

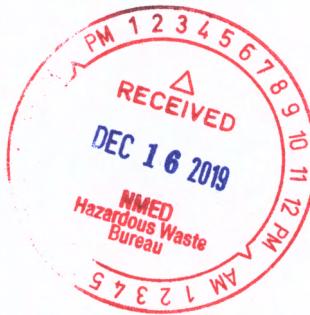


DEPARTMENT OF ENERGY
Environmental Management Los Alamos Field Office (EM-LA)
Los Alamos, New Mexico 87544

DEC 16 2019

EMLA-2020-1151-02-001

Mr. David Cobrain
Acting Bureau Chief
Hazardous Waste Bureau
New Mexico Environment Department
2905 Rodeo Park Drive East, Building 1
Santa Fe, NM 87505-6303



Subject: Submittal of the Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70

Dear Mr. Cobrain:

Enclosed please find two hard copies with electronic files of the "Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70." This work plan is being submitted to fulfill Fiscal Year 2020 Milestone 1 in Appendix B of the 2016 Compliance Order on **Consent (Consent Order)**.

Pursuant to Section XXIII.C of the Consent Order, two pre-submission review meetings were held with the U.S. Department of Energy Environmental Management Los Alamos Field Office (EM-LA); Newport News Nuclear BWXT-Los Alamos, LLC (N3B); and the New Mexico Environment Department on November 5, 2019, and December 3, 2019, to discuss the objectives and content of the work plan.

If you have any questions, please contact Danny Katzman at (505) 309-1371 (danny.katzman@em-la.doe.gov) or Cheryl Rodriguez at (505) 257-7941 (cheryl.rodriguez@em.doe.gov).

Sincerely,

A handwritten signature in blue ink.

Arturo Q. Duran
Compliance and Permitting Manager
Environmental Management
Los Alamos Field Office

Enclosures:

1. Two hard copies with electronic files – Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70 (EM2019-0458)

39256



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December 2019
EM2019-0458

Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70



Newport News Nuclear BWXT-Los Alamos, LLC (N3B), under the U.S. Department of Energy Office of Environmental Management Contract No. 89303318CEM000007 (the Los Alamos Legacy Cleanup Contract), has prepared this document pursuant to the Compliance Order on Consent, signed June 24, 2016. The Compliance Order on Consent contains requirements for the investigation and cleanup, including corrective action, of contamination at Los Alamos National Laboratory. The U.S. government has rights to use, reproduce, and distribute this document. The public may copy and use this document without charge, provided that this notice and any statement of authorship are reproduced on all copies.

Assessment Work Plan for the Evaluation of Conditions in the Regional Aquifer Around Well R-70

December 2019

Responsible program director:

Bruce Robinson		Program Director	Water Program	12/6/2019
Printed Name	Signature	Title	Organization	Date

Responsible N3B representative:

Erich Evered		Program Manager	N3B Environmental Remediation Program	12/6/2019
Printed Name	Signature	Title	Organization	Date

Responsible DOE EM-LA representative:

Arturo Q. Duran		Compliance and Permitting Manager	Office of Quality and Regulatory Compliance	12/13/19
Printed Name	Signature	Title	Organization	Date

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1.0 INTRODUCTION

This assessment work plan presents the assessment activities that will be conducted to evaluate conditions in the aquifer around new chromium interim measure (IM) performance monitoring well R-70. Figure 1.0-1 shows the location of R-70 with respect to the chromium plume footprint as approximated by the 50 µg/L extent. This evaluation was initially driven by the results of the first round of samples collected at new well R-70 (screens 1 and 2) in May 2019. Chromium concentrations in the May 2019 samples were 13 µg/L and 270 µg/L in screens 1 and 2, respectively. Although considered preliminary, these results led the New Mexico Environment Department (NMED) to issue a letter to the U.S. Department of Energy (DOE) Environmental Management Los Alamos Field Office (EM-LA) dated July 12, 2019, to install two new groundwater monitoring wells downgradient of R-70 (NMED 2019, 700508).

The July 12, 2019, letter identified a need for two additional groundwater monitoring wells to fulfill the following objectives for managing uncertainty associated with protection of Los Alamos County production well PM-3:

1. Characterize chromium contamination near the base of the Puye Formation directly upgradient of PM-3 (R-35c);
2. Define the lateral and vertical extent of chromium contamination in the northeastern portion of the plume (R-73).

EM-LA and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) engaged NMED in discussions regarding various possible explanations for the concentrations and vertical distribution of chromium occurrences in R-70. Concurrent with the technical discussions, EM-LA submitted a letter to NMED dated August 7, 2019, requesting an extension for submittal of the two drilling work plans for R-35c and R-73 (DOE 2019, 700531). In response, NMED issued a letter dated August 21, 2019, approving the extension request (NMED 2019, 700549).

A letter from EM-LA to NMED dated October 28, 2019, documents two meetings held on September 4 and September 17, 2019, involving the designated agency managers (DOE 2019, 700650). The designated agency manager discussions led to the agreement that this assessment work plan would be prepared and submitted to NMED by December 17, 2019 “in lieu of the direction NMED provided in the letter dated July 12, 2019” (NMED 2019, 700508). The agreement also included preparation and submittal of an evaluation report that would consider the need to drill R-35c based on the results of the assessment activities by June 17, 2020.

