Report

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Date: February 11, 2003
Refer to: ER2003-0134

FEB 2003

Mr. John Young, Corrective Action Project Leader
Permits Management Program
NMED – Hazardous Waste Bureau
2905 Rodeo Park Drive East
Building 1
Santa Fe, NM 87505-6303

SUBJECT: QUARTERLY TECHNICAL REPORT FOR OCTOBER THROUGH DECEMBER 2002

Dear Mr. Young:

Enclosed are two copies of the Remediation (R) Program Quarterly Technical Report, October through December 2002. The Quarterly Technical Report presents information on the quarter's activities, including regulatory meetings, sampling, cleanups, and report writing. Also enclosed is a certification statement signed by the designee owner and operator for the Los Alamos National Laboratory. In accordance with Laboratory security requirements, copies of this report are available upon request through the external Remediation Program Web site at http://erproject.lanl.gov/documents/virtualhome.html. The report is also available on the internal Web site at http://erproject.lanl.gov/documents/VL/status.html.

If you have questions regarding this report, please contact Dave McInroy at (505) 667–0819 or Everett Trollinger at (505) 667–0281.

Sincerely,

David McInroy, Acting Program Manager
Remediation Program
Los Alamos National Laboratory

Sincerely,

Everett Trollinger, Project Manager
Department of Energy
Los Alamos Site Operations

8215

DM/ET/MB/dv

Enclosure: 1) Quarterly Technical Report for October through December 2002 (ER2003-0006)
2) Certification

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CERTIFICATION

CERTIFICATION BY THE ENVIRONMENTAL RESTORATION (ER) PROJECT TECHNICAL REPRESENTATIVES

Document Title: Quarterly Technical Report for October through December 2002

I certify under penalty of law that these documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violation.

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David McInroy, Acting Program Manager
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Los Alamos National Laboratory

or

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Beverly A. Ramsey, Division Leader
Risk Reduction and Environmental Stewardship Division
Los Alamos National Laboratory

_____ Date: 2-12-03

Everett Trollinger, Project Manager
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Department Of Energy/Los Alamos Site Office

or

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Herman LeDoux,
Assistant Area Manager of
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Department Of Energy/Los Alamos Site Office

Report

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Remediation Program

RRES

LA-UR-03-0817
February 11, 2003
ER2003-0006

Quarterly Technical Report October–December 2002

Los Alamos
NATIONAL LABORATORY
Los Alamos NM 87545

Produced by the Risk Reduction and Environmental Stewardship Remediation Program

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LIST OF ACRONYMS AND ABBREVIATIONS

ASTM	American Society for Testing and Materials
bgs	below ground surface
BMP	best management practice
CFR	Code of Federal Regulations
CMS	corrective measures study
D&D	decontamination and decommissioning
DOE	US Department of Energy
DQO	data quality objective
EPA	US Environmental Protection Agency
ER	environmental restoration
ERDB	Environmental Restoration Database
ESH ID	environment, safety, and health identification number
FWO-CGRP	Facilities and Waste Operations Division-Cerro Grande Rehabilitation Project
FY	fiscal year
HE	high explosives
HSWA	Hazardous and Solid Waste Amendments
Laboratory	Los Alamos National Laboratory
MDA	material disposal area
NMED	New Mexico Environment Department
NMED-HWB	New Mexico Environment Department-Hazardous Waste Bureau
NNMCAB	Northern New Mexico Citizens Advisory Board
NTISV	nontraditional in situ vitrification
PRG	preliminary remediation goal
PRS	potential release site
PTSE	Primary Toxicity Study Evaluation
RCRA	Resource Conservation and Recovery Act
RFI	RCRA facility investigation
RRES-R	Risk Reduction and Environmental Stewardship Division's Remediation Program
RRES-SWRC	Solid Waste Regulatory Compliance Group
RRES-WQH	Water Quality and Hydrology Group
RSI	request for supplemental information
SAP	sampling and analysis plan

SMART	Spatial Mapping and Reporting Tool
SMO	Sample Management Office
SWMU	solid waste management unit
SWPPP	Stormwater Pollution Prevention Plan
TA	technical area
VCA	voluntary corrective action
VCM	voluntary corrective measure
VOC	volatile organic compound
WQDB	Water Quality Database

QUARTERLY TECHNICAL REPORT

OCTOBER–DECEMBER 2002

LOS ALAMOS NATIONAL LABORATORY

RISK REDUCTION AND ENVIRONMENTAL STEWARDSHIP

REMEDIATION PROGRAM

ALBUQUERQUE OPERATIONS OFFICE

CONTRACTOR: University of California

PROGRAM MANAGER: David McInroy

NUMBER OF POTENTIAL RELEASE SITES: Approximately 2,000

POTENTIAL WASTE: Radionuclides, High Explosives, Inorganic Chemicals, Organic Chemicals

1.0 INTRODUCTION

This quarterly report describes the technical status of activities in the Los Alamos National Laboratory (the Laboratory) Risk Reduction and Environmental Stewardship-Remediation (RRES-R) Program, formerly the Environmental Restoration (ER) Project. The activities are reported according to the current program structure and then, when applicable, by the technical area (TA) where the specific activity is located. The Hazardous and Solid Waste Amendments (HSWA) portion of the Laboratory's Hazardous Waste Facility Permit (Module VIII, Section P, Task V, C) requires the submission of a technical progress report on a quarterly basis. This report, submitted to fulfill the permit's requirement, summarizes much of the fieldwork and report-writing performed this quarter in the RRES-R Program.

2.0 WORK PACKAGES

2.1 Townsites — Project Team Leader: Terry Rust

2.1.1 TA-0

DP Road Land Transfer Tract [PRSs 00-004, 00-010(a,b), 00-027, 00-030(a,b,l,m), and 00-033 and part of PRS 21-021]. A request for supplemental information (RSI) was received for the DP Road Land Transfer Tract voluntary corrective action (VCA) plan. The response is in review. Fieldwork for all potential release sites (PRSs) in the land transfer tract is now complete; the subsurface components for the Soil Vapor Extraction System for PRS 00-027 have been installed and continue to operate, and an estimated 1000 lb of benzene and other contaminants have been removed from the subsurface to date.

2.1.2 TA-02

RRES-R Program continues to coordinate affected RRES-R activities with the Facilities and Waste Operations Division-Cerro Grande Rehabilitation Project (FWO-CGRP) decontamination and decommissioning (D&D) staff charged with removal of the remaining TA-02 structures (the Omega West Reactor).

2.1.3 TA-10

Numerous briefings and a tour of TA-10 and Los Alamos County tree-thinning operations were conducted in response to media reports.

2.1.4 TA-57

RRES-R Program staff have been coordinating with and assisting the Laboratory's Earth and Environmental Sciences Division Office and Water Quality and Hydrology Group (RRES-WQH) personnel with the closure of the one-million-gallon pond (PRS 57-004) located at TA-57, Fenton Hill.

2.1.5 TA-73

PRSs 73-001(a,b)-99 [73-001(a–d) and 73-004(d)]. The 73-1 Airport Landfill voluntary corrective measure (VCM) plan was submitted to the New Mexico Environment Department (NMED) this quarter.

2.1.6 Facility Integration Activities

Land transfer, private property, Los Alamos community development, and other non-US Department of Energy (DOE) property-related issues were addressed this quarter.

2.2 Industrial Sites — Project Team Leader: Gabriela Lopez Escobedo

During this quarter, the Industrial Sites Team reviewed and provided information for the draft solid waste management unit (SWMU) report for PRSs in TAs-05, -46, and -60.

2.2.1 TA-03

PRS 03-010(a). Results of a geophysical survey (completed in August 2002) were received for PRS 03-010(a), a systematic release from a vacuum repair shop. The purpose of the geophysical survey was to determine whether geophysical methods can be used to define the extent of a localized perched aquifer beneath and west of Building SM-30 in TA-03, and, if so, to map the extent of the aquifer.

The preliminary results of the investigation indicate that

- the alluvial fill appears to be limited in lateral extent to the north, west, and south;
- any associated increase in moisture in the fill appears to be vertically limited by a layer of welded Bandelier Tuff underlying the fill; and
- no seepage, weepage, or increase in moisture content is evident in the alluvial-fill slope west of the chainlink fence.

An extension was requested on November 18, 2002, for the submittal of the geophysics report, because the relevant parties were not able to meet to discuss the results of the investigation results. Approval of the extension request was received from NMED on December 3, 2002. Once a meeting is possible between NMED Hazardous Waste Bureau (NMED-HWB) personnel and RRES-R Program personnel, the final results of the investigation will be presented to NMED and the team will discuss the path forward for this site.

2.2.2 TA-35

Preparations have begun for the execution of the sampling and analysis plan (SAP) for the Middle Mortandad/Ten Site Aggregate (Environmental Restoration Project 2002, 73092).

2.2.3 TA-53

PRS 53-002(a)-99, Northern and Southern Surface Impoundments.

TA-53 Field Work in Los Alamos Canyon Drainage. Preparation of the field summary report for mapping and sampling activities in 2001 and 2002 is complete. The field summary report describes sampling campaigns completed during Phase I and Phase II activities at drainage Areas C, D, and E below the impoundments at TA-53. Information from the field summary report will be included in the Resource Conservation and Recovery Act (RCRA) facility investigation (RFI) report for PRS 53-002(a)-99. Analytical results from samples collected in the last quarter of FY 2002 have been received, and the data are undergoing quality assurance review and validation.

PRS 53-002(a) Interim Action. Results were received from samples collected from the two northern impoundments and submitted for analysis last quarter; the samples were from the bottom of the excavation following removal of the clay liner. Data are undergoing quality assurance review and validation. Tritium and inorganic chemical analytical results were delivered to the Industrial Sites Team to begin the data assessment for the site.

TA-53 Continuation Field Work. Results were received from samples collected and submitted for analysis in the last quarter of FY 2002. These samples were collected from the area surrounding the surface impoundments and the drainage below, including 300-ft-deep boreholes. Data are undergoing quality assurance review and validation. Tritium and inorganic chemical analysis results were delivered to the Industrial Sites Team to begin the data assessment for the site. Analytical data for determining extent of tritium at this site shows maximum concentrations at 32 pCi/g, decreasing with depth. Results from soil samples collected at seven boreholes indicate no detectable concentrations below 150 ft below ground surface (bgs). The industrial screening value for tritium is 6921 pCi/g.

TA-53 RFI Report. Preparations have begun for the RFI report for PRSs 53-002(a)-99, 53-008, and surrounding areas, which will include all data collected by the ER Project during field campaigns in 1994/1995, 1999/2000, and 2002.

2.2.4 Addendum to the Sampling and Analysis Plan for the Middle Mortandad/Ten Site Aggregate

Planning has begun for the addendum to the Middle Mortandad/Ten Site Aggregate SAP. This document will contain the SAP for the remainder of the PRSs in the Middle Mortandad/Ten Site Watershed Aggregate that were not included in the March 2002 SAP (Environmental Restoration Project 2002, 73092). Those PRSs are in TAs-04, -05, -52, and -63.

2.2.5 Facility Integration Activities

During the first quarter of fiscal year (FY) 2003, Industrial Sites Team members responded to approximately 122 requests for excavation permits; environment, safety, and health (ESH)-ID questionnaires; and facility inquiries about new construction projects. In addition, the team worked with facility managers (by attending meetings and providing information) on ongoing projects and planned construction projects collocated with PRSs.

Planning is underway for characterization and cleanup activities for PRSs affected by the by-pass road project at TA-03. The following PRSs are currently in or near the proposed path of the construction project: PRSs 03-009(i), 03-014(c2 and j [part of consolidated PRS 03-014(a)-99]), and 03-015-00.

Personnel provided support to the turbine generator project at the TA-03 power plant. The utility lines required for the new turbine will be located within the boundary of PRS 03-012(b)-00. Phase I RFI samples were collected and analyzed in accordance with Addendum 1 of the Operable Unit 1114 RFI work plan, and RRES-R Program personnel worked with the facility contractor to conduct background comparisons and screening assessments of the analytical results to determine the steps necessary to proceed with the construction project.

Personnel worked with the facility contractor for decontamination of portions of PRS 03-033, a historical liquid waste collection system for the printed circuit shop formerly located in the northwest corner of the Physics Building (Building 03-40). The facility is removing contaminated lines and concrete beneath the former shop as part of the conversion of the space into offices. Samples will be collected beneath the drainlines in the crawl space beneath the former shop to determine the nature and extent of any contamination from the drainlines. The requirement for cleanup of potentially contaminated media will be determined by the results of the human health risk screening and assessment. If contaminated media are removed, confirmation samples will be collected to verify that cleanup levels have been met for that portion of the PRS.

2.3 High Explosives Production Sites and MDA P Closure — Project Team Leader: Don Hickmott

2.3.1 TA-16-260 Outfall Corrective Action

The TA-16-260 Outfall Corrective Action Team continued fieldwork, data analysis, and report-writing activities in support of the corrective measures study (CMS) at PRS 16-021(c)-99 (the 260 outfall). The major focus this quarter was data analysis and writing of the Phase III RFI report and the CMS report. Hydrogeology studies, including stream profiles, were continued. Modeling of both risk assessments was completed using Goldsim and fate and transport modeling to investigate conceptual models for contaminant transport in the regional aquifer. High-performance team activities continued at a low level. A revision to the addendum to the 260 outfall CMS plan was completed and peer reviewed.

2.3.1.1 TA-16 CMS Hydrogeology and Monitoring

The field team continued to monitor water levels in the Cañon de Valle alluvial wells and in the intermediate-depth wells. The hydrologic system in that canyon remains relatively dry. Cañon de Valle surface water was present only between Burning Ground Spring and MDA P and in a short reach downgradient from the alluvial well pair in middle Cañon de Valle. However, all five of the alluvial wells in Cañon de Valle contained water this quarter; the uppermost well was wet this quarter. Two of the three alluvial wells in Martin Spring Canyon also contained water during the reporting period. None of the

intermediate-depth boreholes contained water throughout the quarter. SWSC Spring and the headwaters of Cañon de Valle were dry; however, a small new spring continued to flow in the headwaters region. Quarterly sampling locations were sampled during December.

A draft report on the controlled-source auto-magnetotellurics study completed in September was received from the geophysical subcontractor. The results of the study suggest that there are narrow zones of high conductivity (possible recharge pathways) within Cañon de Valle and in the middle of the TA-16 mesa top. These data will be used to help site intermediate-depth boreholes at TA-16. A revision to the groundwater addendum to the CMS plan was completed and peer reviewed.

Stable isotope samples were collected during precipitation events. Every-other-day samples were collected and archived for eventual stable isotope analysis. Flow-integrated samples were collected in Burning Ground and Martin Springs. Stream profiles that included analytical laboratory sampling were completed. All first-quarter analytical results are pending.

A review of all water data collected to date from the springs was continued. Time series at all locales that are being sampled during quarterly sampling continued to be reviewed. Outliers and other analyses that may have issues were identified for focused validation. Data indicate there is no obvious decrease in contaminant concentrations in the post-interim measure samples evaluated to date.

Modeling of contaminant transport using Goldsim was continued. This modeling suggested relatively rapid high explosives (HE) transport, but much slower barium transport. Porous flow modeling of the regional aquifer was completed to investigate conceptual models. The latter modeling suggested that a combination of high recharge in the western sections of TA-16, combined with localized zones of low hydraulic conductivity, were required to produce the perched zone observed in well R-25.

Sections of the Phase III RFI report that did not depend on high-performance team interactions were written.

2.3.1.2 PRS 16-021(c)-99 CMS

Additional data from the stormwater management system at the 260 outfall were received. This barrier unit is designed to remove HE and barium from spring waters. Data indicate the barrier unit is removing HE effectively but not barium. Stabilization and distribution coefficient studies to support modeling of monitored natural attenuation were continued.

The 260 Outfall and the Ecological Risk High-Performance Teams continued to evaluate ecological sampling in Cañon de Valle. The population dynamics studies indicate minimal impacts to rodents in Cañon de Valle, relative to a reference canyon; however, body-burden data for rodents appear to be of low quality. Resampling for rodents was completed in May; analytical samples were shipped in December. Data from the second round of sampling of aqueous invertebrates was received. These data were of low quality, so aqueous invertebrates were resampled in December.

Sections of the CMS report that did not require high-performance team discussions were drafted.

2.3.1.3 Surface Water

BMPs were inspected and maintained.

2.3.2 MDA P Closure

Work on the final reports for the MDA P and 387 Flash Pad closures and the SWMU 16-016(c)-99 VCA was completed this quarter. Phase I and Phase II field reports were also completed. Peer reviews of these documents and all other components of the final report were completed in December. Comment resolution and revision of the reports also began in December.

2.4 Canyon Investigations — Project Team Leader: Kent Rich

2.4.1 Los Alamos and Pueblo Canyons Scope

2.4.1.1 Surface Water Investigation (Biota Study)

A second round of small-mammal trapping occurred in four areas in the Los Alamos Canyon and Pueblo Canyon watersheds as part of ecological risk assessment activities. Two of the four trapping arrays were extended farther upstream than in previous efforts, and five composite sediment samples were collected from these areas to provide supporting data for pending bioassay analyses. In addition, two sediment samples were collected from Los Alamos Canyon for earthworm mortality tests because a previous sample from this area had provided anomalous results.

2.4.1.2 Pueblo Plutonium Transport – Canyons Assessment of Remedial Alternatives

Plutonium is being measured by both the Laboratory and NMED at elevated concentrations in nonfiltered stormwater in Pueblo Canyon. A recent increase in plutonium transport is associated with the increase in the number and magnitude of floods that have been sustained through the length of the canyon following the Cerro Grande fire. Stormwater samples were collected in the summer of 2002 from eight stations located along the length of Pueblo Canyon to evaluate spatial variations in plutonium concentration and variations associated with a range of flood discharges. The locations were chosen to partition the watershed in a way that will support an evaluation of how variations in plutonium concentrations in sediment and variations in valley-floor and channel geomorphology affect concentrations of plutonium in floods. Samples will be analyzed for suspended sediment concentration, particle-size distribution, and plutonium concentration. Assessment of these data and associated modeling efforts will support an evaluation of potential mitigation options to reduce plutonium transport.

2.4.1.3 Los Alamos and Pueblo Canyons Surface Aggregate Report

This report will present the assessment and evaluation of all Canyons investigations conducted to date in the Los Alamos Canyon and Pueblo Canyon watersheds. Other data relevant to a watershed-scale assessment of contamination will also be evaluated. The primary objective of the report will be to assess potential human health and ecological risk associated with current and estimated future contamination in sediment, surface water, and alluvial groundwater in the watershed.

Technical discussions with NMED were completed concerning sampling and data collection in support of an ecological risk assessment for Los Alamos and Pueblo Canyons, and sampling was conducted in July. The content of the technical discussions was documented in a record of communication. This work included four components: (1) small-mammal trapping in four trapping arrays by personnel from the Laboratory's Ecology Group and associated sediment sampling within these arrays to characterize media that the mammals were exposed to (hantavirus tests have been completed for the small mammals, and submittal of biota samples is pending finalization of an analytical protocol with the off-site laboratory); (2) sampling of floodplain sediment in 12 locations for earthworm bioassay tests, seedling germination

tests, and media characterization; (3) sampling of channel sediment in 12 locations for assessing potential effects on aquatic organisms and media characterization; and (4) bluebird nest box surveys by personnel from the Laboratory's Environmental Dynamics and Spatial Analysis Group. Results from these biota tests and surveys and from the sediment samples are pending. An additional component of the ecological risk assessment will be watershed-scale modeling of potential adverse affects to the spotted owl, deer mouse, and robins using the Laboratory Ecology Group's ECORSK.6 model, which was started this quarter. These results will be presented and assessed in the Los Alamos and Pueblo Canyons surface aggregate report; a draft of that report is planned for completion in September 2003.

2.4.2 Mortandad Canyon

Phase I sediment investigations were conducted in reaches MCW-1, MCW-2, and M-6 in the Mortandad Canyon watershed to determine if any Laboratory operations have impacted these areas. MCW-1 and MCW-2 are located in an unnamed tributary to Mortandad Canyon, below firing sites at TA-05; the tributary drains onto San Ildefonso Pueblo land. Reach M-6 is located on San Ildefonso Pueblo land adjacent to State Highway 4. The Phase I investigations included detailed geomorphic mapping and associated geomorphic characterization and the collection of 43 sediment samples for analysis.

A watershed-scale data assessment was initiated to identify remaining data needs in previously sampled reaches and to help focus future sampling. This effort includes compiling all analytical data from sediment samples in nine reaches sampled between 1998 and 2001; conducting data quality checks on these analyses; evaluating spatial variations in contaminant concentrations and contaminant inventory; and performing an initial evaluation of these data in the context of potential human health or ecological risk.

2.4.3 DP Canyon

A tracer study is being implemented in DP Canyon as part of ongoing investigations in Los Alamos and Pueblo Canyons and to address key questions related to an evaluation of potential remedial options for strontium-90 contamination in alluvial groundwater in DP and Los Alamos Canyons. The study, in combination with existing water quality and contaminant characterization data, is considered part of an effort to understand the hydrologic system in DP Canyon. A potassium bromide tracer will be used for the study. Because bromide is a conservative anion in solution, monitoring spatial and temporal variations in concentrations will generate data that can be used to develop a detailed characterization of the alluvial and surface water system in DP Canyon.

Approximately 100 monitoring points were installed and developed in DP Canyon in preparation for tracer injection. All wells were developed initially using a bailer and then a peristaltic pump until formation water had cleared. Indicator parameters (pH, temperature, and conductivity) were measured and recorded as a measure of development. The types of monitoring points include fully screened wells for dialysis cell multilevel sampling, nested monitoring wells for tracer characterization, monitoring wells installed on the margin of the alluvial aquifer to determine the lateral extent of saturation and for tracer characterization, and nested piezometers screened at different heights in the aquifer to determine vertical gradients.

