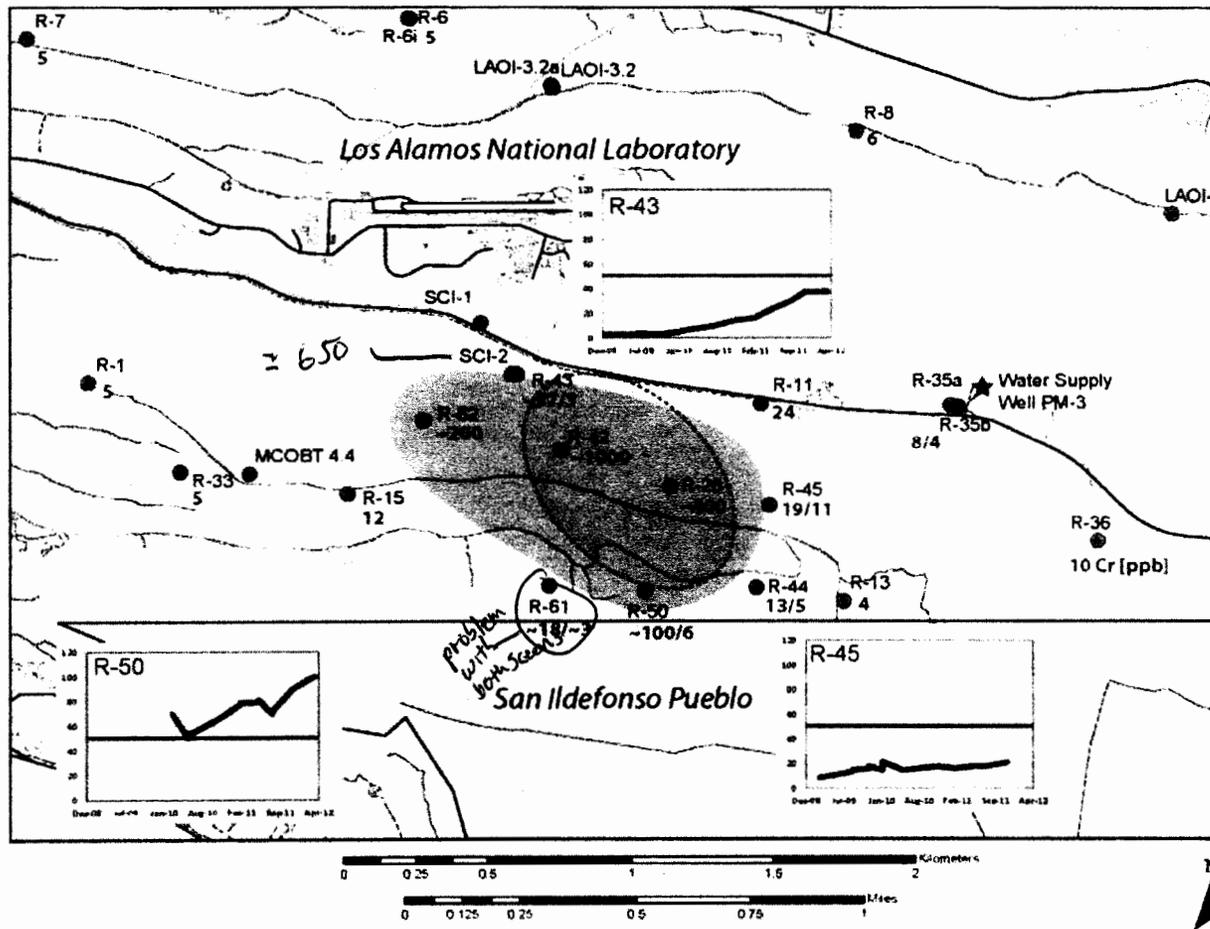
Source of Chromium in Groundwater



Vertical Migration



Chromium in Groundwater at LANL – Recent Changes

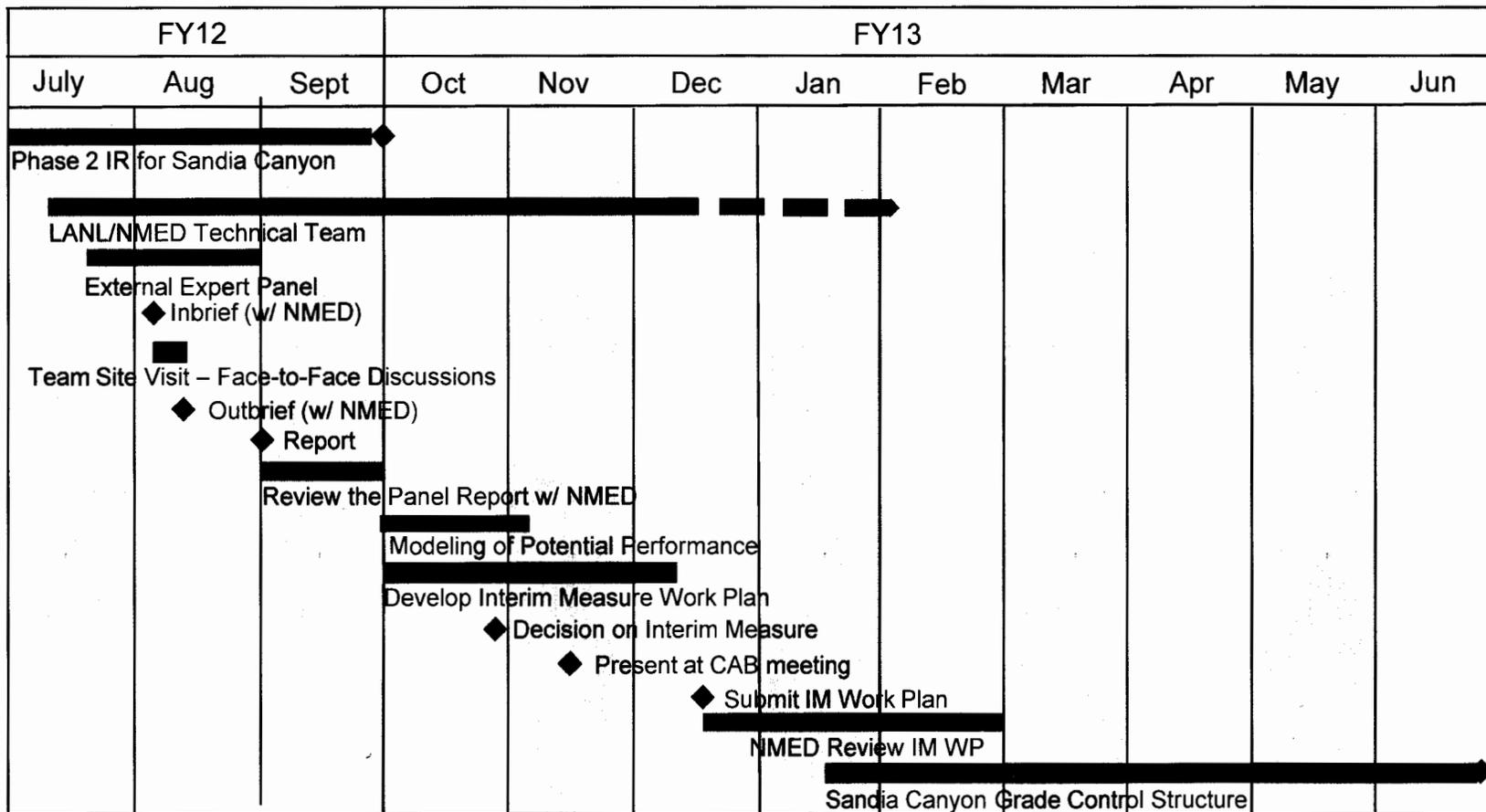


◆ The oval shape (black dash line) within the plume indicates the concentration projection (50 ppb) before R-61 and R-62 had been drilled.

◆ Increasing concentrations of Cr(VI) (100 ppb) at Laboratory boundary with San Ildefonso.

◆ Offsite extent of Cr(VI) greater than 50 ppb standard

Proposed Timeline for Interim Measure



Proposed Timeline for Interim Measure Completion