Pursuant to the assessment work plan presubmittal meetings held between EM-LA/N3B and NMED on November 5, 2019, and December 4, 2019, and the July 12, 2019, letter from NMED (NMED 2019, 700508), this work plan defines the activities associated with evaluating existing and newly acquired information on the condition of the regional groundwater that will support a final decision by June 17, 2020, on the need for R-35c and/or R-73. In addition to the detailed analysis of existing data, the assessment period provides the parties the opportunity to consider how the IM operations in the eastern portion of the plume (specifically extraction at CrEX-5 and injection into CrIN-1 and CrIN-2) impact the need for additional wells.

2.0 ASSESSMENT APPROACH

The following sections of this work plan present the assessment activities that will be conducted to provide multiple lines of evidence to address the work plan objectives. These lines of evidence will be used to address the objectives described in section 1.

Appendix A includes a preliminary drilling work plan for well R-35c. Based on NMED's letter dated July 12, 2019, (NMED 2019, 700508) the assumption for this preliminary drilling work plan was that R-35c will be drilled near PM-3 and screened in strata between the depths of existing well screens at R-35a and R-35b, to investigate chromium contamination near the base of the Puye Formation upgradient of PM-3.

2.1 Evaluation of Alternate Conceptual Models for the Chromium Concentration Profile at R-70

2.1.1 Hydrostratigraphy

This assessment activity involves a detailed review of the hydrostratigraphy in the chromium plume, specifically as it relates to the spatial distribution of chromium in the eastern portion of the plume downgradient of R-70. Existing geologic information derived from core, cuttings, and geophysics data will be compiled and presented in cross-sections applicable to the assessment. The assessment will explore whether there are stratigraphic controls at formation scale, or finer, that may play a role in preferential plume migration. The Puye Formation (Tp), the pumiceous Puye unit [Tp(p)], and the Miocene pumiceous unit (Tp) are all present in the upper portion of the regional aquifer in the R-70 area (Figure 2.1-1). This analysis will explore whether there are indications that plume migration along stratigraphic controls (e.g., preferential hydrologic pathways) in the eastern portion of the plume is responsible for the occurrence of deep contamination at R-70. The hypothesized preferential pathways could result in migration in strata between R-35a and R-35b. Available geophysics data from R-35a will also be used to identify evidence of stratigraphic units that may indicate zones of higher hydraulic conductivities in the R-35 area. Vertical hydrologic gradients observed in two-screen wells in the eastern portion of the plume (e.g., R-45 and R-70 and paired wells [R-35b and R-35a]) will be assessed from the perspective of implications on groundwater flow and fate and transport as part of this evaluation.

As part of this analysis, hydraulic response data from various intentional and opportunistic hydraulic tests will be evaluated and incorporated into the chromium groundwater model. Examples of hydraulic test data include monitoring of pressure responses at CrEX-5 and other nearby wells from development/aquifer testing conducted on each of the R-70 screens; pressure responses at CrEX-5, R-35a, R-35b, and R-70 screen 1 and screen 2 to water-supply pumping at PM-3; and pressure responses at R-70 screen 1 and screen 2 from IM operations, including extraction at CrEX-5.

2.1.2 Hydrogeochemistry

This assessment activity involves use of geochemical data to evaluate whether there is geochemical stratification in the regional aquifer that explains the vertical distribution of chromium at R-70. Geochemical data, including stable isotopes, from surrounding wells will be used for this analysis. Geochemical stratification could be caused by mixing of groundwater flow paths that originate from different upgradient source areas with different geochemical signatures. As described in the "Compendium of Technical Reports Conducted Under the Work Plan for Chromium Plume Center Characterization" (LANL 2018, 602964), there appears to be a distinct geochemical domain in the northern portion of the plume, as expressed in data from R-11. This assessment will consider evidence that this type of mixing could be responsible for the chromium profile at R-70.

A review of zonal sampling that was conducted during drilling of R-35a will also be conducted. The R-35a and R-35b well completion report discusses groundwater samples collected during drilling in the regional aquifer (LANL 2007, 098129). A total of 18 screening samples were collected from the regional aquifer during drilling at R-35a at 40-ft intervals ranging from 760 to 840 ft below ground surface (bgs) (3 samples) and at 20-ft intervals ranging from 840 to 1140 ft bgs (15 samples). A total of 8 screening samples were collected during drilling at R-35b at 10-ft intervals ranging from 815 to 890 ft bgs. The borehole water samples were air-lifted to the surface with the drill casing positioned at a given depth.