Dialysis multilevel samplers were installed at six locations, allowed to equilibrate for three weeks, and then sampled. Approximately 60 samples were collected and are being analyzed for inorganic chemicals and anions. This activity was performed to characterize the vertical variations in chemistry of the groundwater at high spatial resolution (10 cm) in order to understand the nature of strontium-90 mobility, an important chemical of concern in DP Canyon. RRES personnel plan two more sampling rounds this year, using dialysis multilevel samplers to capture the temporal and spatial fluctuation of groundwater chemistry.

Preparations are underway for pre-tracer injection characterization and for tracer injection. Pre-tracer injection characterization is designed to characterize the distribution of strontium-90 in the alluvial aquifer and to capture the ambient chemistry. Understanding the chemical conditions associated with strontium-90 mobility/immobility is critical to predicting strontium-90 transport in DP Canyon.

In preparation for tracer injection, the Canyons Team developed two sampling techniques using syringe and low-flow in-line filtration to be used in conjunction with dedicated bromide sensors. The tracer will be injected in January, followed by a period of intensive sampling and analysis.

2.5 Deep Groundwater Wells — Project Team Leader: John McCann

Well development, sampling, database management, and reporting activities were conducted this quarter under the Groundwater Protection Program. Site restoration and waste management activities will continue into next quarter.

Sampling was conducted this quarter at wells CdV-R-15-3, CdV-R-37-2, and R-13.

Work continued on data management activities, including importing groundwater analytical data to the RRES–WQH Water Quality database (WQDB).

Accomplishments in the reporting area this quarter include the completion of the well R-7 geochemistry report and the MCOBT-4.4 and 8.5 completion report.

Groundwater hydrochemical data for two regional wells are presented in Appendix D. Analytical results are reported for well R-13 (one screen; first sampling round) and well CdV-R-37-2 (three screens; first, second, and third sampling rounds). Isotopic results for ^{15}N are not back from the laboratory for the third sample round at well CdV-R-37-2 and will be reported at a later date. Data reported include field parameters, inorganic, organic, and radiological constituents.

2.6 TA-21 Material Disposal Areas — Project Team Leader: Bill Criswell

PRS 21-014 (MDA A) General's Tanks: A management self-assessment conducted in the first quarter of FY 2003 identified several items that must be addressed to conduct the work safely at Material Disposal Area (MDA) A. The health and safety plan will be revised and submitted to DOE for review and approval. Since the General's tanks contain radionuclide inventories that exceed the thresholds in DOE STD 1027-92, the safety basis documentation must be prepared in compliance with 10 CFR 830 Subpart B, "Nuclear Safety Management—Safety Basis Requirements." The compilation and review of the health and safety plan is being coordinated with the Laboratory's Office of Authorization Basis and is anticipated to be complete in the second quarter of FY 2003.

PRS 21-015 (MDA B) and PRS 21-017(a)-99 (MDA U). The subcontractor submitted the peer review draft of the MDA B RFI report. The peer review committee identified several issues that will require substantial modification before the draft is complete. The draft of the MDA U RFI report is postponed until the third quarter of FY 2003 to allow time to address the issues identified in the MDA B report.

PRS 21-016(a)-99 (MDA T), PRSA 21-014 (MDA A) and PRS 21-018(a)-99 (MDA V). A decision peer review was conducted during the first quarter of FY 2003 concerning nature and extent of contamination at MDA T. Several data needs were identified, and a SAP addendum will be prepared in the second quarter to address these data needs. The SAP addendum will also address similar work at MDA A, which is adjacent to MDA T, to increase efficiency and avoid additional mobilization efforts. Once the surface

work is completed, another SAP addendum will be prepared to address the remaining subsurface drilling activities at MDA A and the east side of MDA T. The subsurface efforts require an approved safety basis in accordance with 10 CFR 830. These efforts are being coordinated with the Laboratory's Office of Authorization Basis and are anticipated to be complete in the third quarter of FY 2003. The decision peer review for nature and extent at MDA V will not occur until the second quarter of FY 2003.

2.7 TA-21 Non-Material Disposal Areas — Project Team Leaders: Mark Thacker and Becky Coel-Roback

PRS 21-027(d)-99, NTISV Cold Demonstration VCM. NMED has approved the VCM completion report for PRS 21-027(d)-99, the nontraditional in situ vitrification (NTISV) cold demonstration; however, NMED did not approve the no further action status proposed in the report.

PRS 21-018(a)-99, NTISV Hot Demonstration at MDA V. Analytical data for the glass samples were received last quarter and are being evaluated and incorporated into the interim measure completion report. Mineralogical analysis of the glass samples is not yet complete.

PRS 21-011(k), VCM Activities. A revised VCM plan for the PRS 21-011(k) outfall was submitted to NMED on October 31, 2002. The revised plan outlined the approach for excavation of radioactively contaminated soil and sediment and for disposal at TA-54 Area G. A request for a no-longer-contained-in determination was submitted to NMED on November 5, 2002. The no-longer-contained-in determination was received from NMED on November 25, 2002, and requires that one sample per 100 yd^3 of excavated material be analyzed for RCRA Appendix VIII volatile organic compounds (VOCs). In order for the waste to be disposed of at Area G, the results must meet land disposal restrictions and be less than health-based (industrial) concentrations for detected VOCs. Should any detected VOC not meet the disposal restrictions and industrial health-based screening levels, NMED must immediately be notified and the waste must be managed appropriately. VCM fieldwork began in November 2002. Removal of the former drainline has been completed and removal of "hot spots" within the PRS boundary is ongoing. Site restoration and demobilization activities will be conducted in the third quarter of FY 2003; the VCM completion report will be prepared and submitted to NMED in FY 2003.

PRS 21-013(d)-99, VCA Activities. A draft of the VCA plan addendum for PRS 21-013(d)-99, a historic disposal site comprising former PRSs 21-013(d) and 21-013(e), has been completed. The final plan will be submitted to DOE in January 2003, and fieldwork will begin following approval. The VCA completion report is planned for submittal to NMED in July 2003.

PRS 21-024(f) VCA Activities. Work is continuing on the VCA completion report for PRS 21-024(f), a former septic system. Additional samples will be collected in January to address data gaps, and the analytical results will be included in the VCA completion report. Site restoration will also take place during the second quarter of FY 2003.

PRS 21-024(i), Interim Action Activities. Work is continuing on the interim action completion report for PRS 21-024(i), a former septic system. Analytical results for additional samples collected from Area 3, a geologic bench located above Los Alamos Canyon, were received late in the first quarter of FY 2003. These results will be included in the interim action completion report.

PRS 21-029, DP Tank Farm. Site inspections at the two hydrocarbon seep areas in DP Canyon were conducted in October, November, and December 2002. The inspection reports are included as Appendix A of this document.

2.8 TA-49, TA-50, and TA-54 — Project Team Leaders: John Hopkins and Bill Criswell

2.8.1 TA-49

PRS 49-001(a)-00, MDA AB, Areas 2, 2A, and 2B. Monthly moisture monitoring continued at this site during the first quarter of FY 2003, and a review of the data is presented in Appendix B of this report. Neutron-based measurements were not collected during October because of contract delays after the fiscal year boundary. The field efforts will now be performed during the first part of each month so the entire year of data (October through September) will be reported in the annual report (previously the yearly report included September through August).

SAP addenda for the TA-49 fieldwork were in progress during the first quarter of FY 2003. These plans include a SAP addendum for surface radiation and sampling surveys at MDA AB and adjacent PRSs and a SAP addendum for subsurface drilling and sampling at MDA AB. The subsurface efforts require an approved safety basis in accordance with 10 CFR 830, "Nuclear Safety Management." These efforts are being coordinated with the Laboratory's Office of Authorization Basis and are anticipated to be complete in the third quarter of FY 2003.

Erosion-control best management practices (BMPs) were inspected following precipitation events and remain in good condition.

2.8.2 TA-50

MDA C. Results of the second geophysical investigation were reported delineating the location of pits on the southern and eastern edges of MDA C. A SAP addendum proposing additional sampling activities to fill data gaps at MDA C was completed.

2.8.3 TA-54

MDA H. The MDA H inventory was revised for the CMS report based on updated data from Sandia National Laboratories on a similar classified waste landfill. Monthly MDA H CMS progress reports for September, October, and November 2002 were submitted to NMED during the first quarter of FY 2003 in accordance with Module VIII of the Laboratory's Hazardous Waste Facility Permit. Comments on the MDA H RFI report addendum were verbally received from NMED in December 2002.

Pore-Gas Monitoring. The quarterly pore-gas monitoring at MDA G and MDA L was completed as required by Module VIII of the Laboratory's Hazardous Waste Facility Permit. The field-screening information for the first quarter of FY 2003 is presented in Appendix C of this report.

MDA L. The draft of the MDA L RFI report was completed and submitted for peer review in late December. A formal peer review meeting is scheduled for the week of January 16, 2003.

MDA G. Data validation and the data pull were completed for the MDA G RFI report. The RFI report will be completed in the second quarter.

2.9 Corrective Action Strategy — Project Team Leader: Richard Mirenda

2.9.1 Science-Based Monitoring Stewardship

In the first quarter of FY 2003, the Science-Based Monitoring-Stewardship Team initiated the first phase of the risk-based long-term environmental stewardship strategy, which considers the groundwater

pathway. The stewardship strategy incorporates elements of US Environmental Protection Agency (EPA) "Region 6 Corrective Action Strategy Guide for Pilot Projects" (CAS) (EPA 2000, 70145); EPA-OSWER's guidance on meeting RCRA corrective action environmental indicators (EPA 1999, 73806); EPA-OSWER's "Risk Assessment Guidance for Superfund Volume 3 Part A: Process for Conducting Probabilistic Risk Assessment" (RAGS3) (EPA 1999, 67598); and EPA/DOE American Society of Testing and Materials guidance on risk-based corrective action, thus providing a strong technical and regulatory foundation. The CAS promotes a baseline sitewide all-sources risk assessment as a basis of corrective-action planning on a "worst-first" basis. The CAS was written in response to the EPA-OSWER RCRA environmental indicators initiative and provides rationale for assessing baseline risk under present land-use scenarios for screening purposes. In addition, the approach is entirely consistent with the emerging DOE Office of Environmental Management (EM-1) policy on risk-based end-states (DOE 2003, 73805).

Consistent with both the CAS and RAGS3, the first phase involved a "Tier 1" (screening-level) risk assessment. The Tier 1 risk assessment provides a single, upper bound point-estimate of the potential groundwater pathway risk. The Tier 1 assessment will calculate the point-estimate risk posed by perchlorate and nitrate contamination in Mortandad Canyon at the PM water-supply wells. The Tier 1 risk assessment will evaluate the maximum expected concentration of nitrate and perchlorate at PM-5 supply well over a period of 100 years.

A bounding deterministic FEHM model of vadose zone transport of nitrate through Mortandad Canyon was calibrated using all available data for infiltration, percolation, contaminant releases, and contaminant distribution within the vadose zone, alluvial water, intermediate groundwater, and regional groundwater. The regional groundwater model will be used to calculate transport (sorption, dispersion, and dilution) of nitrate mass entering the water table from the bottom of the vadose zone to PM-5 supply well. Results of the Tier 1 risk assessment will be used to determine the need for an evaluation of other sources and/or an evaluation of all sources simultaneously.

The baseline groundwater pathway risk assessment and associated risk-based decision process is the demonstration pilot for an all-media environmental risk management system for the RRES Division environmental protection programs. This effort will direct resources to ensure risk reduction across all media in a prioritized way and will be consistent with guidance from DOE's Office of Environmental Policy and Assistance and the EPA's Federal Facilities Enforcement Office in *Environmental Management Systems Primer for Federal Facilities* (DOE and EPA 1997, 73653).

2.9.2 Data Quality

Data quality activities for the first quarter include the following:

- continued data assessment for the draft SWMU report;
- began to compile PRS/subject module information for samples without PRS assignments;
- reviewed and revised Standard Operating Procedure 1.04, "Sample Control and Field Documentation"; and
- continued revision of the data dictionary.

In addition, the data stewardship team continued to design and improve the database web page to provide regulators and stakeholders real-time access to data. The first internal release, at the beginning of November 2002, was well received by various parties, including NMED.

2.9.3 Peer Review Team

Team members coordinated and participated in peer reviews for RRES-R Program documents this quarter, as needed.

2.9.4 Data Validation

Data validators completed the validation of 850 suite combinations and verified 936 suite combinations during the first quarter. Data validators continue to stay current with incoming data packages. The validation process consists of performing validation of external laboratory data packages based on EPA's National Functional Guidelines. Data stewards also assisted with the assignment and review of reporting qualifiers and reason codes for data sets in preparation.

2.9.5 Data Stewardship

2.9.5.1 Integrated Information Management System Support

The Data Stewardship Team continues to work with the Information Management Team to design and implement the Integrated Information Management System. The system consists in part of software tools intended to ensure consistency and accuracy in data and information management and to allow tracking and traceability of environmental data. In the first quarter, the Data Stewardship Team continued to provide technical support for the development and implementation of the software applications described below.

- The Sample Tracking Application provides software tools that interface with the Environmental Restoration Database (ERDB) Planning Module to track the sample planning and analysis process, from planning and initiating a sampling event, generating field paperwork, ordering sample analytics, checking-in samples at the Sample Management Office (SMO), and shipping samples to analytical laboratories, to completing a sampling event. The Decision Analysis and Assessment Team is working on the enhancement of tracking and other functions. This tool is also used by other organizations in RRES.

- The Verification and Validation Application provides software tools that interface with the ERDB to provide tracking of the verification and validation processes for analytical chemistry data. Verification is the comparison of the electronic record received in an electronic data deliverable file with the hard-copy data package. Validation is a process in which qualifier flags and accompanying reason codes are applied to the data to indicate the data quality. The application software has greatly improved the productivity of the verification and validation process.

- The Spatial Mapping, Analysis, and Reporting Tool (SMART) Application provides software tools to enable the following functions: (1) allow data users to create lists on geographic information system maps and view preliminary data sets; (2) allow data stewards to pull data sets, review and edit records, and to generate reports (replacing the functions of the A3 toolbox); and (3) provide data users a tool for spatial and statistical analysis of a data set. The Decision Analysis and Assessment Team is currently working on the requirements for SMART.

2.9.5.2 Data Stewardship and Reporting

The Data Stewardship Team continued to deliver quality data sets to meet RRES-R Program needs in the first quarter. The team continued to make progress with the cleanup of legacy data. Data stewards also continued work on the optimization of the data process.

Data Set Preparation. Team members prepared and delivered 26 electronic datasets for RRES-R Program data users and created 13 sampling events and generated the necessary field paperwork for 617 samples. A total of 57,406 analytical records were loaded into the ERDB.

Data Management and Legacy Data Cleanup. Data management and legacy data cleanup activities continued this quarter. Data stewards calculated and loaded a total of 46,750 validation qualifiers into the ERDB in the first quarter. Of these, 27,156 records were processed with the new Verification and Validation Application and 19,594 records were manually loaded. Stewards also defined 141 subject relationships, created 217 location names, and updated survey coordinates for 846 location names. A field information review of 2107 sample records was performed using Desk Instruction 4.26, "Legacy Field Data Review Process," and the new field quality assurance screen in the SMO application.

Groundwater Data. The data steward for the Groundwater Investigations Team performed the following activities during the first quarter:

- reviewed final data tables for well R-7 (24 tables), and for the well R-25 (84 tables) geochemistry report;
- reviewed and formatted chemical data for the first, second, and third round of samples for well CdV-R-37-2;
- reviewed and formatted data for the first round of samples for well R-13;
- reviewed chemical data for the first round of sampling of well MCOBT-4.4;
- conducted migration of well R-7 and well R-25 chemistry data for four rounds of sampling to the WQDB; and
- started to evaluate chemistry data from Wells CdV-R-37-2 and CdV-R-15-3 for migration to the WQDB.

Staff continued to make progress in well construction and borehole geophysics activities. The data stewards conducted a final quality check on well construction data for wells R-5, R-13, R-31, MCOBT-4.4, MCOBT-8.5, CdV-R-15-3, CdV-R-37-2, and R-8/R-8A and migrated the data to the WQDB. Data stewards also reviewed geophysics data for wells R-7, R-9, R-9i, R-12, R-15, R-19, R-22, and R-25.

2.9.6 Risk Assessment

2.9.6.1 Human Health Risk

The draft document on guidance for developing human health preliminary remediation goals (PRGs) for nonradiological chemicals of potential concern was received with peer review comments incorporated. The document will undergo a final edit and review before being finalized.

The team completed peer reviews of the MDA B RFI report, the MDA P Phase I implementation closure report, the MDA P closure report, the MDA AB SAP addendum, the MDA C SAP addendum, the PRS 21-013(d)-99 VCA plan addendum, and the PRS 21-011(k) VCM plan revisions. Team members also

participated in a detailed review and revision of the MDA H CMS report, including a re-evaluation of the waste inventory and recommended alternatives.

Additionally, the team completed the RSI responses and evaluations for the PRS 00-030(g) RFI report. This included updates of human health and ecological risk assessments and a revised discussion of nature and extent using canyon data.

Staff updated radionuclide screening action levels using RESRAD, Version 6.21

The team held discussions on appropriate exposure scenarios and cleanup levels for non-RRES-R sites to assist in decontamination and decommissioning (D&D) and remediation of contaminated areas and also provided guidance for sampling non-RRES-R areas undergoing D&D. Discussions also included the approach to human health risk assessment for the Los Alamos and Pueblo Canyons surface aggregate report.

2.9.6.2 Ecological Risk

Four abstracts (three posters and one platform) were presented at the Society of Environmental Toxicology and Chemistry 2002 meeting in Salt Lake City, Utah. The posters featured the ECORISK database, calculation of ecological preliminary remediation goals (PRGs), and the bluebird nest box network. The platform session was a description of the process for selecting assessment endpoints and measures of effect for the Los Alamos and Pueblo Canyons surface aggregate ecological risk assessment.

Other ecological risk activities included the following:

- Provided ongoing support for the Los Alamos and Pueblo Canyons surface aggregate report.
- Updated the ecological risk assessment to address NMED comments on the PRS 00-030(g) RFI report.
- Developed an approach for deriving ecologically based PRGs. A draft document presenting an approach for calculating ecological PRGs for remedial activities was provided to the team members for their review.

2.9.6.3 Ecological Risk Database

The Primary Toxicity Study Evaluation (PTSE) Tracking Database coding and parameter tables and an FY 2003 priority analyte status spreadsheet were updated. The PTSE databases were also updated to code for default values in cases where PTSEs are in progress. Team members began incorporating a history table into the database to increase the detail in the change control module of the database.

Team members completed reviews of scientific papers for cadmium, nickel, pentachlorophenol, and mercury toxicity in plants, and continued reviews of scientific papers for cobalt, selenium, and cadmium toxicity in mammals. In addition, Part 1 and 2 reviews of cobalt references for mammals and birds were completed. Staff also continued to generate new toxicity reference values using the PTSE process, with a focus on cobalt for birds and mammals.

Literature searches for polycyclic aromatic hydrocarbon toxicity data for birds, cobalt toxicity for birds and mammals, Aroclor 1260 toxicity for mammals, and di-n-butyl phthalate toxicity in general were undertaken. Team members also reviewed bibliographies of cobalt references in files to locate any additional references that may be applicable for PTSEs.

Additional ecological risk database activities included the following:

- Corrected the toxicity reference value for uranium in birds from 7.8 to 78 mg/kg/d. The uncertainty factor applied was incorrect in the previous version of the ECORISK Database, Revision 1.5.
- Began the process of documenting differences between ECORISK Database, Revisions 1.4 and 1.5 toxicity reference values.
- Continued planning of data table normalization for conversion of the MS Access 97 ECORISK Database to MS Access 2000.

2.9.7 Native American Risk

Personnel gave a presentation to San Ildefonso Pueblo environmental staff in December on exposure assessment. Team members provided the environmental staff with vegetation and soil data from samples collected during the summer and discussed the results. Several meetings with San Ildefonso Pueblo environmental staff also took place regarding biota sampling for FY 2003. Pueblo environmental staff decided where to focus sampling and what to sample, i.e., vegetation, small mammals, and birds. The Laboratory's Ecology Group personnel will assist and train the environmental staff in collecting, processing, and submitting samples.

2.10 Regulatory Compliance — Project Team Leader (Acting): Alison Dorries

No monthly meetings were held with NMED this quarter. A few informal discussions were held with NMED regarding special topics such as permit modification and ongoing RFIs, interim measures, VCAs/VCMs, RFI reports, CMS reports, and responses to RSIs.

Team members performed the following miscellaneous tasks:

- Participated as members of high-performance teams for the TA-54 MDA H CMS, airport landfill remedial actions, and the 260 outfall.
- Conducted inspections of RRES-R Program field operations and waste management activities.
- Continued reviewing and revising information in the PRS database and draft SWMU report.
- Evaluated historical PRS data to identify PRSs that may have received RCRA-regulated wastes after 1980. Personnel developed a list of those PRSs and met with the Laboratory's Solid Waste Regulatory Compliance Group (RRES-SWRC) to discuss the criteria for including/excluding the sites in other regulatory programs. The results were reported and submitted to DOE.

2.10.1 Long-Term Environmental Stewardship

Team members participated in several meetings regarding the new Master Plan for TA-21. RRES-R staff reviewed and evaluated various potential future land-use alternatives and provided input concerning remediation requirements and regulatory drivers that will affect specific future land-use alternatives.

RRES-R Program personnel continue to proactively consider long-term environmental stewardship factors before designing or implementing corrective actions or stabilization measures. Personnel also promoted and coordinated stewardship efforts within the RRES-R Program and other Laboratory organizations that are or will be responsible for implementing long-term environmental stewardship as part of their landlord activities.