2.1.3 Observations of Interim Measure Operations in Performance Monitoring Wells

The “Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6” (CrIN-6 evaluation report) considered the need for additional monitoring that would be necessary to support the alternatives considered for CrIN-6 (LANL 2018, 603032). The CrIN-6 evaluation report recommended an additional monitoring well (R-70) to monitor the actual plume response to IM operations. The CrIN-6 evaluation report presented model results that did not discern potential stratification in chromium concentrations like those that had been initially observed between R-70 screens 1 and 2. As indicated in the CrIN-6 evaluation report, extraction at CrEX-5 and injection in CrIN-1 and CrIN-2 would result in decreasing concentrations in a performance monitoring well at the R-70 location. Monitoring at R-70 screen 1 and screen 2 will be important to determining the performance of the IM and whether the IM is controlling the plume in both monitored intervals. Sampling will be conducted on a monthly frequency in R-70 screens 1 and 2, expected to begin in January 2020, and will supplement ongoing monthly performance monitoring being conducted at wells R-35a, R-35b, R-45 screen 1 and screen 2, R-11, R-44 screen 1 and screen 2, R-50 screen 1 and screen 2, and SIMR-2 (Figure 1.0-1).

2.1.4 Groundwater Modeling

Modeling will be conducted to assess the adequacy of the performance monitoring network in the northeastern portion of the plume. The modeling analysis will incorporate, at a minimum, new hydraulic information derived from the data sources described in section 2.1.1 and conceptual model aspects and uncertainties derived from the assessment activities described in section 2.1.2. As with the modeling work proposed in the CrIN-6 evaluation report (LANL 2018, 603032), the model will be used to provide insights into how the chromium concentrations might trend in response to IM operations and how the chromium mass in the eastern portion of the plume downgradient of CrEX-5 and R-70 might dissipate once upgradient hydraulic capture is achieved under the IM and a new plume extent is established through hydraulic control.

Full quality assurance documentation and presentation of all input parameters and modeling uncertainties will be included in the assessment report.

3.0 IMPLEMENTATION SCHEDULE

All of the assessment activities in the work plan have already begun and will be completed for inclusion in an assessment report due to NMED by June 17, 2020, as required by the designated agency manager agreement documented in EM-LA’s October 28, 2019, letter (DOE 2019, 700650). Should the R-70 assessment report due to NMED by June 17, 2020, conclude that it is necessary to drill an additional well or wells, a drilling and installation schedule will be included in that report.

4.0 REFERENCES AND MAP DATA SOURCES

4.1 References

The following reference list documents cited in this report. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Laboratory's Associate Directorate for Environmental Management, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has references to review documents. The set is updated when new references are cited in documents.

DOE (U.S. Department of Energy), August 7, 2019. "Extension Request for Submittal of Two Drilling Work Plans for Monitoring Wells R-35c and R-73," U.S. Department of Energy letter EM-LA-40DH-00491 to J.E. Kieling (NMED-HWB) from D. Hintze (EM-LA), Los Alamos, New Mexico. (DOE 2019, 700531)

DOE (U.S. Department of Energy), October 28, 2019. "Response to NMED's Letter Dated August 21, 2019; Approval Extension Request for Submittal of Two Drilling Work Plans for Monitoring Well R-35c and R-73," U.S. Department of Energy letter EMLA-2020-1001-00-001 to J.E. Kieling (NMED-HWB) from D. Hintze (EM-LA), Los Alamos, New Mexico. (DOE 2019, 700650)

LANL (Los Alamos National Laboratory), September 2007. "Completion Report for Regional Aquifer Wells R-35a and R-35b," Los Alamos National Laboratory document LA-UR-07-5324, Los Alamos, New Mexico. (LANL 2007, 098129)

LANL (Los Alamos National Laboratory), March 2018. "Compendium of Technical Reports Conducted Under the Work Plan for Chromium Plume Center Characterization," Los Alamos National Laboratory document LA-UR-18-21450, Los Alamos, New Mexico. (LANL 2018, 602964)

LANL (Los Alamos National Laboratory), April 2018. "Evaluation of Chromium Plume Control Interim Measure Operational Alternatives for Injection Well CrIN-6," Los Alamos National Laboratory document LA-UR-18-23385, Los Alamos, New Mexico. (LANL 2018, 603032)

NMED (New Mexico Environment Department), July 12, 2019. "Results from Regional Groundwater Monitoring Well R-70," New Mexico Environment Department letter to D. Hintze (EM-LA) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2019, 700508)

NMED (New Mexico Environment Department), August 21, 2019. "Approval Extension Request for Submittal of Two Drilling Work Plans for Monitoring Wells R-35c and R-73," New Mexico Environment Department letter to D. Hintze (EM-LA) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2019, 700549)

4.2 Map Data Sources

Hillshade; Los Alamos National Laboratory, ER-ES, As published;
\\slip\gis\Data\HYP\LiDAR\2014\Bare_Earth\BareEarth_DEM_Mosaic.gdb; 2014.

Unpaved roads; Los Alamos National Laboratory, ER-ES, As published, GIS projects folder;
\\slip\gis\GIS\Projects\14-Projects\14-0062\project_data.gdb\digitized_site_features\digitized_roads; 2017.

Drainage channel; Los Alamos National Laboratory, ER-ES, As published, GIS projects folder;
\\slip\gis\GIS\Projects\15-Projects\15-0080\project_data.gdb\correct_drainage; 2017.

Structures; Los Alamos National Laboratory, KSL Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.

Paved Road Arcs; Los Alamos National Laboratory, FWO Site Support Services, Planning, Locating and Mapping Section; 06 January 2004; as published 29 November 2010.