A member of the RRES-R staff served as the Laboratory representative for various DOE working groups preparing programmatic and policy documents, conducting long-term environmental stewardship studies, and developing complex-wide implementation programs for long-term environmental stewardship.

2.10.2 Waste Management and Waste Minimization

The annual RRES-R Program waste minimization awareness plan, which is required by Module VIII of the Hazardous Waste Facility Permit, was completed and submitted to NMED this quarter.

Other waste management activities included preparing the waste characterization strategy form addendum and waste profiles for PRS 21-011(k), the VCM soil removal project, as well as completing the final low-level radioactive waste shipments from TA-54, MDA-H and PRS 21-024(f).

RRES-R staff also coordinated with staff from the Laboratory's FWO-CGRP, Environmental Geology and Risk Analysis Group, and RRES-SWRC concerning management of potentially contaminated sediments in Los Alamos Canyon. A strategy was developed for managing sediments that may be excavated during construction of fire roads.

2.10.3 Stakeholder Involvement

2.10.3.1 Outreach Activities

Outreach staff prepared a letter to update focus group members on the status of the MDA H CMS. The RFI addendum for MDA H was provided to group members, and the letter and the addendum were also provided to the independent reviewer and NMED personnel.

RRES-R staff participated in the Northern New Mexico Citizens Advisory Board (NNMCAB) Environmental Restoration Subcommittee meeting on November 14, 2002. Staff provided a briefing on the September 2002 request for permit modification. Subject matter experts also presented information on PRS 21-011(k), an outfall. Staff provided guidance to the board members regarding the process for developing fact sheets. Copies of the RRES-R Citizens Guide were delivered to the NNMCAB. Staff attended approximately eight NNMCAB-sponsored meetings this quarter.

Staff prepared and coordinated with DOE and the Laboratory's Public Affairs Office the publication of a press release for TA-48, where a small amount of soil contaminated with organic chemicals was discovered and remediated, and potential health threats were eliminated.

Staff conducted the first quarterly RRES-R public meeting for FY 2003, the subject of which was the September 2002 request for permit modification (LANL 2002, 73668). Staff prepared information sheets and presentation materials and provided publicity for the meeting. The meeting took place on November 14, 2002, at Fuller Lodge in Los Alamos.

Staff also planned and conducted the NMED attorney site visit and tour on October 23, 2002.

2.10.3.2 Virtual Library/Public Reading Room

Work continued on the RRES-R Program's Virtual Library. Approximately 410 documents were copied, scanned, and converted to portable document format (PDF) files. Approximately 100 documents were uploaded to the internal server. Currently, this information is accessible only to internal staff because the National Nuclear Security Administration decision is still pending regarding what types of documents can

be available to the public on the external web page. Team members also placed information sheets online for the following topics: PRS 03-056(c), the 260 outfall, Acid Canyon, the airport landfill, DP Tank Farm, ecological risk assessment, land transfer, long-term environmental stewardship, MDA H, MDA P, the NTISV project, the TA-53 impoundments, and TA-21 MDAs.

Staff delivered the following documents to the Laboratory's Community Relations Office Public Reading Room this quarter: MDA H CMS progress reports for September, October, and November, a document regarding the stratigraphy of the Tuffs from Borehole 49-2-700-1; the VCA completion report for SWMU 46-003(h), and the VCM plan for PRS 73-001(a).

2.10.4 Facility Integration and Short-Term Stewardship

RRES-R Program personnel attended facility-related meetings (D&D and pre-construction) to ensure RRES-R participation early in the planning process for upcoming D&D and construction/land development activities planned at the Laboratory to address outstanding characterization and/or remediation of PRSs located at planned D&D and construction/land development sites. Personnel provided input to the ongoing TA-21 Master Plan process.

Regulatory compliance personnel attended weekly D&D meetings to ensure RRES-R integration at the beginning of any D&D project collocated with PRSs to coordinate/implement activities for expedited investigation, analysis, or remediation of the affected PRSs, proper sampling notification and/or other communications to NMED, and subsequent data review, evaluation, and reporting. RRES-R facility integration activities will also ensure that various construction and land development activities will occur without disruption and in conformance with all DOE, Laboratory, state and federal orders, regulations, and mandates. This early participation will also ensure that the RRES-R Program will continue to positively interact with regulatory agencies to ensure that corrective actions will be approvable by the administrative authority, as well as the public, and it will aid the Laboratory in achieving no further action designations at potentially contaminated sites

2.10.4.1 D&D at TA-03

Phase I RFI data collected for PRS 03-012(b)-00 in support of the turbine project at the TA-03 steam plant were evaluated this quarter. The new turbine and a portion of the planned utility lines will be located outside the boundary of PRS 03-012(b)-00; only a segment of the utility trench will be located between the east side of structure 03-25 and the east fence, which is located within the boundary of PRS 03-012(b)-00. Phase I RFI results indicate that two sample locations in this area had concentrations of chromium, copper, and silver that exceed area background values, but are less than screening action levels for residential land use. Therefore, before the installation of utility lines, RRES-R Program personnel will collect approximately five confirmation soil samples from the bottom of the excavation trench for analysis of target analyte list metals to ensure that the nature and extent of those metals are defined for that portion of SWMU 03-012(b)-00.

RRES-R personnel met with D&D staff regarding the collection of confirmation samples beneath the former printed-circuit shop, located in the northwest corner of the Physics Building, (Building 03-40). PRS 03-033 is the inactive liquid waste collection system for the shop and consists of a 200-gal. transfer tank and pumps housed in an 8-ft-deep concrete vault and two container storage areas with containment adjacent to the northwest corner of the Physics Building. Drainlines from the former printed circuit shop discharged to the containment tank. Contents of the containment tank were subsequently pumped to drums in the container storage areas before transportation and disposal. The shop was decommissioned in the early 1990s, and the containment tank and associated pumps were removed in 1992. The space

formerly occupied by the shop is to be converted to office space. All structural components of the former shop including ceilings and walls, drains, concrete floors, and drainlines beneath the shop will be removed. RRES-R will collect confirmation soil samples beneath the drainlines under the former shop to ensure that the nature and extent of contaminants of potential concern (as identified in the RFI work plan) are defined for that portion of PRS 03-033.

Meetings were held with D&D staff regarding the collection of confirmation samples at PRS 03-003(c) following the D&D of the Syllac Building (Building 03-287), which is scheduled for mid-2003. PRS 03-003(c) was a temporary equipment storage area for used dielectric oils and capacitors and was located outdoors on the south side of the Syllac Building.

2.10.4.2 D&D at TA-16

RRES-R and D&D staffs met regarding the collection of characterization samples at PRSs and/or portions of PRSs associated with ongoing TA-16 D&D projects, including the 220 complex; the former TA-16 service station and administration buildings (structures 16-195, -206 and -208); the basket-wash facility (structure 16-390); and the 340 complex. Although future construction is not currently planned for these locations, where possible, RRES-R personnel will collect characterization samples while portions of the PRSs are accessible. Characterization samples will be collected and analyzed in accordance with applicable RFI work plans, which will be cited in the 10-day notification letters to NMED.

2.10.5 Deployed Regulatory Coordinators

Regulatory coordinators provided assistance to project remediation teams regarding regulatory compliance issues for activities within the RRES-R Program this quarter. The coordinators provided regulatory reviews of documents prepared by RRES-R and participated in peer reviews. Deployed personnel from the Laboratory's RRES-WQH and RRES-SWRC participated in the reviews as subject matter experts regarding water issues and hazardous and solid waste issues, respectively. These efforts included preparing and reviewing comments on sections of the draft SWMU report; numerous supplemental RFI sampling and analysis plans, RFI reports, and VCA/VCM plans and reports; a well completion report; and a well geochemistry report.

Coordinators provided regulatory compliance support to the MDA P Team, in preparation for the submittal of the final closure certification report.

Staff also interfaced with the Laboratory's Solid Waste Operations Group (FWO-SWO) to obtain RRES-R Program waste volumes and waste volumes for all Laboratory programs.

2.10.5.1 Water Regulatory Support

Surface Water Assessment Team members completed the effort on the data quality objective (DQO) process for Multi-Sector General Permit-related stormwater monitoring for SWMUs. The team is attempting to reach a consensus with NMED, DOE, EPA, and the Laboratory on an appropriate approach for monitoring runoff from SWMUs under the Laboratory's Multi-Sector General Permit.

A RRES-R Program staff member met with EPA Region VI personnel in Dallas, Texas, to brief stormwater regulators on the status of the Laboratory's monitoring efforts related to the Multi-Sector General Permit. Items discussed included a summary of the Surface Water Assessment Team/DQO efforts to date regarding "Conventional Industrial Activities" and a review of SWMU monitoring options. EPA representatives are planning to visit the Laboratory and NMED in early 2003 to continue discussions.

The staff member briefed DOE and the RRES Division Office regarding this discussion with EPA and current Surface Water Assessment Team/DQO efforts and proposed approaches to monitoring SWMUs.

Staff attended a Laboratory construction project meeting where a proposal was made to move environmental restoration-related earth-moving construction/remediation activities to a Storm Water Pollution Prevention Plan (SWPPP) requiring individual permits. The proposal would require Notice of Intent submittals for permit coverage and the development of another parallel-path SWPPP to cover active construction projects. Currently, environmental restoration projects are covered under an umbrella SWMU/SWPPP, whether active or inactive.

Other regulatory support activities included the following:

- Participated in NNMCAB briefing to discuss BMPs and stormwater monitoring at TA-46, the proposed reactive barrier in Mortandad Canyon, and post-Cerro Grande fire rehabilitation efforts.
- Participated in the TA-46 BMP effectiveness study being conducted by the Surface Water Assessment Team and the DOE Oversight Bureau. Sediment and stormwater sampling have been completed. Statistical analysis of final data collection is ongoing. A report on the findings of study is scheduled for early 2003.
- Attended several meetings with RRES Division Office personnel to identify costs associated with stormwater permitting related to operations at TA-54 Area G.

2.10.5.2 Groundwater Activities

The deployed regulatory coordinator provided regulatory support for the submittal to NMED of notices of intent to discharge for land-application of drilling fluids and development water from wells R-16, R-20, R-23, and R-32. Approximately 60,000 gal. of drilling water from R-16; 65,000 gal. of development water from R-20; and 100,000 gal. of drilling fluids and development water from well R-23 were land-applied this quarter. NMED approved the land application under the notice of intent to discharge; the Laboratory submitted the notice to NMED for hydrogeologic workplan (LANL 1998, 59599) wells.

The coordinator also reviewed cuttings data from wells R-14 and R-32 for use in site restoration activities, provided technical support for drilling mud and cuttings issues, and provided oversight for seven waste shipments from RRES-R Program drilling sites.

2.10.5.3 TA-02 Activities

RRES-R personnel developed a strategy for regulatory closure of TA-02 PRSs, in conjunction with D&D activities being performed by FWO-CGRP. Existing TA-02 sampling and analysis data were reviewed to support preparation of planning documents.

A memorandum of understanding between FWO-CGRP and RRES-R Program for remediation work at TA-02 was finalized and signed. The memorandum describes the roles and responsibilities of each organization during D&D and integrated remediation activities planned at TA-02. In addition, RRES-R personnel coordinated with FWO-CGRP to develop a SAP and scope of work for D&D activities at PRS 02-006(a), the French drain located at the gas stack for TA-02.

2.10.5.4 TA-21 MDA Activities

A regulatory coordinator provided guidance regarding the approach to complete the RFIs of MDAs B and U and provided preliminary comments on the draft RFI reports for both MDAs.

2.10.5.5 TA-21 Non-MDA Activities

- Continued to provide support for the draft interim measures report for SWMU 21-018(a)-99, the NTISV hot demonstration at MDA V and kept NMED apprised of the status of the report.
- Continued to provide support on issues regarding the VCM plan for PRS 21-011(k), a former NPDES-permitted outfall at TA-21. Following the DOE-Office of Los Alamos Site Operations (DOE-OLASO) and RRES-R Program decision to excavate contaminated material at SWMU 21-011(k) and dispose of the material at Area G at TA-54 in lieu of stabilizing the contaminated material in place, the regulatory coordinator assisted with the revision of the VCM plan for PRS 21-011(k), which was submitted to NMED in October 2002.
- Prepared a letter requesting a no-longer-contained-in determination from NMED that environmental media to be generated during excavation of soil, sediment, and tuff as part of the Laboratory's VCM for PRS 21-011(k) do not warrant management as F-listed hazardous waste. NMED subsequently approved the determination request.
- Assisted in preparation and submittal to NMED of pre-excavation offsite contract laboratory analytical results to verify the field-screening approach to be used during the VCM of PRS 21-011(k).
- Prepared 10-day sampling notification letters for VCM confirmation sampling at PRS 21-011(k), supplemental RFI sampling at PRS 21-024(i) and supplemental VCA confirmation samples at SWMU 21-024(f).

2.10.5.6 TA-49, -50 and –54 Activities

The regulatory coordinator for TAs-49, -50, and -54 performed the following tasks this quarter.

- Reviewed and revised the draft SWMU report for TA-49.
- Continued development of confirmation sampling strategies for SWMUs 50-011(a), 50-004(a)-00, and 50-006(a)-00 for confirmation samples to be collected from the bottom of the excavation for the new pump house and influent tank vault at TA-50 in early 2003 (pending funding).
- Participated in meetings regarding the planned connection of new radioactive liquid waste lines from TA-55 to the TA-50 radioactive liquid waste treatment facility and the subsequent remediation of the existing waste lines [SWMU 50-004(a)-00].
- Continued to provide guidance regarding scope and approach for the supplemental RFI SAP prepared for the surface and subsurface investigations at MDA AB.
- Continued to assist in the review and revision of the draft MDA H CMS report. Staff comments resulted in significant revisions to the MDA H waste inventory, corrective measure alternatives, modeling assumptions, and evaluation of corrective measure alternatives and related cost estimates.

- Assisted in the final review of the MDA H RFI report addendum submitted to NMED in October 2002 and worked with NMED high-performance team staff to address subsequent comments on the MDA H RFI report addendum.
- Prepared a 10-day sampling notification letter for supplemental RFI sampling at MDA H in accordance with the MDA H RFI report addendum.
- Provided guidance regarding the approach to complete the RFI of MDA L and provided preliminary comments on the draft RFI report for MDA L.
- Participated in meetings with staff from TA-54 and RRES-SWRC regarding potential management alternatives and corresponding regulatory implications for each approach for the lead stringers located at MDA L.

2.10.6 PRS Deliverable Information Management

2.10.6.1 Compliance Schedule Tracking

Work continued on PRS and deliverables tracking.

2.10.6.2 SWMU Report

Work continues on the draft SWMU report. Data stewards continue to verify the analytical data for the report, and the report continues to go through the rigorous review cycles.

2.10.7 Surface Water Activities and BMPs

The BMP Inspection and Maintenance Team completed follow-up maintenance as required by the Multi-Sector General Permit resulting from findings of the recently completed annual site compliance evaluations at SWMUs covered by the Laboratory's Umbrella SWMU/SWPPP. BMP maintenance was completed at TAs-03, -15, -16, -45, -50, and -73.

Cost estimates are being reviewed for several engineered options to repair erosion damage at Hillside 137. One of these options will be selected, and the final construction design will be completed during the second quarter of FY 2003. Issues still pending include access to the county utility corridor and proposed construction by the current landowner in the drainage area immediately above the site.

Inspections were completed at TA-46 in response to a 0.5-in. rain event that occurred on October 26, 2002.

2.11 Land Transfer — Project Team Leader (Acting): Alison Dorries

Team members assisted in preparing the Laboratory's response to the notice of violation issued by NMED regarding the recent transfer of several tracts of Laboratory property to Los Alamos County and adjacent Pueblos.

Staff members continue to participate as members of the Laboratory's Land Transfer Team and the DOE's Land Transfer Project Office Team. These teams are responsible for the activities leading up to the final transfer of Laboratory property.

2.12 Documentation and Tracking — Project Team Leader: Stephen Bolivar

2.12.1 Information Management

The primary focus of Information Management personnel for the first quarter of FY 2003 was to continue with the business process reengineering. The goals for FY 2003 are to complete all SMO enhancements. The next enhancement will be made next quarter, and then enhancements will be made once a year. The last SMO iteration resulted in the implementation of several editor applications, including a template editor, sample location loader and editor, and an analytical data editor. Future efforts will now transfer to the Spatial Mapping and Reporting Tool (SMART) applications. The SMO applications move the data into the database; SMART applications are used to extract data from the database and produce data for evaluation.

Personnel continue to synchronize database changes with RRES-WQH as part of a data-sharing agreement, ensuring that both organizations maintain identical structures to facilitate data transfers. Transfers now occur on a periodic schedule and databases were kept in sync. Construction well data and corresponding analytical data for five regional wells were transferred this year.

NMED Oversight Bureau personnel were invited to and participated in a "hands-on" review of the new open web analytical database. Their comments were incorporated, and the new open partition web site will be available next quarter.

2.12.2 Records Management

Records Processing Facility personnel received 7271 record pages this quarter for processing. There are now 230,496 records for query on the Records Processing Facility database. Personnel performed 1218 retrievals for customers during the quarter, scanned 50,544 pages, and microfilmed 33,600 pages. There were approximately 18,000 web-page queries. SMO personnel are transferring 10,000 data packages to the RRES-R Records Processing Facility for scanning, microfilming, dual storage, archiving, etc. To date, 255 boxes of documents have been scanned electronically, with 869 boxes pending (as boxes are scanned, boxes of new analytical data are also being entered into the system).

2.12.3 Sample Management Office

The new SMO applications have been in place for several months, and two rounds of enhancements have been implemented. These have resulted in a $1.35 million savings in annual operating costs and have reduced a process that used to take weeks, and in some cases months, down typically to three days. This is documented in a white paper sent to the RRES Division Office. The SMO issued 67 field data groups (number of discrete samples) and had 232 customers this quarter. Personnel handled and shipped 2199 containers. These totals are near the two-year average and slightly above the five-year average.

Efforts to move all equipment from the Field Support Facility building, in preparation for an October 2003 closure date, are underway. Personnel are working with other RRES groups to identify items for transfer and items for salvage.

2.12.4 Computer Support

The RRES-R Program underwent the annual DOE security audit. No major problems were found. The security manual, prepared for the audit, was put into PDF format and will be available from the internal

web page. The document contains a history of audits and assessments for the last five years, findings, and actions taken to remediate the problems. This will facilitate preparation and provide lessons learned for future audits. Computer support personnel received 263 service requests this quarter and closed all but 29 of them. In an effort to increase electronic stability, the server room and electrical connections were upgraded. All desktop computers have been upgraded to the WIN 2000 operating system.

2.12.5 Geographic Information System

All digital data are now available from the Pueblo Complex. All maps generated are captured in PDF format. These files are catalogued and made available to RRES-R Program personnel, and a digital copy is sent to the Records Processing Facility. Maps also have a source statement, and metadata is available. A new theme, called "former structures," is being created. This quarter, the Cartographic Laboratory handled approximately 150 new requests, and produced 70 map products and/or figures. Sixty-three users accessed the flat-file repository for a total of 2249 events (i.e., separate file accesses), and 21 users accessed the relational database management system to view spatial data.

3.0 REFERENCES

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Appendix A

DP Canyon Monthly Inspection Reports
First Quarter, Fiscal Year 2003

DP Canyon Inspection Report
October 31, 2002

Introduction: Regular inspections are conducted to assess the status of two petroleum hydrocarbon seeps in DP Canyon. These seeps, which are downgradient from Potential Release Site 21-029 (DP Tank Farm), are referred to as the upstream and downstream seeps (Figure 1). Inspections are generally conducted on a monthly basis. However, during wetter months, these inspections are conducted on a semimonthly basis. The results of these inspections will help document any changes in the petroleum hydrocarbon seep areas in relation to seasonal changes and recent precipitation.

Date: October 31, 2002

Time: 10:00 a.m.

Personnel: Becky Coel-Roback and Mark Thacker

Weather: 6 °C, sunny, calm

Precipitation: 1.3 inches, approximate total since the last inspection (source: Los Alamos National Laboratory Weather Machine).

Presence of standing or running water: At the time of the inspection, there was some flow from the culverts draining the town site but none entering the drainage at the downstream seep location. There was abundant standing water at both locations.

Location and intensity of odors, staining, or sheen (see Figure 1 for locations):

	Air	Water	Soil/Sediment
Upstream Location	No petroleum hydrocarbon odor in air	Small area of petroleum sheen on water	No sheen, staining, or odor in disturbed sediments
Downstream Location	No petroleum hydrocarbon odor in air	No petroleum sheen on water	Some potential staining in sediments but no odor

Photographs: The following photographs were taken during the site visit (see Figure 1 for locations).

Location 1, canyon head. Culverts at the head of DP Canyon, showing a small amount of water flow

Location 2, upstream location. Small pool with standing water

Location 3, upstream location. During the October inspection, a small area of petroleum hydrocarbon sheen was noted on standing water. No petroleum hydrocarbon odor or sheen was noted in disturbed sediments.

Location 4, upstream location. Stream channel, looking downstream from sample location 21-11136

Location 5, downstream location. There was some standing water in this pool during the October inspection, but no sheen.

Location 6, downstream location. There was some potential petroleum hydrocarbon staining in sediments at this location during the October inspection.

Location 7, downstream location. Stream channel, looking downstream from sample location 21-11176

DP Canyon Inspection Report
November 25, 2002

Introduction: Regular inspections are conducted to assess the status of two petroleum hydrocarbon seeps in DP Canyon. These seeps, which are downgradient from Potential Release Site 21-029 (DP Tank Farm), are referred to as the upstream and downstream seeps (Figure 1). Inspections are generally conducted on a monthly basis. However, during wetter months, these inspections are conducted on a semimonthly basis. The results of these inspections will help document any changes in the petroleum hydrocarbon seep areas in relation to seasonal changes and recent precipitation.