Chromium plume > 50 ppb; Los Alamos National Laboratory, ER-ES, As published;
\\slip\gis\GIS\Projects\13-Projects\13-0065\shp\chromium_plume_2.shp; 2018.

Regional groundwater contour May 2017, 4-ft interval; Los Alamos National Laboratory, ER-ES, As published; \\slip\gis\GIS\Projects\16-Projects\16-0027\project_data.gdb\line\contour_wl2017may_2ft; 2017.

Regional groundwater contour November 2017, 2-ft interval; Los Alamos National Laboratory, ER-ES, As published; \\slip\gis\GIS\Projects\16-Projects\16-0027\project_data.gdb\line\contour_wl2017nov_2ft; 2017.

Point features; As published; EIM data pull; 2017.

Technical Area Boundaries; Los Alamos National Laboratory, Site Planning & Project Initiation Group, Infrastructure Planning Office; September 2007; as published 13 August 2010.

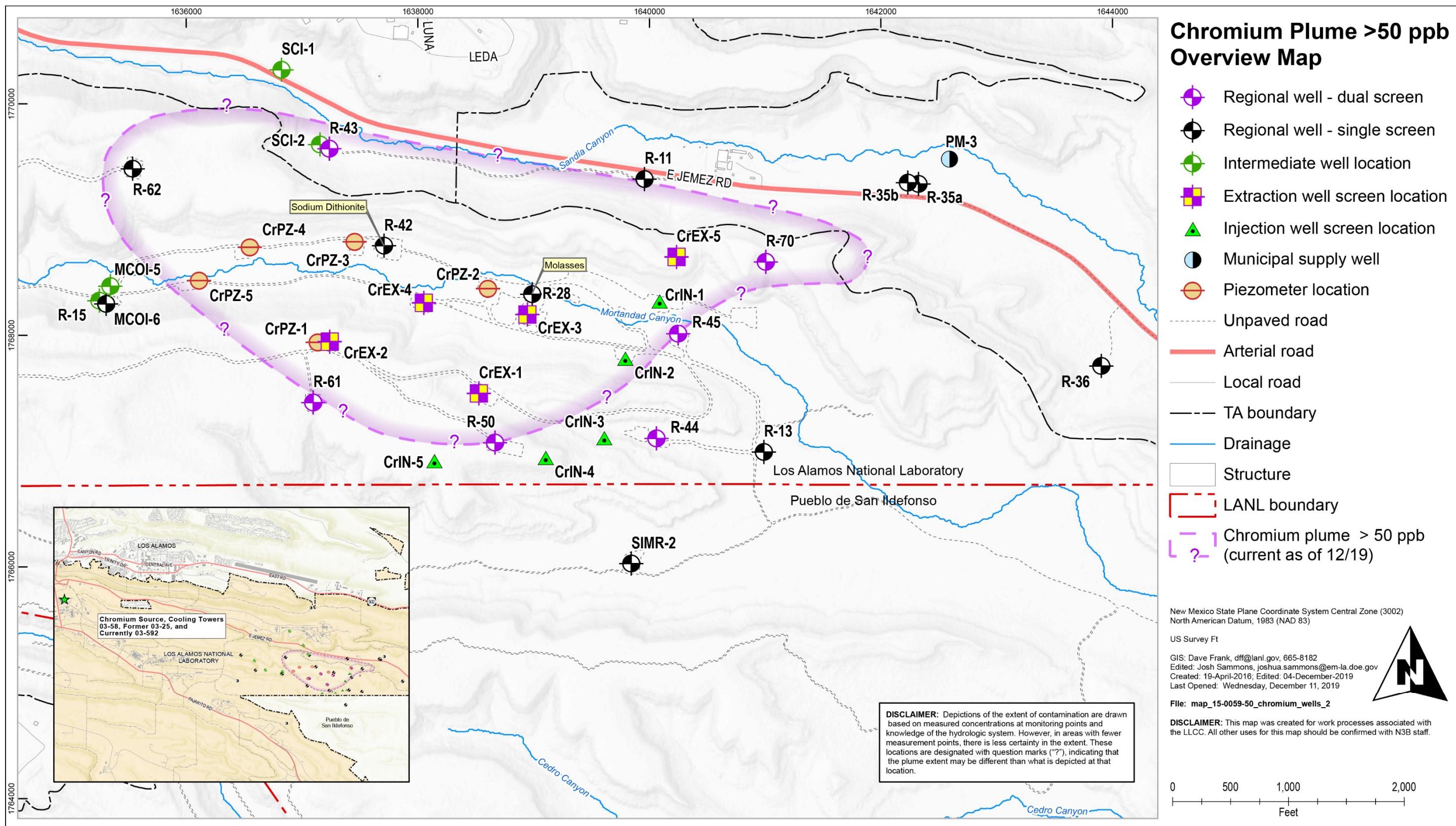


Figure 1.0-1 R-70 location with respect to the chromium plume footprint

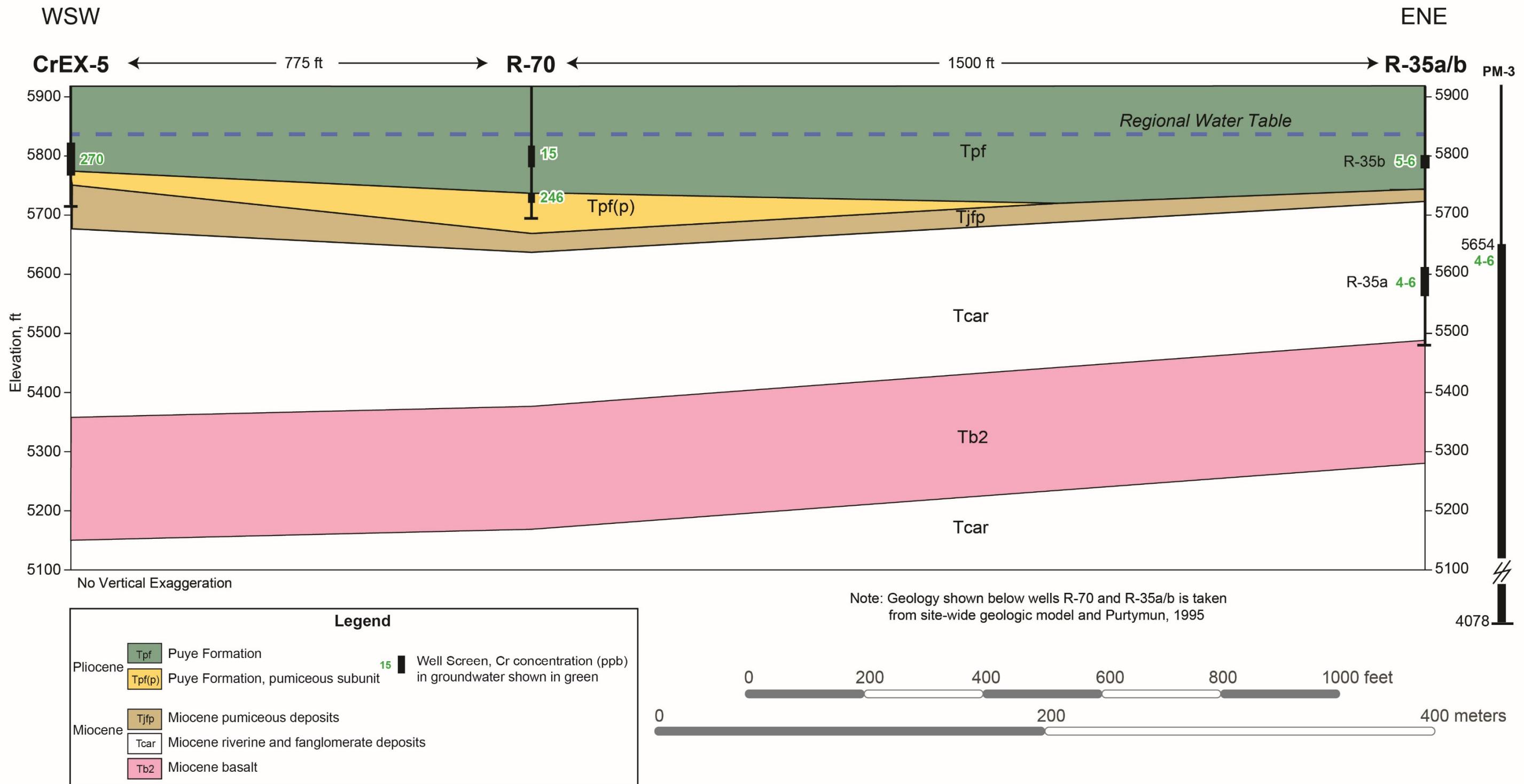


Figure 2.1-1 Geologic cross-section from CrEX-5 to the R-35 area showing stratigraphy, well-screen depths, and approximate recent chromium concentrations for each screen. R-35b is the upper screen; R-35a is the lower screen.

Appendix A

Preliminary Drilling Work Plan for Well R-35c

Preliminary Drilling Work Plan for Regional Aquifer Monitoring Well R-35c

Primary Purpose	<p>This preliminary work plan provides the objectives, drilling approach, and conceptual design for a new groundwater monitoring well (R-35c) for characterization of the chromium plume near the base of the Puye Formation upgradient of municipal water supply well PM-3. The well was required in the New Mexico Environment Department's (NMED's) letter dated July 12, 2019, to the U.S. Department of Energy (DOE) Environmental Management-Los Alamos (EM-LA) and Newport News Nuclear BWXT-Los Alamos, LLC (N3B) (NMED 2019, 700508). The assessment activities presented in the assessment work plan to which this drilling work plan is attached will provide the information necessary to evaluate the need for this (or other wells) and the specific location and well design. As currently conceptualized based on NMED's July 12, 2019, letter, the location for R-35c is shown in Figure A-1 of this drilling work plan.</p> <p>R-35c is proposed with one screen in the upper portion of the regional aquifer. The initial design for the well consists of a 5.56-in.-diameter casing with one 40-slot screen interval (Figure A-2). The final well design will be based on the assessment results and data obtained during drilling, including information from lithologic logs of cuttings, water-level measurements, video logs, geophysical logs, and field-team observations. Specific well-design recommendations will be submitted to NMED for review and approval before construction.</p>
Drilling Approach	<p>The proposed drilling approach for the monitoring well will use fluid-assisted air-rotary with casing-advance methods. Telescoping casing sizes between 20 in. and 10 in. and dual-rotary methods will be used to advance the borehole to a depth within the upper 100 ft of the regional aquifer. This approach will produce a borehole that can accommodate an approximately 2-in. annular filter pack around the 5.5-in. well screen.</p>
Drilling Fluids, Composition, and Use	<p>Fluids and additives will be used to facilitate drilling and may include those previously authorized for use by NMED, including the following:</p> <ul style="list-style-type: none"> • Potable water, municipal water supply, to aid in delivery of other drilling additives and to cool the drill bit; • QUIK-FOAM, a blend of alcohol ethoxy sulfates, used as a foaming agent to lift cuttings; and • AQF-2, an anionic surfactant, used as a foaming agent to lift cuttings. <p>Complete records will be maintained detailing the type, amount, and volume of fluid and additives used and the depth at which fluids or additives were added to the borehole. No drilling fluids, except potable municipal water, will be used within 100 ft of the top of the regional aquifer. If the target zone cannot be reached without the addition of drilling fluids, the situation will be discussed with NMED. No chemicals, other than those listed above, will be added without NMED's approval.</p>
Potential Groundwater Occurrences	<p>Based on drilling observations at R-35a and R-35b, perched-intermediate water is not expected at this location. However, careful observations for evidence of perched groundwater will be made throughout the length of the borehole. If present, necessary precautions will be made to ensure that the perched water is not carried downhole as drilling advances. The top of the regional aquifer is projected to occur at approximately 800 ft below ground surface.</p>
Geophysical Testing	<p>Geophysical logs may be collected when the borehole has been drilled to total depth. Logging data will be used to refine estimates of the top of regional saturation and to characterize the hydraulic properties of saturated strata beneath the water table.</p>

Well Completion Design	<p>Final well screen placement and length will depend upon the geophysical logs, water levels, and field observations. A proposed well design will be submitted to NMED for approval before well construction.</p> <p>Figure A-2 presents a geologic cross-section between nearby wells in the potential R-35c area that will be considered when R-35c is being designed. In addition to geologic units, well screen positions for nearby wells are also depicted. The conceptual location for the R-35c screen is between the R-35a and R-35b screens.</p>
Well Development	<p>The well may be developed by both mechanical and chemical means. Mechanical means include swabbing, bailing, and pumping. Chemical means include the use of additives to remove clays and/or chlorination to kill bacteria that may be introduced during well completion.</p> <ul style="list-style-type: none"> • After initial swabbing and bailing, a submersible pump will be used to complete the development process. • Water-quality parameters will be measured in a flow-through cell. The parameters to be monitored are pH, specific conductance, dissolved oxygen, temperature, turbidity, oxidation-reduction potential, and total organic carbon (TOC). • If N3B is unable to bring the water-quality parameters to within the target values specified below, the use of chemical well development may be discussed with NMED. No chemicals will be added without NMED's approval. <p>Chemical development methods that may be used include sodium acid pyrophosphate and AQUA-CLEAR PFD to remove clays, and/or chlorination with sodium hypochlorite.</p> <p>Well development will be considered complete when target water-quality parameters are met and a volume of water equivalent to that which was introduced into the aquifer during drilling and construction is removed. The target water-quality parameters are turbidity <5 nephelometric turbidity units, TOC <2 parts per million, and other parameters stable.</p>
Hydraulic Testing	<p>The well will be hydraulically tested following development. Limited step-drawdown tests and 24-hr constant rate testing will be the most likely tests. Data from these tests will provide additional information to refine the knowledge of the hydrology in the northeastern portion of the plume.</p>
Water-Quality Sampling	<p>If perched-intermediate groundwater is encountered, attempts will be made to collect screening samples. The screening samples will be analyzed for major anions, metals, and tritium. The screening suite provides the basis for general characterization of the potential source of the perched-intermediate groundwater.</p> <p>Regional aquifer groundwater samples will be collected after installation of the dedicated submersible pump. These samples will be analyzed for a suite of constituents consistent with the other chromium interim measure performance monitoring wells in the vicinity.</p>
Sampling System Installation	<p>A single pump sampling system will be installed in the well. The system will use a typical 4-in. pump and motor in order to maintain sampling purge rates at or near 5 gal. per minute.</p>