Date: November 25, 2002

Time: 10:45 a.m.

Personnel: Becky Coel-Roback and Mark Thacker

Weather: 1 °C, dry, partly sunny

Precipitation: 0.89 inch, approximate total since last inspection (source: Los Alamos National Laboratory Weather Machine).

Presence of standing or running water: At the time of the inspection, there was no flow from the culvert or the north side of the drainage at the downstream location. There was standing water and ice present at the upstream location and ice at the downstream location.

Location and intensity of odors, staining, or sheen (see Figure 1 for locations):

	Air	Water	Soil/Sediment
Upstream Location	No petroleum hydrocarbon odor in air	Small area of sheen on water	Small amount of sheen on sediments but no odor
Downstream Location	No petroleum hydrocarbon odor in air	No standing water	No petroleum hydrocarbon odor or sheen in disturbed sediments

Photographs: The following photographs were taken during the site visit (see Figure 1 for locations).

Location 1, canyon head. There was no flow from the culverts during the November inspection.

Location 2, upstream location. Small pool with standing water

Location 3, upstream location. During the November inspection, there was a small amount of sheen on water and disturbed sediments.

Location 4, upstream location. No photograph available

Location 5, downstream location. There was no standing water in the downstream location during the November inspection.

Location 6, downstream location. There were no petroleum hydrocarbon odors, sheen, or staining noted in any media during the November inspection.

Location 7, downstream location. Stream channel, looking downstream from sample location 21-11176

DP Canyon Inspection Report
December 20, 2002

Introduction: Regular inspections are conducted to assess the status of two petroleum hydrocarbon seeps in DP Canyon. These seeps, which are downgradient from Potential Release Site 21-029 (DP Tank Farm), are referred to as the upstream and downstream seeps (Figure 1). Inspections are generally conducted on a monthly basis. However, during wetter months, these inspections are conducted on a semimonthly basis. The results of these inspections will help document any changes in the petroleum hydrocarbon seep areas in relation to seasonal changes and recent precipitation.

Date: December 20, 2002

Time: 10:00 a.m.

Personnel: Becky Coel-Roback and Mark Thacker

Weather: -1 °C, dry, sunny

Precipitation: 0.66 inch, approximate total since last inspection (source: Los Alamos National Laboratory Weather Machine).

Presence of standing or running water: At the time of the inspection, there was no flow or standing water in the drainage due to freezing conditions.

Location and intensity of odors, staining, or sheen (see Figure 1 for locations):

	Air	Water	Soil/Sediment
Upstream Location	No petroleum hydrocarbon odor in air	No standing water	No petroleum hydrocarbon odor or sheen in sediments
Downstream Location	No petroleum hydrocarbon odor in air	No standing water	No petroleum hydrocarbon odor or sheen in sediments

Photographs: The following photographs were taken during the site visit (see Figure 1 for locations).

Location 1, canyon head. Culverts at the head of DP Canyon showing no water flow due to freezing conditions

Location 2, upstream location. Frozen pool at the upstream location during the December inspection

Location 3, upstream location. During the December inspection, there was no evidence of petroleum hydrocarbons at the upstream location.

Location 4, upstream location. Stream channel, looking upstream from sample location 21-11136

Location 5, downstream location. There was no evidence of petroleum hydrocarbons at the downstream location during the December inspection.

Location 6, downstream location. There were no petroleum hydrocarbon odors in sediments in the downstream location during the December inspection.

Location 7, downstream location. Stream channel, looking upstream from sample location 21-11176

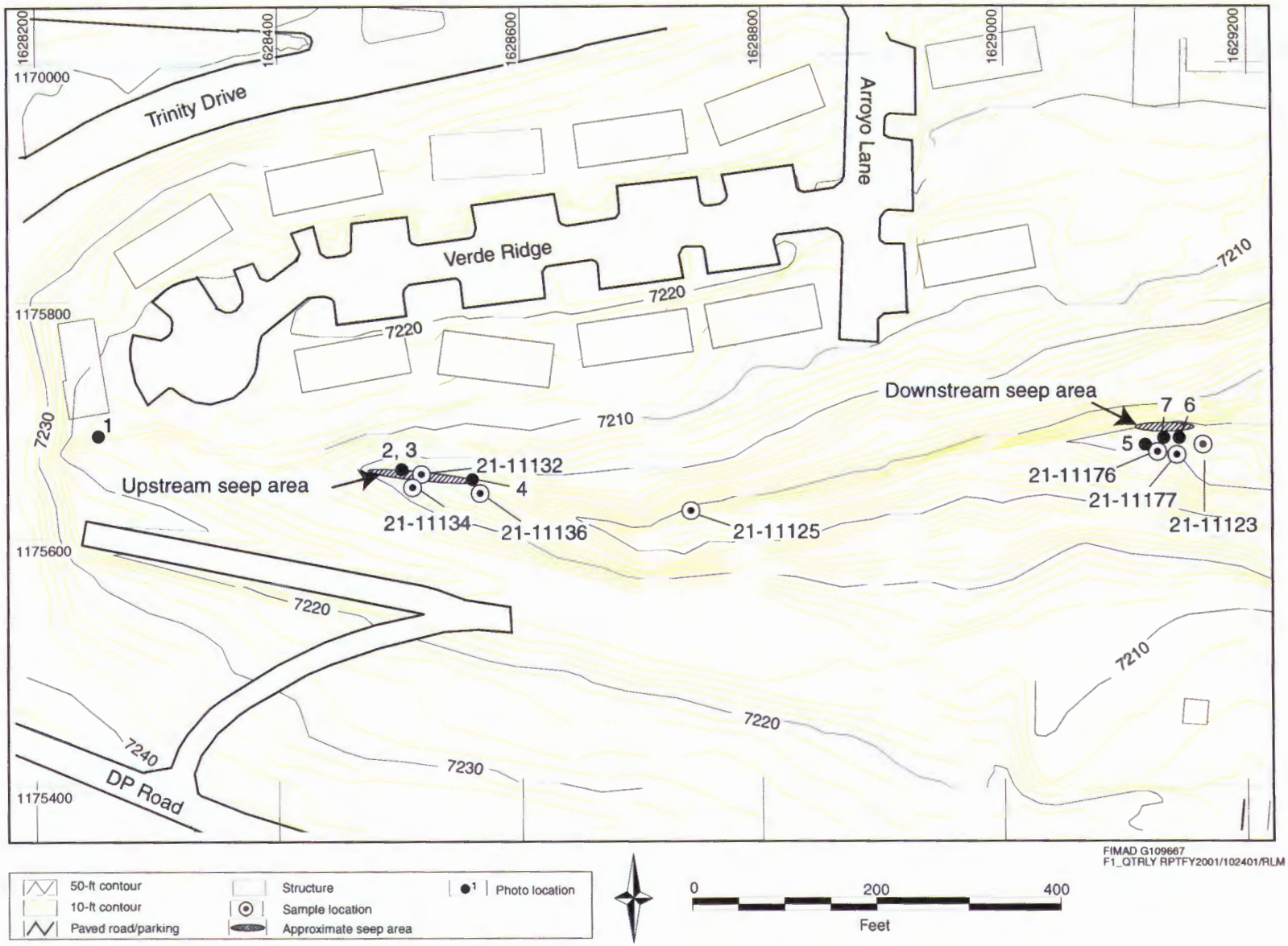

Figure 1. DP Tank Farm photo locations, seep areas, and sampling locations

Appendix B

Quarterly Moisture-Monitoring Report
First Quarter, Fiscal Year 2003
Technical Area 49, Material Disposal Area AB

QUARTERLY MOISTURE-MONITORING REPORT
FIRST QUARTER, FISCAL YEAR 2003
TECHNICAL AREA 49
MATERIAL DISPOSAL AREA AB

Risk Reduction and Environmental Stewardship–Remediation Program

Los Alamos National Laboratory

February 2003

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1.0 INTRODUCTION

The TA-49 moisture-monitoring system began collecting data in March of 2000 to assess the performance of the MDA AB Area 2 cover with respect to maintaining and/or reducing subsurface moisture content. The Area 2 cover was installed after the historical asphalt pad was removed during an interim measure (IM) implemented in 1998 at the direction of New Mexico Environment Department Hazardous and Radioactive Materials Bureau (NMED-HRMB). The area was covered with soil, gravel, and bio-barrier as part of stabilization activities. The IM was conducted to address concerns arising from moisture accumulation beneath the asphalt pad.

In 1998 and 1999, the IM and associated best management practice (BMP) activities conducted at Area 2 included the following:

- installation of a run-on diversion channel to the west of Area 2;
- removal of the asphalt cover over Area 2;
- surface regrading of Area 2 to eliminate surface water ponding;
- grouting and abandonment of CH-2 and the two 150-ft-deep RFI neutron access holes;
- installation of an evapotranspiration (ET) cover composed of crushed tuff monofill with top soil and covered with a steel mesh bio-barrier;
- installation of a silt fence surrounding the ET cover to control both erosion and contaminant transport; and
- seeding the ET cover with shallow-rooting grasses.

For details on the 1998–1999 BMP at Area 2, refer to Environmental Restoration Project (1998, 59166; 1998, 63041; and 1999, 63919).

In February 2000, a moisture-monitoring system was installed to monitor the ET cover at Area 2. Three shallow neutron logging access tubes were installed through the ET cover, and time domain reflectometry (TDR) probes were installed at two depths and at two locations in the ET cover. The TDR probes were wired into a Campbell Scientific, Inc., datalogger for automated measurements. The moisture-monitoring system utilizes three neutron access holes, four time domain reflectometry (TDR) probes, and a rain gauge to evaluate moisture content and relative changes within and beneath the new cover material. Additionally, eight neutron access holes located in the surrounding area are monitored monthly for moisture content. These access holes characterize the moisture content of undisturbed areas immediately adjacent to the cover area. It is anticipated that the new cover material will behave similarly to native undisturbed areas by restoring the semi-arid, moisture-limited, near-surface environment.

Monthly moisture monitoring began at the site in March of 2000. Monitoring is performed in accordance with ER-SOP-7.05, Rev. 1, "Subsurface Moisture Measurements Using a Neutron Probe." Neutron logging is performed with a dedicated CPN 503DR probe the last two workdays of each month to provide a consistent data set for trend analysis. The TDR probes record moisture content measurements twice a day. The two TDR arrays are located adjacent to neutron access holes 49-10046 and 49-10048 for data comparison and confirmation. The TDR arrays consist of a shallow TDR probe positioned horizontally just beneath the surface soil (approximately 6 in.) and a TDR probe positioned vertically beneath the cover materials at 10 and 6 ft, respectively. The shallow TDR probes are positioned to detect infiltration through the topsoil. A rain gauge was located at the surface of the cover near access hole 49-10046 in order to monitor levels of precipitation at the site. Continuous measurement of site precipitation and the 12-hour TDR data characterizes the cover's infiltration response to rain events. Figure 1 shows the locations of

access holes, neutron access holes, TDR probes, the rain gauge, the cover, and the silt fence. Table 1 gives the corresponding depths of the TDR probes.

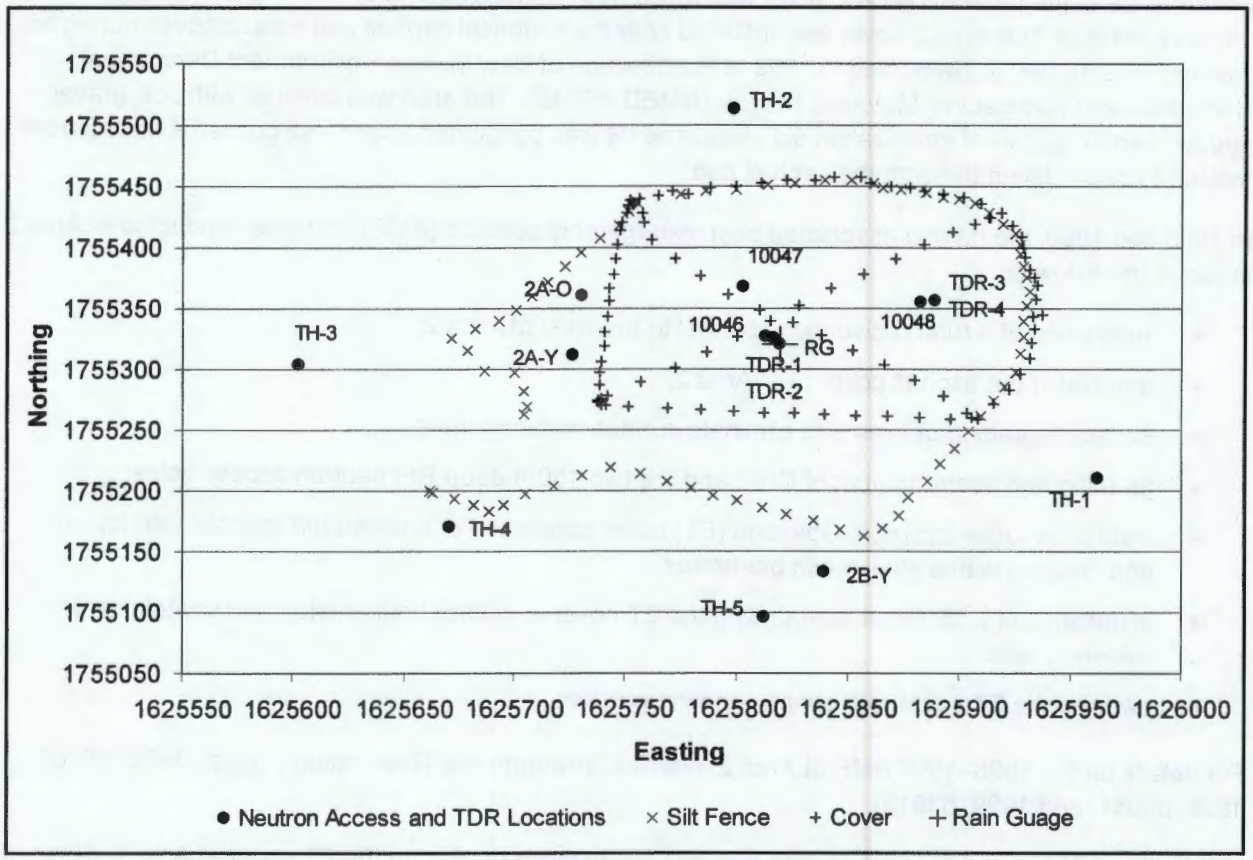


Figure 1. Location of instrumentation and neutron access holes on XY plane at TA-49

Table 1
TDR Array Descriptions

TDR Number	Array Type	Depth (ft)
TDR1	Vertical, within soil overlaying Bandelier Tuff	6
TDR2	Horizontal, at bottom of top-soil	0.5
TDR3	Vertical, within El Cajete pumice formation	10
TDR4	Horizontal, at bottom of top-soil	0.5

In November and December of 2002, neutron moisture measurements were performed at neutron access holes TH-1, TH-2, TH-3, TH-4, TH-5, 2A-O, 2A-Y, 2B-Y, 10046, 10047, and 10048. TDR measurements and precipitation quantities were recorded twice a day to a Campbell Scientific datalogger over the same period. This report will include a discussion of moisture trends over time, a comparison of moisture results from the neutron probe result and the TDR instruments, and a discussion of the relationship between precipitation and moisture content.

2.0 MOISTURE-MONITORING RESULTS

2.1 Neutron Logging

Neutron-logging event scheduling has changed from occurring at the end of the month to the middle of each month. During the first quarter of FY 2003, neutron logging was only completed in November due to probe malfunction. Logging is performed with a dedicated CPN 503DR probe at all neutron access holes. The neutron counts from the 11 access holes were recorded in a spreadsheet, and corresponding volumetric moisture content was calculated for each. Plots of volumetric moisture content for each sampling period and all of the holes are shown in Attachment A.

2.2 TDR and Precipitation Measurements

TDR measurements and precipitation quantities were collected twice a day through December and were recorded to a Campbell Scientific datalogger. The Campbell Scientific datalogger was programmed to record a timestamp, temperature, TDR raw frequencies, and precipitation in inches. The program converts raw frequency to volumetric moisture content and then records the data (both raw and converted) to a *.dat file. Figures 2 and 3 display moisture content and precipitation measurements from installation in April 2000 through December 2002. The cumulative precipitation was calculated from the on-site rain gauge from August 2000 to April 30, 2001. On May 1, 2001, it became apparent that the rain gauge was not functioning due to debris blocking the instrument. Therefore, from May 1, 2001 to date, precipitation data are obtained from the Laboratory TA-49 weather station.

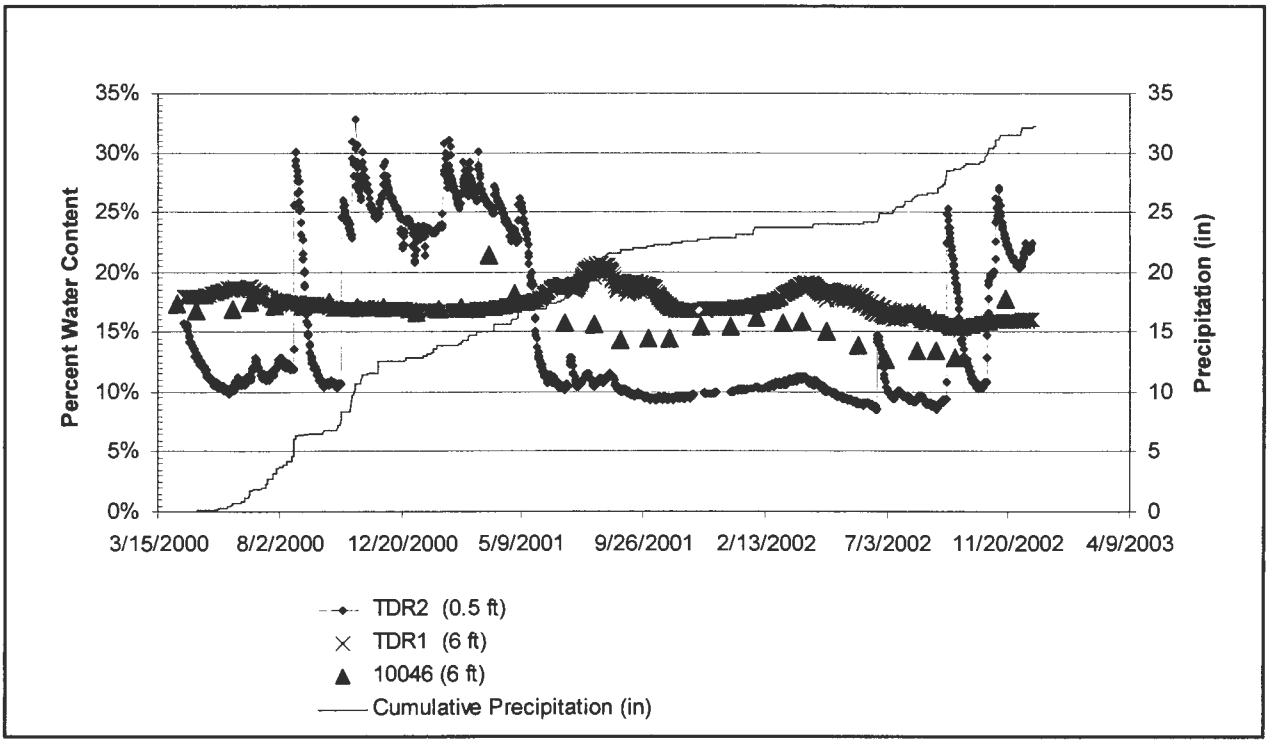


Figure 2. TDR measurements compared with neutron measurements at access hole 10046, which is in close proximity and at the same corresponding depths as TDR1

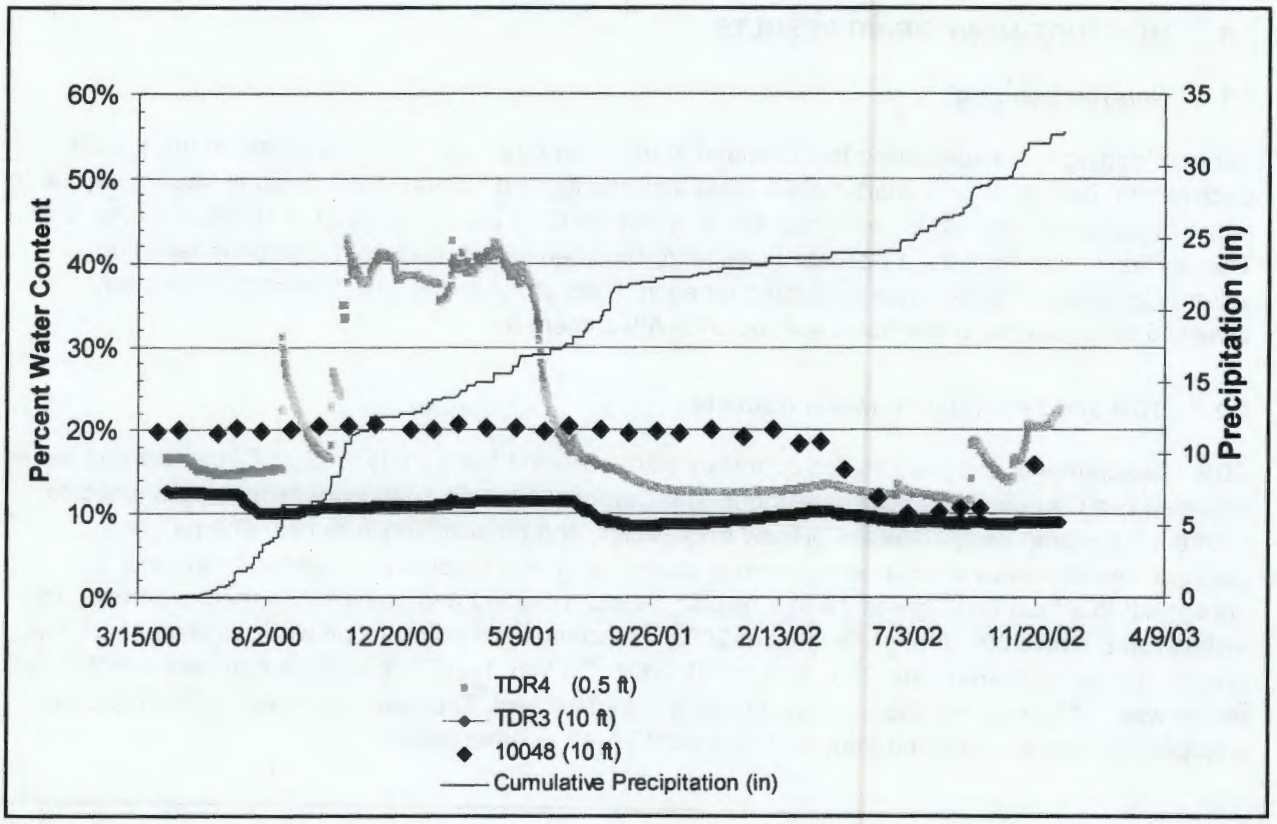


Figure 3. TDR measurements compared with neutron measurements at access hole 10048, which is in close proximity and at the same corresponding depth as TDR3

3.0 MOISTURE-MONITORING RESULTS AND DATA ANALYSIS

3.1 Introduction

During the first quarter (Q1) of 2003, most neutron access holes have shown a slight increase in volumetric moisture content in the first 5 ft, an interval of unconsolidated materials and/or the soil tuff interface, while below 5 ft the moisture trends have decreased. Trend plots of time versus moisture content were created for specific depth intervals (Attachment B). These plots exhibit the impact of snowfall and low temperatures preventing the moisture from infiltrating the cover.