Investigation-Derived Waste Management	<p>Investigation-derived waste will be managed in accordance with Standard Operating Procedure (SOP) 10021, "Characterization and Management of Environmental Program Waste." This SOP incorporates the requirements of applicable U.S. Environmental Protection Agency and NMED regulations, DOE orders, and N3B requirements. The primary waste streams will include drill cuttings, drilling water, drilling fluids and additives, development water, purge water generated during hydraulic testing, decontamination water, and contact waste.</p> <p>Drill cuttings will be managed in accordance with the NMED-approved Decision Tree for the Land Application of Drill Cuttings (April 2016). Drilling, purge, and development waters will be managed in accordance with the NMED-approved Decision Tree for Land Application of Drilling, Development, Rehabilitation, and Sampling Purge Water (November 2016). Initially, drill cuttings and drilling fluids will be stored in a lined pit. Representative samples of the drill cuttings and drilling fluids will be collected and analyzed, and waste determinations will be made from validated data. If validated analytical data show these wastes cannot be land-applied, they will be removed from the pit, containerized, and placed in accumulation areas appropriate for the type of waste.</p> <p>Decontamination water will be containerized separately at the point of generation, placed in an accumulation area appropriate to the type of waste, and directly sampled. Contact waste will be containerized at the point of generation, placed in an appropriate accumulation area, and characterized using acceptable knowledge or the media with which it came in contact.</p> <p>Water generated from future injection well maintenance activities will be managed with applicable permits.</p>
Schedule	<p>Should the R-70 assessment due to NMED by June 17, 2020, conclude that it is necessary to drill R-35c, a drilling and installation schedule will be included in that report.</p>

REFERENCE

The following reference list includes documents cited in this work plan. Parenthetical information following each reference provides the author(s), publication date, and ERID, ESHID, or EMID. This information is also included in text citations. ERIDs were assigned by the Los Alamos National Laboratory's (Laboratory's) Associate Directorate for Environmental Management (IDs through 599999); ESHIDs were assigned by the Laboratory's Associate Directorate for Environment, Safety, and Health (IDs 600000 through 699999); and EMIDs are assigned by N3B (IDs 700000 and above). IDs are used to locate documents in N3B's Records Management System and in the Master Reference Set. The NMED Hazardous Waste Bureau and N3B maintain copies of the Master Reference Set. The set ensures that NMED has the references to review documents. The set is updated when new references are cited in documents.

NMED (New Mexico Environment Department), July 12, 2019. "Results from Regional Groundwater Monitoring Well R-70," New Mexico Environment Department letter to D. Hintze (EM-LA) from J.E. Kieling (NMED-HWB), Santa Fe, New Mexico. (NMED 2019, 700508)