3.2 Correlation between TDR Measurements and Precipitation Events

From mid October to early November 2002, snowfall occurred daily. The light snowfall, which produced less than 3 in. of accumulation, had a noticeable effect on the TDR probes. The shallow TDR probes at 0.5 ft have shown a drastic increase (15%) in moisture content; in contrast the deeper TDR probes (>6 ft) have shown only slight increases (1%–2%). This behavior can be attributed to the cold temperatures and the precipitation in the form of snowfall during October and November.

3.3 TDR and Neutron Comparisons

The moisture monitoring system is performing as expected with consistent results between TDR arrays and neutron logging. Figures 2 and 3 display the deep TDR data associated with access holes 49-10046 and 49-10048 respectively. The neutron probe data from the same depth as the deep TDR probes is also shown. At access hole 49-10046, the neutron probe data differ from the TDR results by approximately 2%, and the reported moisture trends differ slightly (see Figure 2). At access hole 49-10048, the TDR and neutron probe measurements differ by only 7%, with the neutron probe reading lower than the TDR probe.

3.4 Student T-test of Neutron Data

A student t-test analysis was performed to statistically track trends in moisture over time for each of the neutron access holes. The student t-test evaluates the significance of an apparent trend based on a selected confidence interval. For the purpose of this analysis, a 95% confidence interval was selected.

As of December 2002, 33 months of data events were available for statistical analysis. See Table 2 for the results of the student t-test analyses for each of the neutron access holes. The trending analysis results show that moisture levels have decreased. The early winter precipitation levels have mirrored those of 2000 thus proving that the winter of 2001 was anomalously arid.

Table 2
Results of the Student T-test Analysis, Based on a 95% Confidence Interval

Neutron Access Hole	Moisture Trending Results
TH-1	Analysis shows a decreasing moisture trend from 6 to 65 ft and 76 to 110 ft.
TH-2	Analysis shows a decreasing moisture trend from 11 to 30 ft, 36 to 60 ft, and 66 to 100 ft.
TH-3	Analysis shows a decreasing moisture trend from 1 to 5 ft, 51 to 75 ft, and 86 to 105 ft.
TH-4	Analysis shows a decreasing moisture trend from 1 to 10 ft and 51 to 80 ft.
TH-5	Analysis shows a decreasing moisture trend from 1 to 95 ft and 101 to 114 ft.
2B-Y	Analysis shows no significant change in moisture trends.
2A-Y	Analysis shows a decreasing moisture trend from 1 to 5 ft.
2A-O	Analysis shows a decreasing moisture trend from 6 to 10 ft.
49-10046	Analysis shows a decreasing moisture trend from 1 to 13 ft.
49-10047	Analysis shows a decreasing moisture trend from 1 to 2 ft and 7 to 12 ft.
49-10048	Analysis shows a decreasing moisture trend from 1 to 13 ft.

In addition to performing the student t-test analyses, trend plots of time vs. moisture content were created for specific depth intervals (see Figures B-1 through B-11 in Attachment B). These plots exhibit the impact of early winter snow in the near surface depth (1 to 5 ft) for all the neutron access holes (inside the cover and outside the cover), for the months October through December of 2002.

4.0 CONCLUSIONS

The neutron log and TDR data indicate that subsurface moisture levels have behaved consistent with the conceptual model for the site over the period of performance. The precipitation at TA-49 has been moderate, 2.78 in. from October through December 21. In the two previous years during the same months, the precipitation was only 0.59 in. in 2001 versus 5.86 in. in 2000. The moisture levels of the cover have decreased despite the seasonal precipitation. The shallow TDR probes have shown drastic increases in moisture while the deeper probes (>6 ft) have responded lightly, if at all. This can be attributed to the precipitation in the form of the snow and low ambient temperatures. The data from neutron access holes 10046, 10047, and 10048 show moisture content within the cover has decreased from the surface to the bottom of each hole. In neutron access holes adjacent to the cover (TH-3, TH-4, TH-5), the moisture levels have decreased from the surface to the bottom. The data from moderate depth neutron access holes (<60 ft.) surrounding the cover (2A-O, 2A-Y, 2B-Y) have not shown significant changes in moisture content.

Monitoring for the month of December was halted due to the malfunction of the CPN 503 DR hydroprobe. Only two neutron access holes (TH-1 and TH-2) were monitored during December prior to the malfunction of the hydroprobe. The hydroprobe ceased functioning December 16, 2002. Due to the malfunction of the probe, the unit will be returned to the manufacturer in January for repair. The TDR array continues to collect data and will provide confirmation of the cover performance while the neutron probe is not available.

5.0 RECOMMENDATIONS

The TA-49 moisture-monitoring system was installed to assess the performance of the MDA AB Area 2 cover with respect to maintaining and/or reducing subsurface moisture content. The Area 2 cover was installed as part of an IM implemented in 1998 to address concerns arising from moisture accumulation beneath the former asphalt pad on top of the test shafts. The routine moisture monitoring and site inspections conducted since March 2000 have shown the IM to be successful in eliminating run-on, reducing surface water ponding, and promoting evapotranspiration. This is evidenced by the reduction and/or stabilization of the subsurface moisture content within the covered area. Additionally, the increased vegetation, site BMPs, and steel mesh bio-barrier have controlled runoff, erosion, and bio-intrusion, reducing the potential for contaminant migration and cover degradation.

MDA G at TA-54 is a mesa-top setting similar to MDA AB. Routine moisture monitoring has been performed at MDA G for more than 10 years. The results have indicated that very little, if any, detectable changes in moisture content occur below the near-surface environment and that any significant changes or trends are effectively captured by bimonthly monitoring. The moisture-monitoring results for the past 33 months at MDA AB have been consistent with those from MDA G. Measurements of the moisture content within the Bandelier Tuff at both mesa-top sites indicate that seasonal precipitation results in little, if any, deep infiltration. Therefore, it is recommended that moisture monitoring of all neutron access holes be reduced from monthly to bimonthly. This will be sufficient to capture any potential long-term variability in moisture content below the near-surface environment. The current frequency of TDR measurements will continue to monitor the performance of the cover materials.

6.0 REFERENCES

Environmental Restoration Project, June 1998. "Stabilization Plan for Implementing Interim Measures and Best Management Practices at Potential Release Sites 49-001 (b, c, d, and g)," Los Alamos National Laboratory document LA-UR-98-1534, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 59166)

Environmental Restoration Project, September 1998. "Best Management Practices Report for Installation of Stabilization Measures at Potential Release Sites 49-001(b, c, d, and g)," Los Alamos National Laboratory document LA-UR-98-4170, Los Alamos, New Mexico. (Environmental Restoration Project 1998, 63041)

Environmental Restoration Project, August 1999. "Interim Measures Report for Potential Release Sites 49-001(b), 49-001(c), 49-001(d), 49-001(g)," Los Alamos National Laboratory document LA-UR-99-2169, Los Alamos, New Mexico. (Environmental Restoration Project 1999, 63919)

Attachment A

Neutron Moisture Measurements

ATTACHMENT A NEUTRON MOISTURE MEASUREMENTS

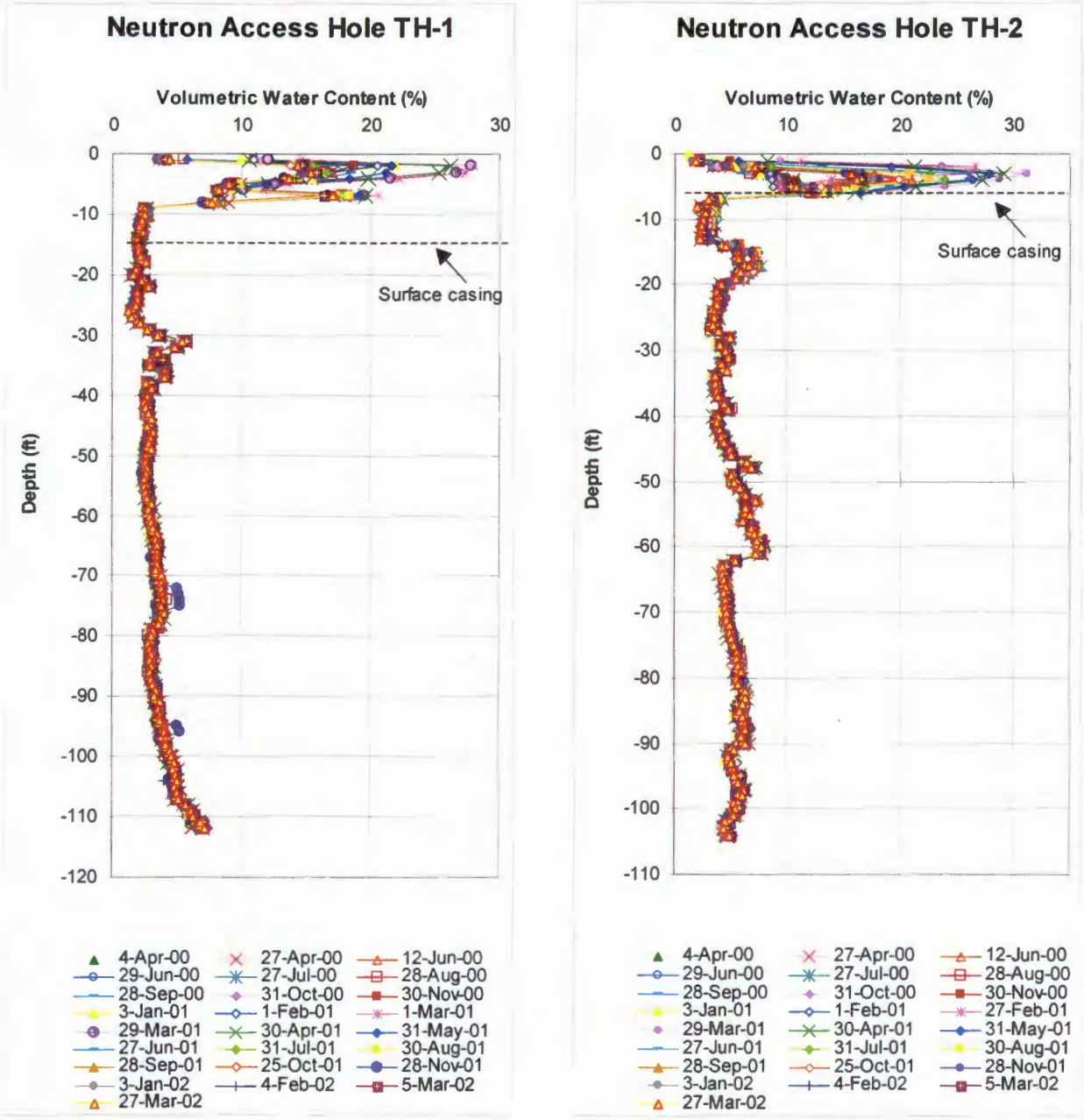
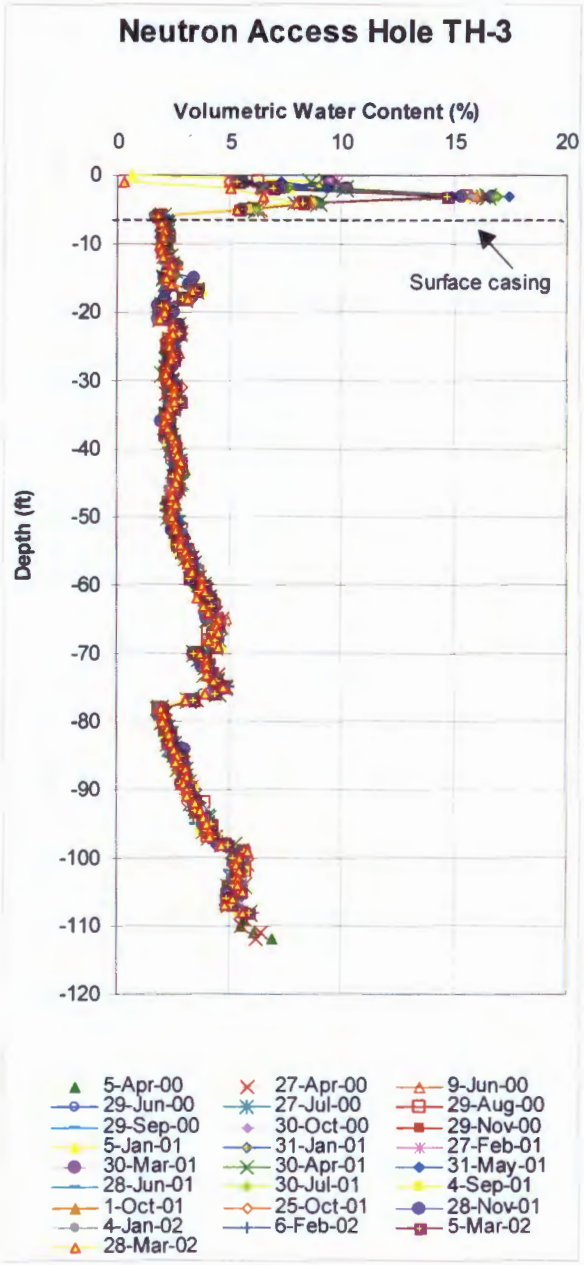


Figure A-1. Neutron probe moisture measurements for neutron access holes TH-1 and TH-2



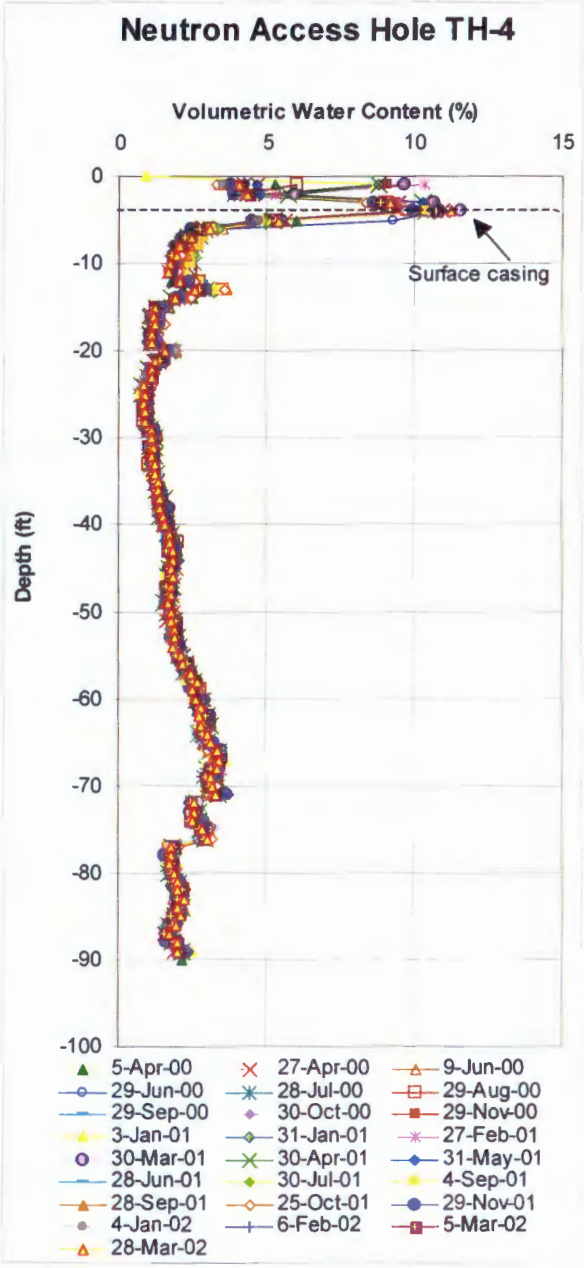


Figure A-2. Neutron probe moisture measurements for neutron access holes TH-3 and TH-4

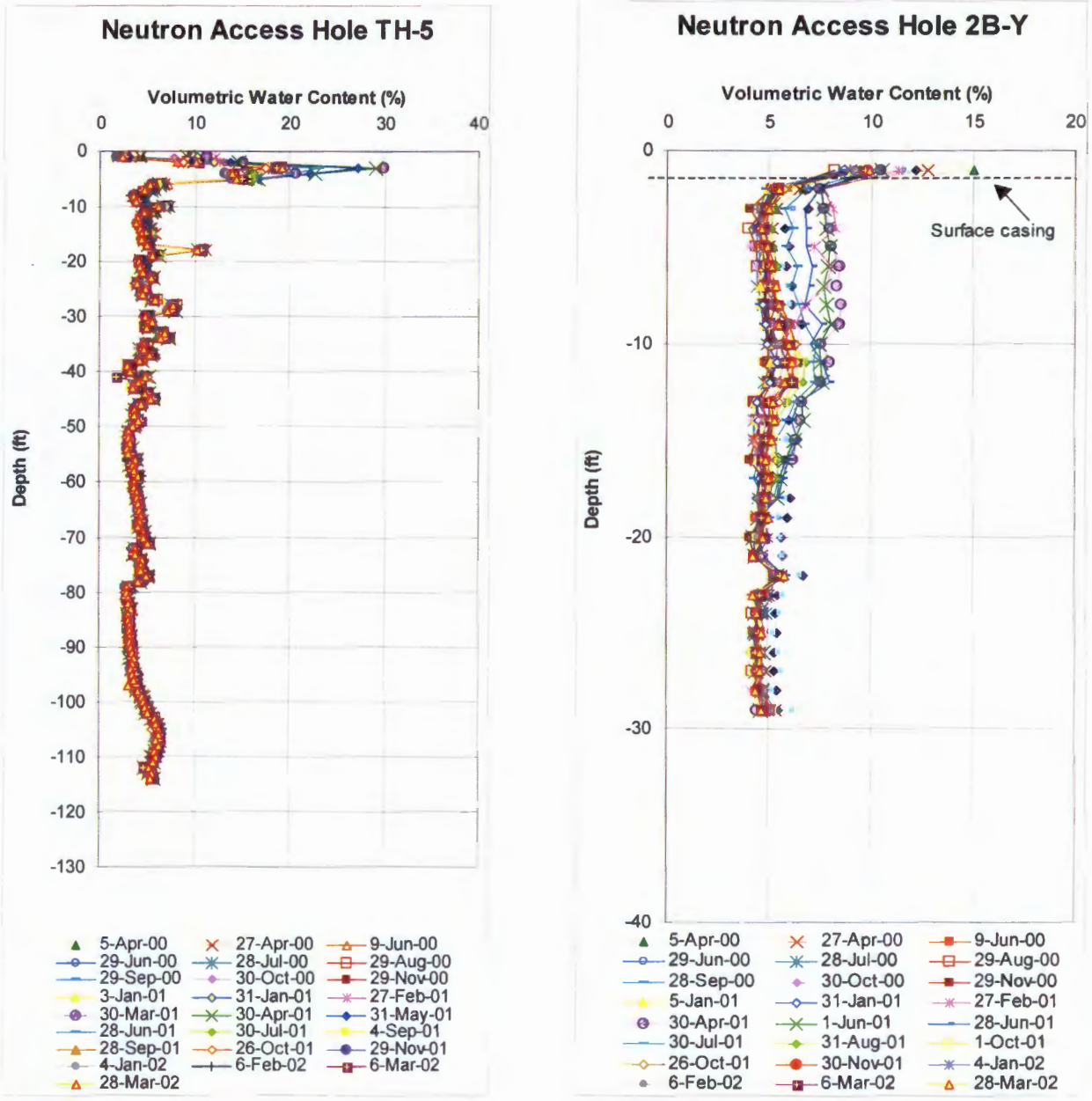


Figure A-3. Neutron probe moisture measurements for neutron access holes TH-5 and 2B-Y

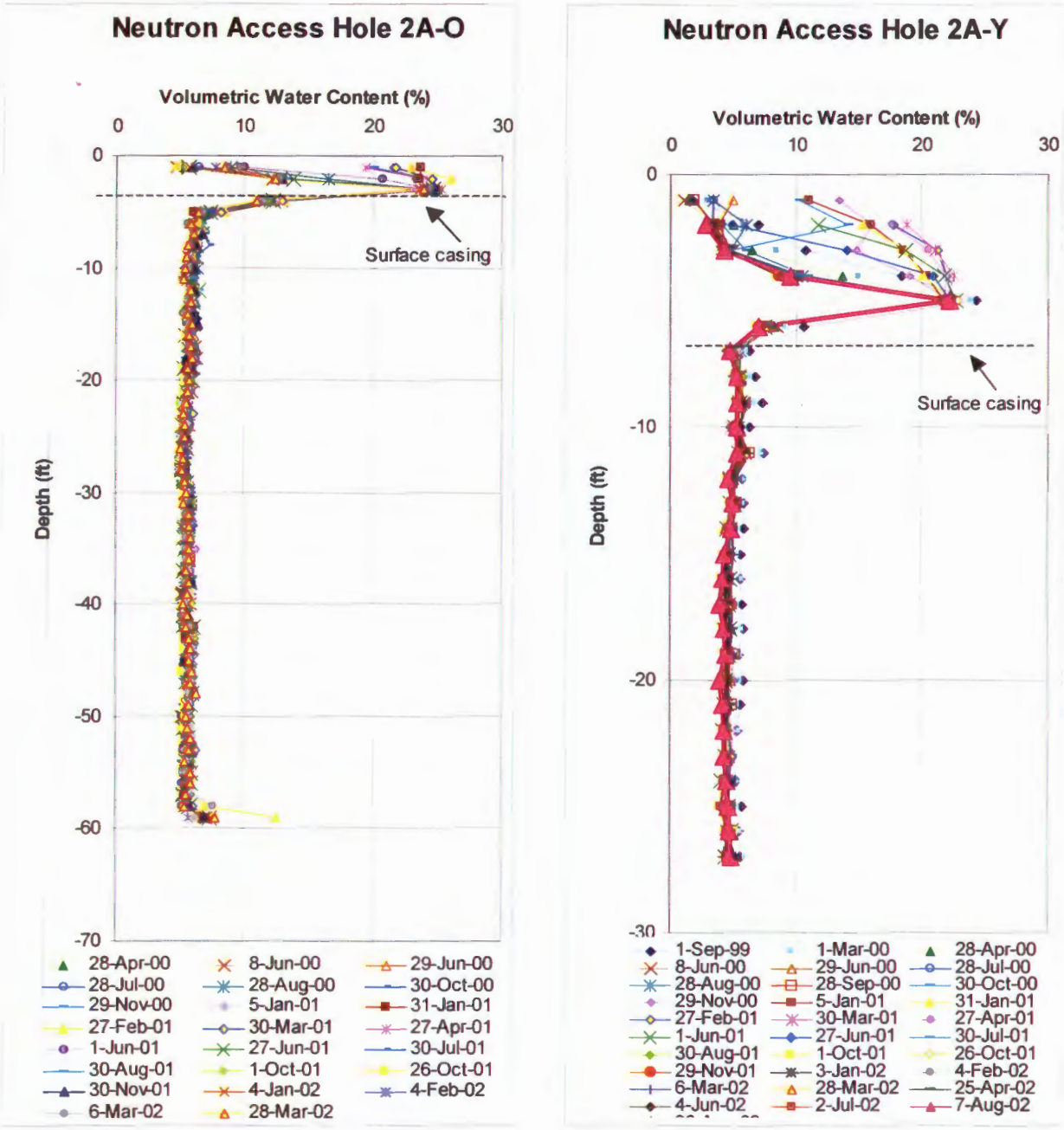
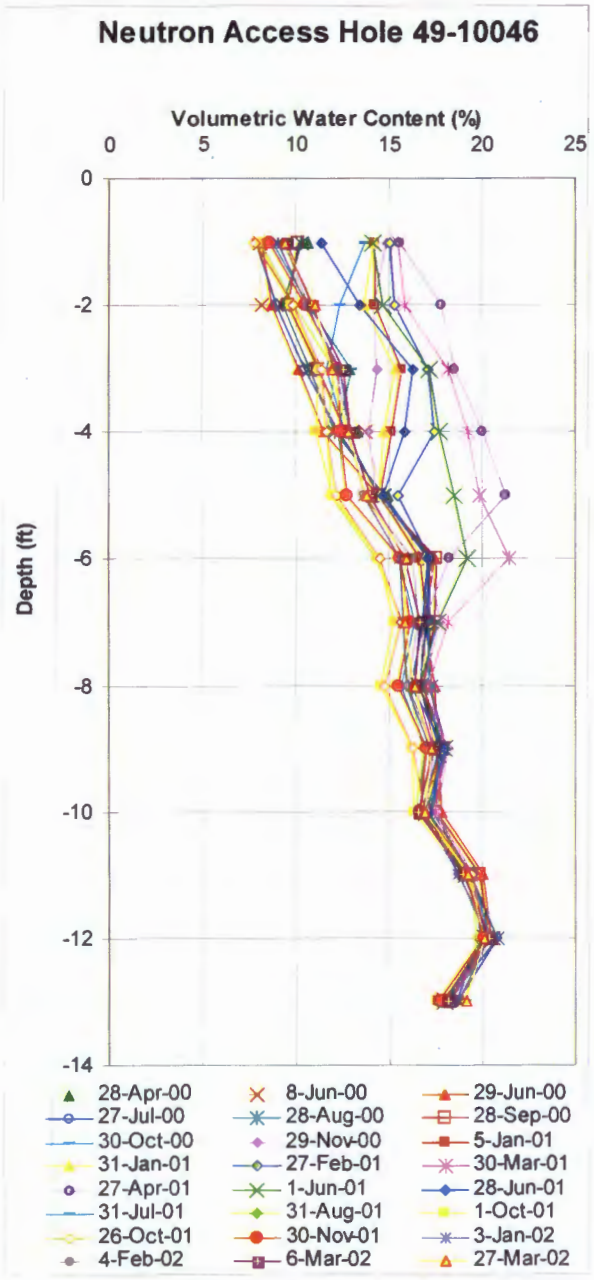


Figure A-4. Neutron probe moisture measurements for neutron access holes 2A-O and 2A-Y



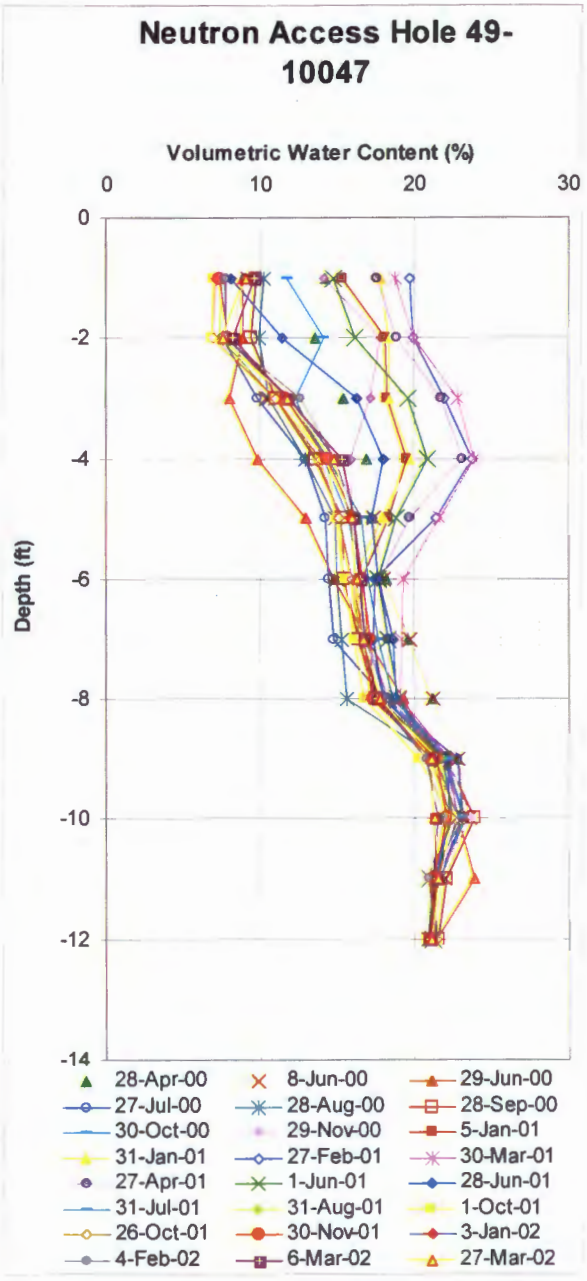


Figure A-5. Neutron probe moisture measurements for neutron access holes 49-10046 and 49-10047

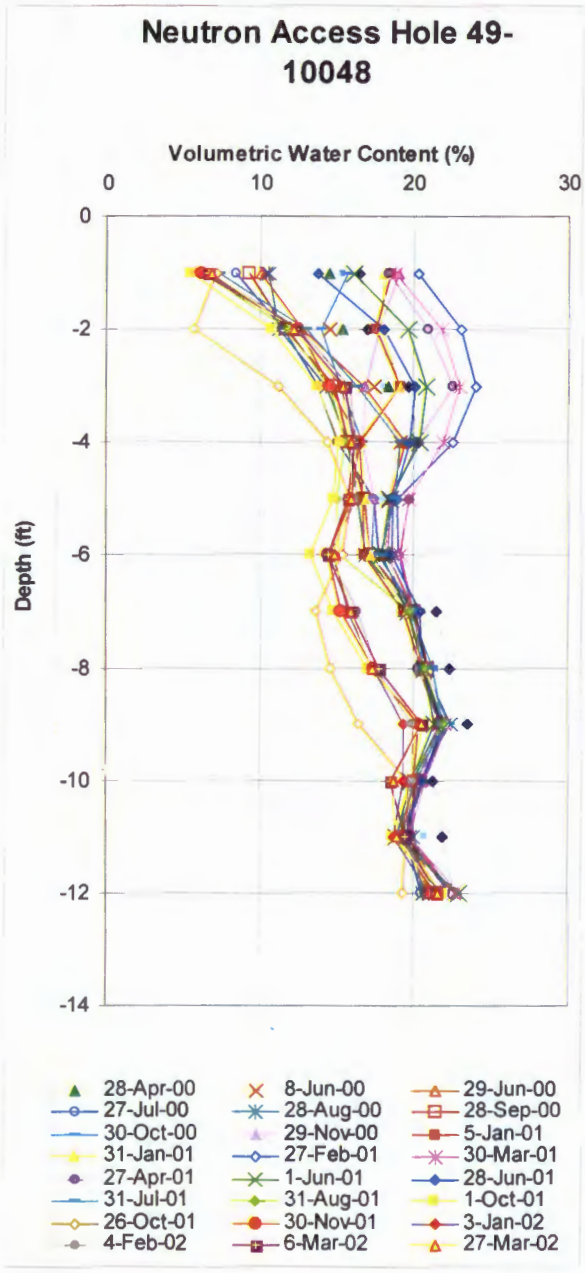


Figure A-6. Neutron probe moisture measurements for neutron access hole 49-10048

Attachment B

Time Versus Moisture Content Plots

ATTACHMENT B TIME VERSUS MOISTURE CONTENT PLOTS

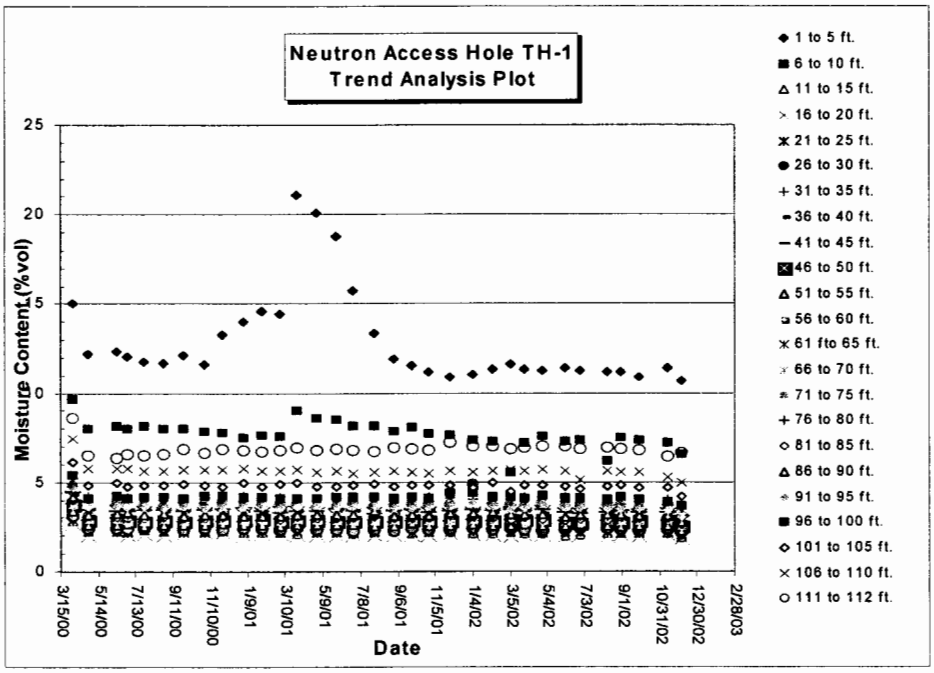


Figure B-1. Trend plot of neutron moisture measurements, neutron access hole TH-1

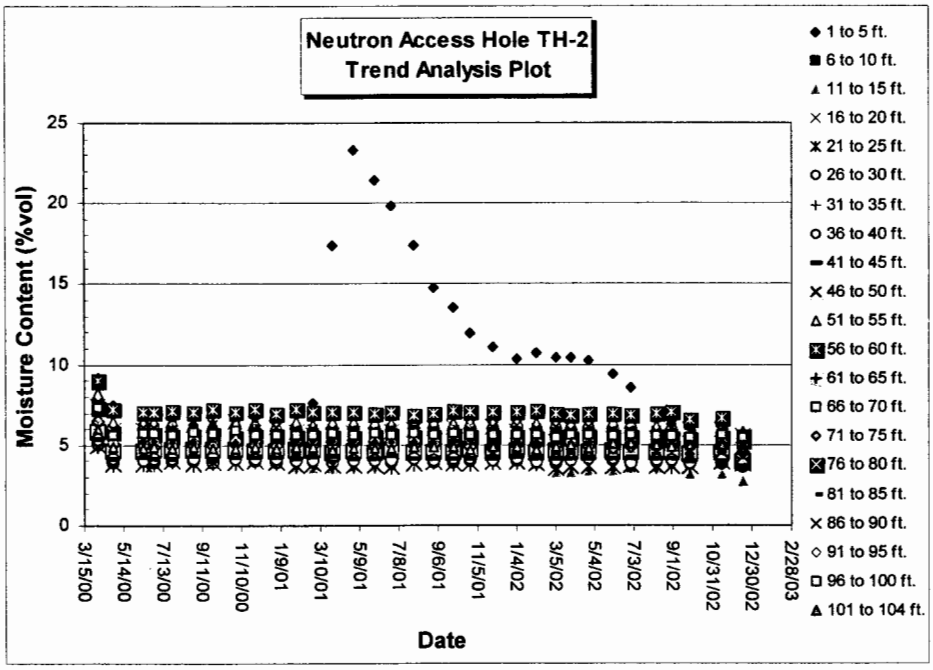


Figure B-2. Trend plot of neutron moisture measurements, neutron access hole TH-2

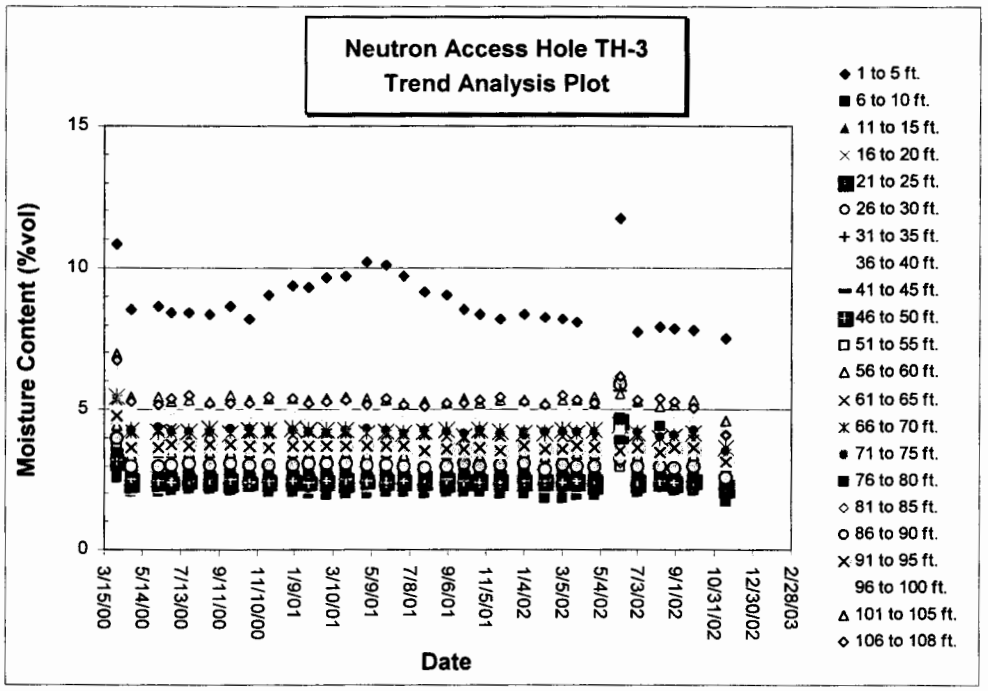


Figure B-3. Trend plot of neutron moisture measurements, neutron access hole TH-3

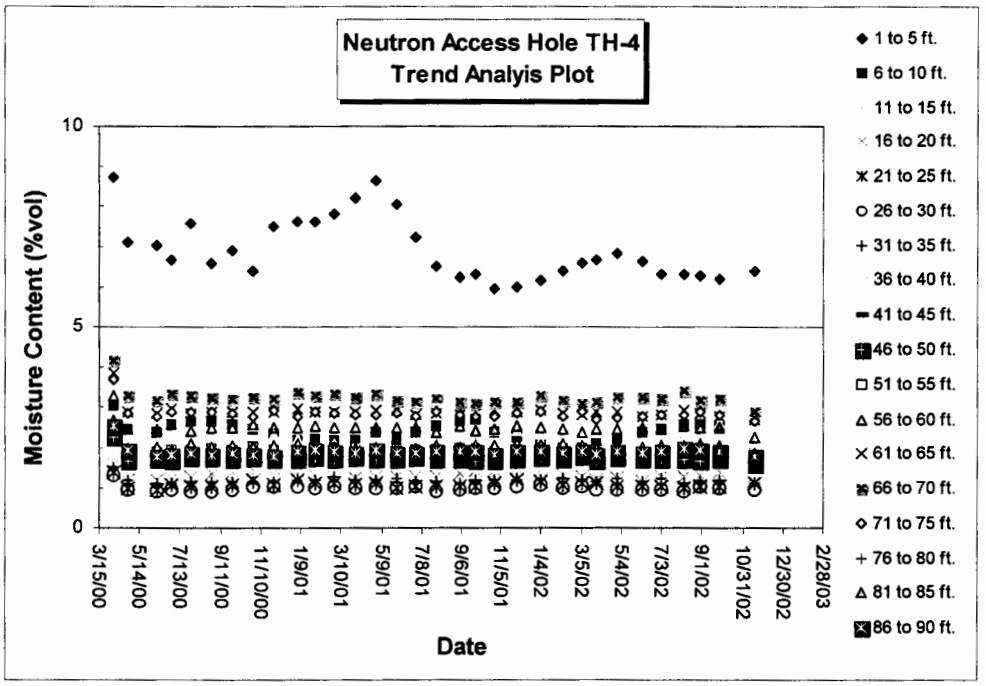


Figure B-4. Trend plot of neutron moisture measurements, neutron access hole TH-4

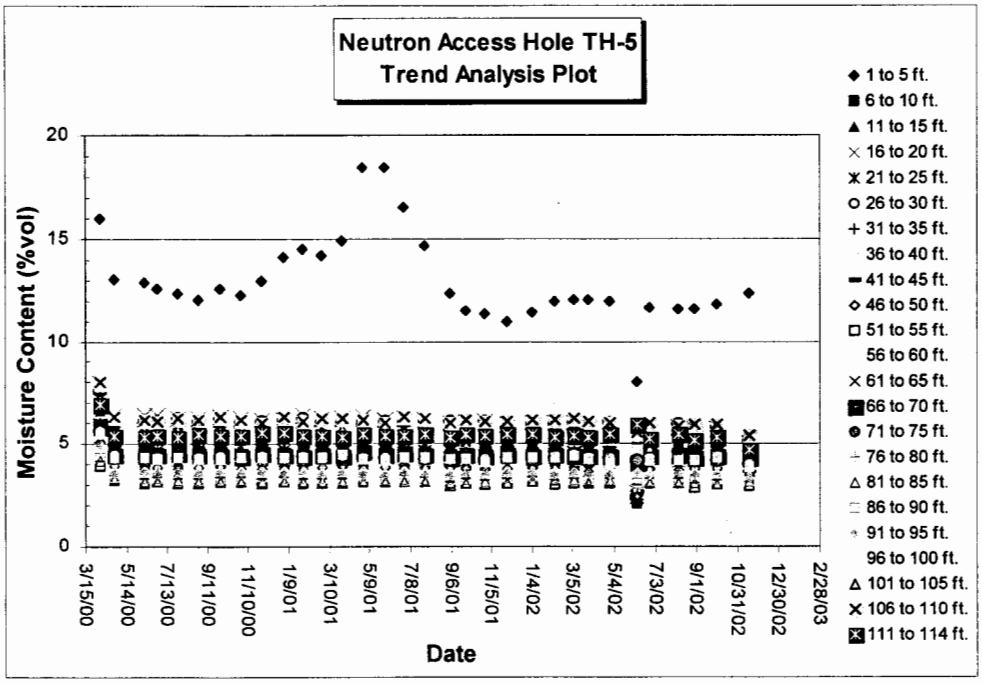


Figure B-5. Trend plot of neutron moisture measurements, neutron access hole TH-5