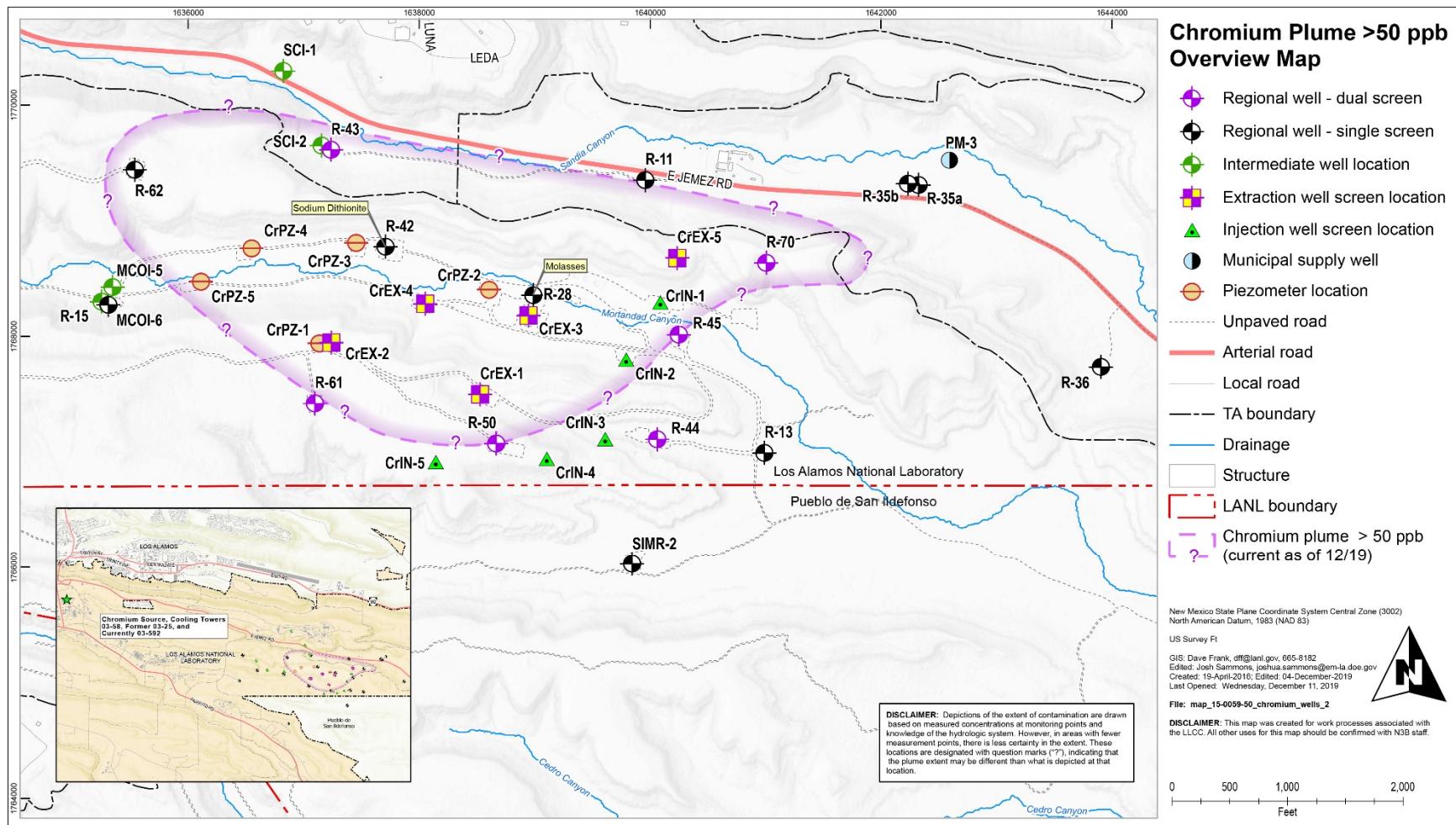


Figure A-1 Potential location for R-35c

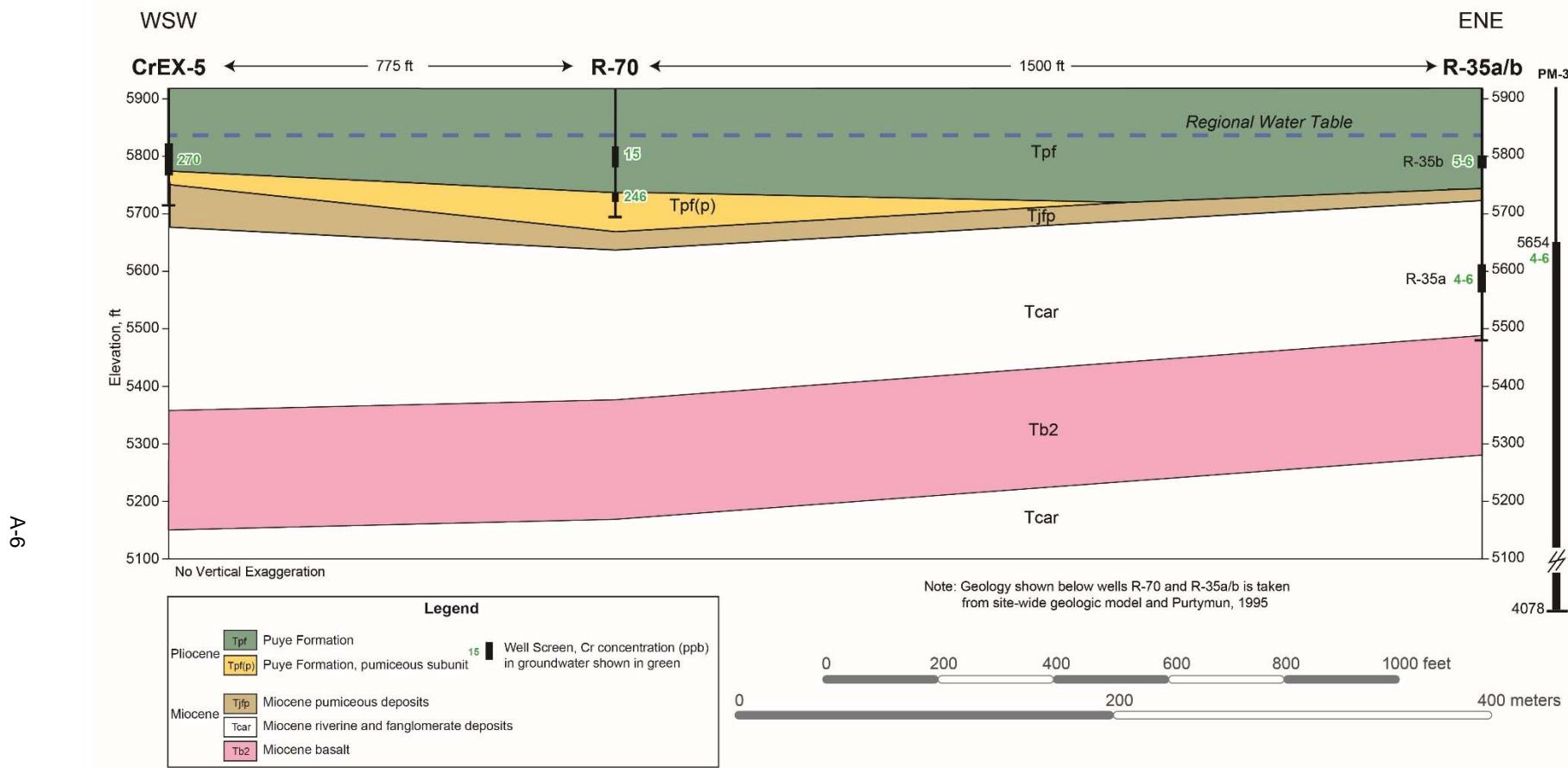


Figure A-2 Geologic cross-section from CrEX-5 to the R-35 area showing stratigraphy, well-screen depths, and approximate recent chromium concentrations for each screen. R-35b is the upper screen; R-35a is the lower screen. A conceptual R-35c screen might be placed between the R-35a and R-35b screens.