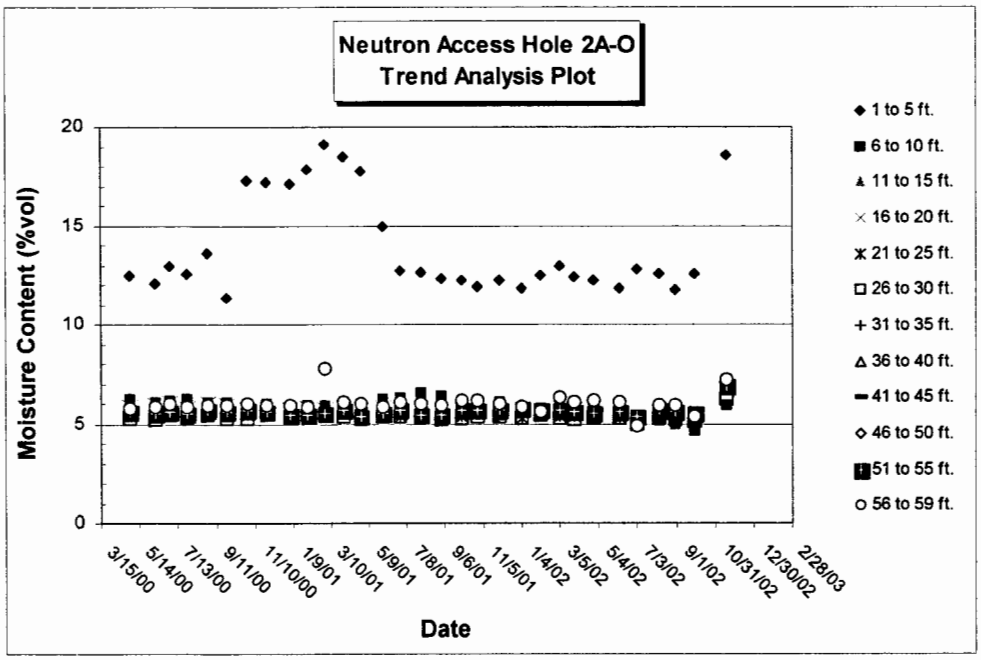


Figure B-6. Trend plot of neutron moisture measurements, neutron access hole 2A-O

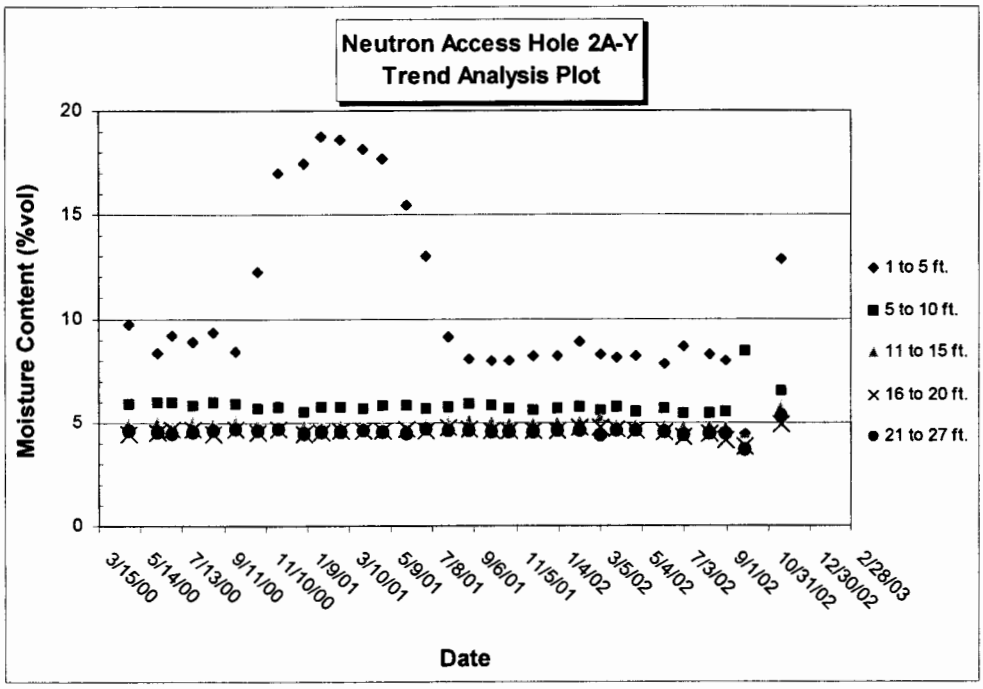


Figure B-7. Trend plot of neutron moisture measurements, neutron access hole 2A-Y

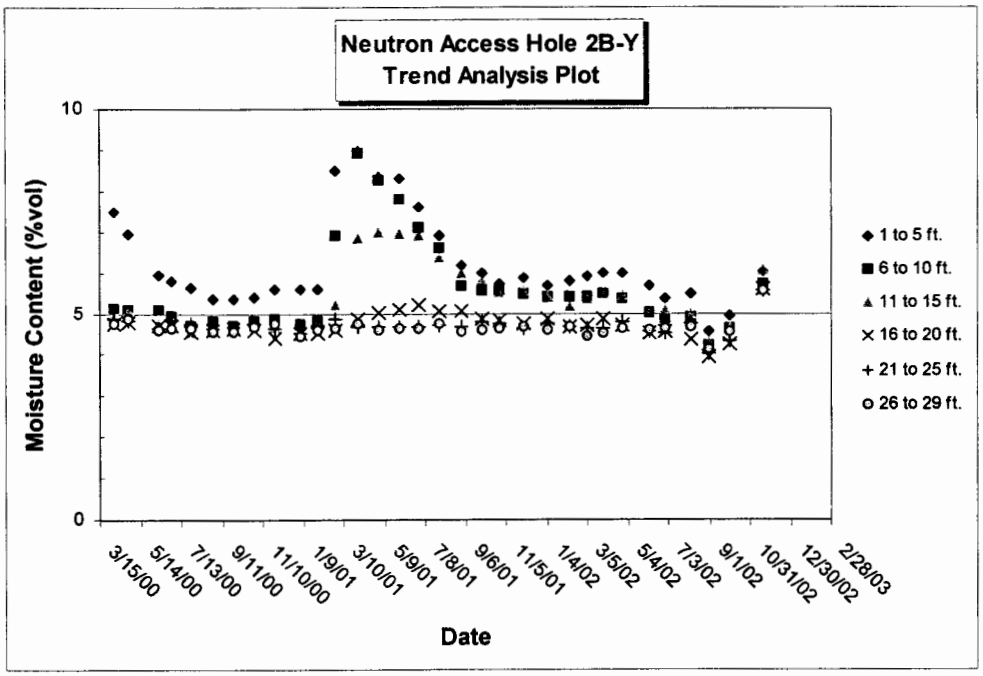


Figure B-8. Trend plot of neutron moisture measurements, neutron access hole 2B-Y

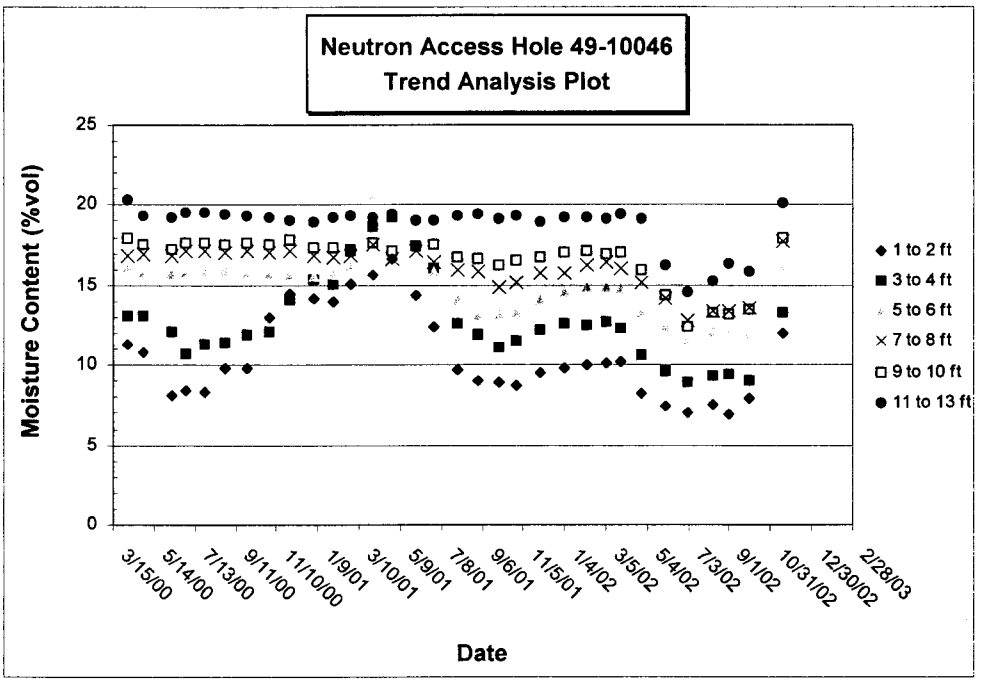


Figure B-9. Trend plot of neutron moisture measurements, neutron access hole 49-10046

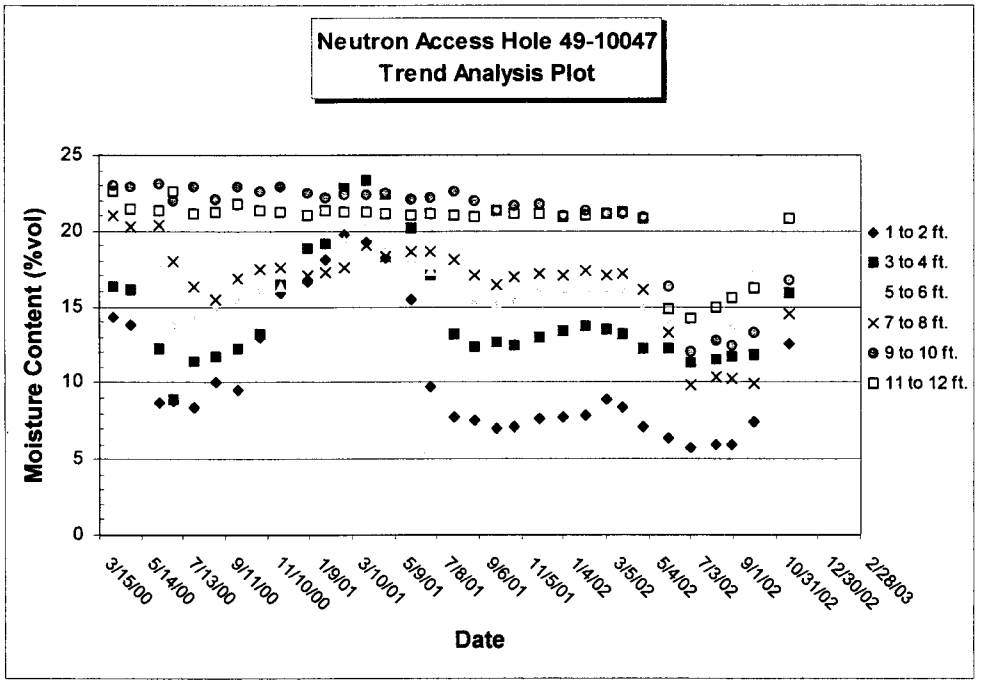


Figure B-10. Trend plot of neutron moisture measurements, neutron access hole 49-10047

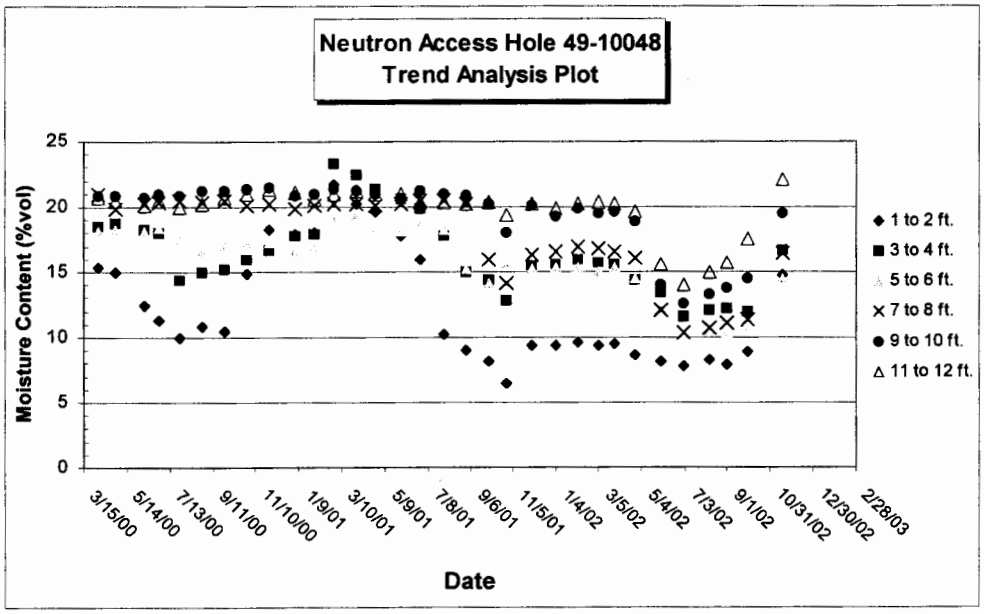


Figure B-11. Trend plot of neutron moisture measurements, neutron access hole 49-10048

Appendix C

Quarterly Pore-Gas Sampling at
Technical Area 54, Material Disposal Areas L and G
First Quarter Fiscal Year 2003

PORE-GAS SAMPLING AT TECHNICAL AREA 54 MATERIAL DISPOSAL AREAS L AND G FIRST QUARTER FISCAL YEAR 2003

Risk Reduction and Environmental Stewardship–Remediation Program

Los Alamos National Laboratory

February 2003

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1.0 INTRODUCTION

This report discusses first quarter subsurface pore-gas sampling at Los Alamos National Laboratory (the Laboratory), Technical Area (TA) 54. Monitoring at TA-54 is required by Module VIII of the Laboratory's Hazardous Waste Facility Permit in Section C.5, "Unsaturated Zone Monitoring" (EPA 1990, 1585). The approved plan (Davis 1993, 38812) for pore-gas sampling at TA-54 is described in the Laboratory's response (Glatzmaier 1993, 30987) to an Environmental Protection Agency (EPA) notice of deficiency (Driscoll 1992, 3849.3) addressing the Laboratory's Resource Conservation and Recovery Act facility investigation (RFI) work plan for TA-54 (LANL 1992, 7669).

1.1 Sampling Plan Requirements

Twenty-eight Risk Reduction and Environmental Stewardship–Remediation (RRES–R) Program wells are available for pore-gas sampling at TA-54. The sampling and analysis plan requires the collection of samples from 12 wells each quarter. These 12 samples are collected for analysis of volatile organic compounds (VOCs). Of these 12 samples, seven are to be selected from a list of 10 wells located at Material Disposal Area (MDA) L, and two are to be selected from a list of four wells located at MDA G. Thus, 9 of the 12 samples collected each quarter are constrained to a defined set of 14 wells. This leaves 3 samples per quarter that may be distributed among the remaining 14 available RRES-R Program pore-gas sampling wells or the boreholes provided by the TA-54 Area G Performance Assessment Maintenance Group (PAMG wells).

The SUMMA canister sampling method is currently being used with analysis by EPA TO-14 (gas chromatography/mass spectrometry) (EPA 1999, 70063). SUMMA canister samples are drawn from one of the several sampling ports available at each well. Table 4 in Appendix F of the fourth-quarter report for Fiscal Year (FY) 2000 (Environmental Restoration Project 2000, 70064) lists the reasons for selecting ports to be sampled during FY 2001.

Before the required sampling is performed, all available wells (RRES-R Program wells and PAMG wells) are screened with the Brüel and Kjaer multigas monitor, Type 1302. Each port is purged and monitored with field instruments until CO_2 levels have stabilized at values representative of subsurface pore-gas conditions and is then screened for four VOCs (1,1,1-trichloroethane, trichloroethene, perchloroethene, and Freon-11).

Three types of field quality assurance (QA) samples are collected and analyzed. These three samples include a duplicate sample, an equipment blank of zero grade air (zero grade air is a common term for air that is certified to be free from VOC contamination) or nitrogen drawn through the sampling apparatus in the working area, and a performance evaluation sample/calibration gas sample taken from a tank of a certified gas mixture. Laboratory QA for EPA Method TO-14 includes internal standards, surrogates, replicates, blanks, laboratory control samples, and reference standards.

1.2 Sampling Purpose

The purpose of the pore-gas sampling at TA-54 MDAs L and G is three-fold:

- to identify changes in contaminant concentrations at the perimeter of the relatively well-characterized plume at MDA L as an indicator of outward plume expansion (i.e., extent),
- to monitor for contaminants and changes in contaminant concentration distributions within the plumes at MDAs L and G as an indicator of changes warranting further attention (i.e., nature), and
- to monitor wells for data gap needs for future modeling and trend analyses.

2.0 FIRST-QUARTER SAMPLING

2.1 Sampling Event

Sampling for the first quarter of FY 2003 (October through December) was conducted during the period from October 24, 2002, to December 19, 2002.

Table 2-1 identifies the wells sampled (from the list of all wells available) and lists the port at each well from which the SUMMA canister sample was drawn. Twelve wells were sampled in accordance with the approved sampling plan. Eight wells at MDA L were sampled, including seven from the defined list. Four wells at MDA G were sampled, including two from the defined list of wells and two from PAMG wells. The two QA samples (field duplicate and equipment blank) were collected as planned. In total, 12 samples were collected for laboratory analysis.

2.2 Sampling Results

Both the field screening and analytical sampling for MDAs G and L were finished by December 19. Field-screening results for first quarter are available upon request. Analytical results are reported in Attachment A.

2.3 Evaluation of Quality Assurance Samples

Field duplicate sample. A field duplicate sample is drawn from the same port on a well immediately after the original sample. The field duplicate was collected on well 54-2034 at the 60-ft sampling port. Table 2-2 presents the relative percent differences (RPDs) between the original sample MD54-02-49759 and the field duplicate MD54-02-49760.

Field equipment blank. A field equipment blank sample documents the effectiveness of equipment purges between samples. A sample was collected by drawing zero-grade air through the sample train after the normal purge performed before each sample. Two compounds were detected. The field equipment blank was taken in the immediate vicinity of well 54-2002 at ground level.

Calibration gas sample (performance evaluation sample). A calibration gas sample was not collected in the first quarter of fiscal year 2003.

Table 2-1
Summary of Sampling Event, First Quarter of FY 2003

Well ID	Site	On Defined Sampling List (Y/N)	Number of Ports Screened	Depths of Screened Ports (ft)	Depth of Port Sampled (ft)	Sample ID
54-1015	MDA L	N	7	45, 187, 350, 385, 435, 485, 525	525	MD54-03-49750
54-1016	MDA L	N	7	36, 188, 318, 390, 481, 533, 601	—[a]	n/a[b]
54-1018	MDA L	N	n/a	Well needs repair[c]	—	n/a
54-1107	PAMG	N	n/a	Well needs repair[c]	—	n/a
54-1111	PAMG	N	7	20, 40, 50, 70, 78, 100, 139	100	MD54-03-49757
54-1117	PAMG	N	6	20, 32, 55, 73, 82, 85	82	MD54-03-49758
54-1121	PAMG	N	7	20, 26, 62, 70, 76, 98, 121	—	n/a
54-2002	MDA L	Y	10	20, 40, 60, 80, 100, 120, 140, 157, 180, 200	120	MD54-031-49751
54-2009	MDA G	Y	4	37, 62, 79, 92	79	MD54-03-49752
54-2010	MDA G	Y	3	30, 53, 95	95	MD54-03-49753
54-2012	MDA L	Y	3	8, 28, 42	—	n/a
54-2013	MDA L	N	3	20, 43, 63	—	n/a
54-2014	MDA L	N	4	13, 31, 46, 86	—	n/a
54-2016	MDA L	N	3	18, 31, 82	—	n/a
54-2020	MDA L	N	10	20, 40, 60, 80, 95, 120, 140, 160, 180, 200	—	n/a
54-2021	MDA L	Y	10	20, 40, 60, 80, 100, 120, 140, 160, 180, 200	140	MD54-03-49754
54-2022	MDA L	Y	10	20, 40, 60, 80, 100, 120, 140, 160, 180, 200	—	n/a
54-2023	MDA L	Y	9	20, 40, 60, 80, 100, 120, 140, 159, 180, 200	100	MD54-03-49755
54-2024	MDA L	N	10	20, 40, 60, 80, 100, 120, 140, 160, 180, 200	—	n/a
54-2025	MDA L	N	5	20, 60, 100, 160, 180	—	n/a
54-2026	MDA L	Y	6	20, 60, 100, 160, 200, 215	100	MD54-03-49756
54-2027	MDA L	N	6	20, 60, 100, 160, 200, 220	—	n/a
54-2028	MDA L	N	7	20, 60, 100, 160, 200, 220, 250	—	n/a
54-2029	MDA L	Y	8	20, 60, 100, 160, 200, 220, 260, 288	100	MD54-03-49748
54-2030	MDA L	Y	7	20, 60, 100, 160, 200, 220, 243	160	MD54-03-49749
54-2031	MDA L	Y	7	20, 60, 100, 160, 200, 220, 260	—	n/a
54-2032	MDA G	Y	5	20, 60, 100, 130, 156	—	n/a
54-2033	MDA G	Y	8	20, 60, 100, 160, 200, 220, 260, 277	—	n/a
54-2034	MDA L	Y	7	20, 40, 60, 80, 100, 160, 200, 220, 260	60 60	MD54-03-49759 MD54-03-49760
54-2087	MDA L	N	4	13, 31, 46, 86	—	n/a
54-2088	MDA L	N	4	13, 31, 46, 86	—	n/a
54-2089	MDA L	N	4	13, 31, 46, 86	—	n/a
				Total wells sampled	12	
				MDA L defined list wells sampled (7 expected)	7	
				MDA G defined list wells sampled (2 expected)	2	
				PAMG wells sampled	2	
				QA samples taken	1 field duplicate	1 equipment blank

[a] A dash indicates that the port was not sampled.

[b] n/a = not applicable.

[c] This well has been taken out of service because of failure of positive pressure membranes or irreparable damage to ports.

Table 2-2
Field Duplicate Sample Results Comparison (Well 54-2034, 60 ft)

Compound	Sample MD54-02-49759[a] (ppmv[b])	Sample MD54-02-49760[c] (ppmv)	RPD[d]
Freon-11	0.037	0.038	2.6
Dichloroethene [1,1-]	0.160	0.160	0
Freon-113	0.081	0.081	0
Methylene chloride	0.029	0.031	6.7
Dichloroethane[1,1-]	0.092	0.095	3.2
Chloroform	0.024	0.024	0
Trichloroethane[1,1,1-]	4.9	5.0	2
Carbon tetrachloride	ND[e]	ND	n/a[f]
Benzene	ND	ND	n/a
Dichloroethane[1,2-]	0.032	0.033	3
Trichloroethene	1.0	1.0	0
Dichloropropane[1,2-]	ND	ND	n/a
Toluene	ND	ND	n/a
Tetrachloroethene	0.048	0.045	6.5
Xylene[m&p]	ND	ND	n/a
Xylene[o-]	ND	ND	n/a
Tetrahydrofuran	ND	ND	n/a

[a] Detection limit = 0.016 ppmv.
[b] ppmv = Parts per million by volume.
[c] Detection limit = 0.016 ppmv.
[d] Relative percent difference.
[e] ND = Not detected.
[f] n/a = Not applicable.

3.0 REFERENCES

Davis, A., December 14, 1993. "RFI Work Plan for OU 1148, Approval Los Alamos National Laboratory NM0890010515," Environmental Protection Agency memorandum to J. Vozella, Dallas, Texas. (Davis 1993, 38812)

Driscoll, B., November 30, 1992. "EPA NOD to LANL," EPA memorandum to C. Rofer, Los Alamos National Laboratory, Los Alamos, New Mexico. (Driscoll 1992, 3849.3)

EPA (US Environmental Protection Agency), April 1990. United States Environmental Protection Agency, Region 6 Hazardous Waste Permit (Hazardous and Solid Waste Amendments), Washington DC. (EPA 1990, 1585)

EPA (US Environmental Protection Agency), January 1999. "Compendium Method TA-14A, Determination of Volatile Organic Compounds (VOCs) in Ambient Air Using Specially Prepared Canisters With Subsequent Analysis by Gas Chromatography," in "Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air," EPA/625/R-96/010b, Office of Research and Development, Cincinnati, Ohio. (EPA 1999, 70063)

Glatzmaier, T., November 12, 1993. "Final Notice of Deficiency (NOD) Response for Operable Unit (OU) 1148," Los Alamos National Laboratory memorandum EM-13:93-A232, Los Alamos, New Mexico. (Glatzmaier 1993, 30987)

LANL (Los Alamos National Laboratory), May 1992. "RFI Work Plan for Operable Unit 1148," Los Alamos National Laboratory document LA-UR-92-855, Los Alamos, New Mexico. (LANL 1992, 7669)

Attachment A

First-Quarter Analytical Results for Fiscal Year 2003

ATTACHMENT A FIRST-QUARTER ANALYTICAL RESULTS FOR FISCAL YEAR 2003

Well:	**54-2009**		**FY2003 1st Quarter**
Depth:	**79**		**MDA G**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49752**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	2.9	0.15
75-34-3	1,1-Dichloroethane	1.7	0.15
71-55-6	1,1,1-Trichloroethane	39	0.15
79-01-6	Trichloroethene	0.028	0.15
127-18-4	Tetrachloroethene	0.047	0.15

Well:	**54-1111**		**FY2003 1st Quarter**
Depth:	**100**		**PAMG**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49757**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	0.056	0.0064
75-09-2	Methylene Chloride	0.052	0.0064
75-34-3	1,1-Dichloroethane	0.041	0.0064
71-55-6	1,1,1-Trichloroethane	2.0	0.0064
79-01-6	Trichloroethene	0.027	0.0064
127-18-4	Tetrachloroethene	0.036	0.0064

Well:	**54-2030**		**FY2003 1st Quarter**
Depth:	**160**		**MDA L**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49749**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	0. 160	0.0082
75-34-3	1,1-Dichloroethane	0.010	0.0082
71-55-6	1,1,1-Trichloroethane	1.80	0.0082
75-09-2	Methylene Chloride	0.021	0.0082
79-01-6	Trichloroethene	0.390	0.0082
127-18-4	Tetrachloroethene	0.057	0.0082
56-23-5	Carbon Tetrachloride	0.020	0.0082

Well:	**54-1015**		**FY2003 1st Quarter**
Depth:	**525**		**MDA L**
Date:	**12/07/02**		
Sample ID:	**MD54-03-49750**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	0.020	0.00079
75-34-3	1,1-Dichloroethane	0.002	0.00079
71-55-6	1,1,1-Trichloroethane	0.041	0.00079
79-01-6	Trichloroethene	0.004	0.00079
127-18-4	Tetrachloroethene	0.002	0.00079
67-64-1	Acetone	0.006	0.0032

Well:	**54-2029**	**FY2003 1st Quarter**
Depth:	**100**	**MDA L**
Date:	**11/25/02**	
Sample ID:	**MD54-03-49748**	

CAS Analyte Code	Compound Analyte Code Desc	Result [ppmv]	Reporting Limit [ppmv]
75-35-4	1,1-Dichloroethene	0.064	0.0029
75-09-2	Methylene Chloride	0.053	0.0029
75-34-3	1,1-Dichloroethane	0.051	0.0029
67-66-3	Chloroform	0.018	0.0029
71-55-6	1,1,1-Trichloroethane	0.740	0.0029
56-23-5	Carbon Tetrachloride	0. 089	0.0029
79-01-6	Trichloroethene	0. 190	0.0029
127-18-4	Tetrachloroethene	0.018	0.0029

Well:	**54-2002**	**FY2003 1st Quarter**
Depth:	**120**	**MDA L**
Date:	**12/05/02**	
Sample ID:	**MD54-03-49751**	

CAS Analyte Code	Compound Analyte Code Desc	Result [ppmv]	Reporting Limit [ppmv]
75-35-4	1,1-Dichloroethene	11	0.086
75-09-2	Methylene Chloride	21	0.086
75-34-3	1,1-Dichloroethane	4.8	0.086
67-66-3	Chloroform	7.4	0.086
79-01-6	Trichloroethene	61	0.086
127-18-4	Tetrachloroethene	5.4	0.086
71-55-6	1,1,1-Trichloroethane	260	0.086
56-23-5	Carbon Tetrachloride	1.3	0.086
71-43-2	Benzene	1.3	0.086
107-06-2	1,2-Dichloroethane	6.7	0.086
79-01-6	Trichloroethene	61	0.086
78-87-5	1,2-Dichloropropane	11	0.086
108-88-3	Toluene	4.8	0.086
108-38-3	m,p-Xylene	1.6	0.086
95-47-6	o-Xylene	0.910	0.086
67-63-0	2-propanol	11	0.340

Well:	**54-2010**	**FY2003 1st Quarter**
Depth:	**95**	**MDA G**
Date:	**12/05/02**	
Sample ID:	**MD54-03-49753**	

CAS Analyte Code	Compound Analyte Code Desc	Result [ppmv]	Reporting Limit [ppmv]
75-35-4	1,1-Dichloroethene	0.49	0.054
75-34-3	1,1-Dichloroethane	0.61	0.054
71-55-6	1,1,1-Trichloroethane	13.0	0.054
79-01-6	Trichloroethene	0.22	0.054
127-18-4	Tetrachloroethene	0. 18	0.054

Well:	**54-2021**	**FY2003 1st Quarter**
Depth:	**140**	**MDA L**
Date:	**12/05/02**	
Sample ID:	**MD54-03-49754**	

CAS Analyte Code	Compound Analyte Code Desc	Result [ppmv]	Reporting Limit [ppmv]
75-35-4	1,1-Dichloroethene	1.3	0.13
75-09-2	Methylene Chloride	0.86	0.13
75-34-3	1,1-Dichloroethane	1.0	0.13
67-66-3	Chloroform	0.19	0.13
71-55-6	1,1,1-Trichloroethane	41.0	0.13
107-06-2	1,2-Dichloroethane	0.76	0.13
79-01-6	Trichloroethene	11.0	0.13
127-18-4	Tetrachloroethene	0.86	0.13

Well:	**54-2023**		**FY2003 1st Quarter**
Depth:	**100**		**MDA L**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49755**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	1.0	0.056
75-09-2	Methylene Chloride	0.22	0.056
75-34-3	1,1-Dichloroethane	0.19	0.056
67-66-3	Chloroform	0.54	0.056
71-55-6	1,1,1-Trichloroethane	16.0	0.056
56-23-5	Carbon Tetrachloride	0.07	0.056
79-01-6	Trichloroethene	4.40	0.056
71-43-2	Benzene	0.056	0.056
78-87-5	1,2-Dichloropropane	0.10	0.056
127-18-4	Tetrachloroethene	0.36	0.056

Well:	**54-2026**		**FY2003 1st Quarter**
Depth:	**100**		**MDA L**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49756**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	0.20	0.011
75-09-2	Methylene Chloride	0.022	0.011
75-34-3	1,1-Dichloroethane	0.029	0.011
67-66-3	Chloroform	0.12	0.011
71-55-6	1,1,1-Trichloroethane	3.10	0.011
56-23-5	Carbon Tetrachloride	0.022	0.011
79-01-6	Trichloroethene	0.77	0.011
127-18-4	Tetrachloroethene	0.097	0.011

Well:	**54-1117**		**FY2003 1st Quarter**
Depth:	**82**		**PAM G**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49758**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	1.2	0.140
75-34-3	1,1-Dichloroethane	1.1	0.140
71-55-6	1,1,1-Trichloroethane	38.0	0.140
79-01-6	Trichloroethene	1.2	0.140
127-18-4	Tetrachloroethene	0.34	0.140

Well:	**54-2034**		**FY2003 1st Quarter**
Depth:	**60**		**MDA L**
Date:	**12/05/02**		
Sample ID:	**MD54-03-49759**		
CAS Analyte Code	**Compound Analyte Code Desc**	**Result [ppmv]**	**Reporting Limit [ppmv]**
75-35-4	1,1-Dichloroethene	0.037	0.016
75-09-2	Methylene Chloride	0.029	0.016
75-34-3	1,1-Dichloroethane	0.092	0.016
67-66-3	Chloroform	0.024	0.016
71-55-6	1,1,1-Trichloroethane	4.9	0.016
107-06-2	1,2-Dichloroethane	0.032	0.016
79-01-6	Trichloroethene	1.0	0.016
127-18-4	Tetrachloroethene	0.048	0.016

Well:	**54-2034**	**FY2003 1st Quarter**
Depth:	**60**	**MDA L**
Date:	**12/09/02**	
Sample ID:	**MD54-03-49760 (field duplicate)**	

CAS Analyte Code	Compound Analyte Code Desc	Result [ppmv]	Reporting Limit [ppmv]
75-35-4	1,1-Dichloroethene	0.160	0.016
75-09-2	Methylene Chloride	0.031	0.016
75-34-3	1,1-Dichloroethane	0.095	0.016
67-66-3	Chloroform	0.024	0.016
71-55-6	1,1,1-Trichloroethane	5.0	0.016
107-06-2	1,2-Dichloroethane	0.033	0.016
79-01-6	Trichloroethene	1.0	0.016
127-18-4	Tetrachloroethene	0.045	0.016

Well:	**54-2002**	**FY2003 1st Quarter**
Depth:	**0**	**MDA L**
Date:	**12/09/02**	
Sample ID:	**MD54-02-49761 (equip blank)**	

CAS Analyte Code	Compound Analyte Code Desc	Result [ppmv]	Reporting Limit [ppmv]
71-55-6	1,1,1-Trichloroethane	0.00084	0.0008
74-87-3	Chloromethane	0.001	0.17

Appendix D

Groundwater Sampling Results,
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Table D-1
Samples Taken at Wells

Sample ID	Location ID	Sample Round	Field Preparation	Depth (ft)	Media	Alkalinity	Ammonia	Anions[a]	Cyanide	Metals	Phosphorus	Stable Isotopes	Total Kjeldahl Nitrogen
R-13													
GW13-02-46375	R-13	1	F	958–1019	Regional Groundwater	940S[b]	940S	940S	—[c]	940S	940S	—	940S
GW13-02-46374	R-13	1	NF	958–1019	Regional Groundwater	—	—	—	940S	940S	—	953S	940S
CdV-R-37-2													
GW37-02-0002	CdV-R-37-2	1	F	1200	Regional Groundwater	474S	474S	474S	—	474S	474S	—	474S
GW37-02-0001	CdV-R-37-2	1	NF	1200	Regional Groundwater	—	474S	474S	—	474S	—	477S	—
GW37-02-0004	CdV-R-37-2	1	F	1359	Regional Groundwater	474S	474S	474S	—	474S	474S	—	474S
GW37-02-0003	CdV-R-37-2	1	NF	1359	Regional Groundwater	—	474S	474S	—	474S	—	477S	—
GW37-02-0006	CdV-R-37-2	1	F	1551	Regional Groundwater	482S	482S	482S	—	482S	482S	—	482S
GW37-02-0005	CdV-R-37-2	1	NF	1551	Regional Groundwater	—	482S	482S	—	482S	—	484S	—
GW37-02-45561	CdV-R-37-2	2	F	1200	Regional Groundwater	733S	733S	733S	—	733S	733S	—	733S
GW37-02-45556	CdV-R-37-2	2	NF	1200	Regional Groundwater	—	—	—	—	733S	—	745S	—
GW37-02-45562	CdV-R-37-2	2	F	1359	Regional Groundwater	750S	750S	750S	—	750S	750S	—	750S
GW37-02-45557	CdV-R-37-2	2	NF	1359	Regional Groundwater	—	—	—	—	750S	—	752S	—
GW37-02-45563	CdV-R-37-2	2	F	1551	Regional Groundwater	755S	755S	755S	—	755S	755S	—	755S
GW37-02-45558	CdV-R-37-2	2	NF	1551	Regional Groundwater	—	—	—	—	755S	—	757S	—
RE37-02-46415	CdV-R-37-2	3	F	1200	Regional Groundwater	996S	996S	996S	—	996S	996S	—	996S
RE37-02-46414	CdV-R-37-2	3	NF	1200	Regional Groundwater	—	—	—	—	996S	—	1003S	—
RE37-02-46417	CdV-R-37-2	3	F	1359	Regional Groundwater	996S	996S	996S	—	996S	996S	—	996S
RE37-02-46416	CdV-R-37-2	3	NF	1359	Regional Groundwater	—	—	—	—	996S	—	1003S	—
RE37-02-46419	CdV-R-37-2	3	F	1551	Regional Groundwater	998S	998S	998S	—	998S	998S	—	998S
RE37-02-46418	CdV-R-37-2	3	NF	1551	Regional Groundwater	—	—	—	—	998S	—	1006S	—

Table D-1 (continued)

Sample ID	Location ID	Sample Round	Field Preparation	Depth (ft)	Media	High-Explosive	Humic Acid	Polychlorinated Biphenyls	Pesticides	Semivolatile Organic Compounds	Total Organic Carbon	Volatile Organic Compounds
R-13												
GW13-02-46375	R-13	1	F	958–1019	Regional Groundwater	—	943S	—	—	—	—	—
GW13-02-46374	R-13	1	NF	958–1019	Regional Groundwater	939S	—	939S	939S	939S	940S	939S
CdV-R-37-2												
GW37-02-0002	CdV-R-37-2	1	F	1200	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-0001	CdV-R-37-2	1	NF	1200	Regional Groundwater	471S	—	—	—	470S	470S	470S
GW37-02-0004	CdV-R-37-2	1	F	1359	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-0003	CdV-R-37-2	1	NF	1359	Regional Groundwater	471S	—	—	—	470S	470S	470S
GW37-02-0006	CdV-R-37-2	1	F	1551	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-0005	CdV-R-37-2	1	NF	1551	Regional Groundwater	481S	—	—	—	479S	479S	479S
GW37-02-45561	CdV-R-37-2	2	F	1200	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-45556	CdV-R-37-2	2	NF	1200	Regional Groundwater	732S	—	—	—	—	733S	—
GW37-02-45562	CdV-R-37-2	2	F	1359	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-45557	CdV-R-37-2	2	NF	1359	Regional Groundwater	749S	—	—	—	—	750S	—
GW37-02-45563	CdV-R-37-2	2	F	1551	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-45558	CdV-R-37-2	2	NF	1551	Regional Groundwater	754S	—	—	—	—	755S	—
RE37-02-46415	CdV-R-37-2	3	F	1200	Regional Groundwater	—	—	—	—	—	—	—
RE37-02-46414	CdV-R-37-2	3	NF	1200	Regional Groundwater	995S	—	—	—	—	996S	—
RE37-02-46417	CdV-R-37-2	3	F	1359	Regional Groundwater	—	—	—	—	—	—	—
RE37-02-46416	CdV-R-37-2	3	NF	1359	Regional Groundwater	995S	—	—	—	—	996S	—
RE37-02-46419	CdV-R-37-2	3	F	1551	Regional Groundwater	—	—	—	—	—	—	—
RE37-02-46418	CdV-R-37-2	3	NF	1551	Regional Groundwater	997S	—	—	—	—	998S	—

Table D-1 (continued)

Sample ID	Location ID	Sample Round	Field Preparation	Depth (ft)	Media	Strontium-90	Americium-241	Gamma Spectroscopy	Gross Alpha/Beta	Tritium	Isotopic Plutonium	Isotopic Uranium
R-13												
GW13-02-46375	R-13	1	F	958–1019	Regional Groundwater	944S	944S	944S	—	—	944S	944S
GW13-02-46374	R-13	1	NF	958–1019	Regional Groundwater	944S	944S	944S	944S	952S	944S	944S
CdV-R-37-2												
GW37-02-0002	CdV-R-37-2	1	F	1200	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-0001	CdV-R-37-2	1	NF	1200	Regional Groundwater	—	—	—	—	478S	—	—
GW37-02-0004	CdV-R-37-2	1	F	1359	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-0003	CdV-R-37-2	1	NF	1359	Regional Groundwater	—	—	—	—	478S	—	—
GW37-02-0006	CdV-R-37-2	1	F	1551	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-0005	CdV-R-37-2	1	NF	1551	Regional Groundwater	—	—	—	—	485S	—	—
GW37-02-45561	CdV-R-37-2	2	F	1200	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-45556	CdV-R-37-2	2	NF	1200	Regional Groundwater	—	—	—	—	746S	—	—
GW37-02-45562	CdV-R-37-2	2	F	1359	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-45557	CdV-R-37-2	2	NF	1359	Regional Groundwater	—	—	—	—	753S	—	—
GW37-02-45563	CdV-R-37-2	2	F	1551	Regional Groundwater	—	—	—	—	—	—	—
GW37-02-45558	CdV-R-37-2	2	NF	1551	Regional Groundwater	—	—	—	—	758S	—	—
RE37-02-46415	CdV-R-37-2	3	F	1200	Regional Groundwater	—	—	—	—	—	—	—
RE37-02-46414	CdV-R-37-2	3	NF	1200	Regional Groundwater	—	—	—	—	1005S	—	—
RE37-02-46417	CdV-R-37-2	3	F	1359	Regional Groundwater	—	—	—	—	—	—	—
RE37-02-46416	CdV-R-37-2	3	NF	1359	Regional Groundwater	—	—	—	—	1005S	—	—
RE37-02-46419	CdV-R-37-2	3	F	1551	Regional Groundwater	—	—	—	—	—	—	—
RE37-02-46418	CdV-R-37-2	3	NF	1551	Regional Groundwater	—	—	—	—	1008S	—	—

[a] Anions = Ammonia, bromide, chloride, fluoride, nitrate/nitrite, oxalate, perchlorate, sulfate.
[b] Laboratory sample number.
[c] — = Not available or applicable.

Table D-2
Well CdV-R-37-2 Screen 2 First Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	2	1200	01/28/02	NF[e]	1	1	120000	—[f]	—	—	—	—
Dissolved Oxygen	2	1200	01/28/02	NF	1	1	2200	—	—	—	—	—
pH	2	1200	01/28/02	NF	1	1	6.98	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	2	1200	01/28/02	NF	1	1	228	—	—	0/1	—	0/1
Temperature (°C)	2	1200	01/28/02	NF	1	1	16.5	—	—	0/1	—	0/1
Turbidity (NTU[g])	2	1200	01/28/02	NF	1	1	3.45	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	2	1200	01/28/02	F[h]	1	1	89700	—	—	—	—	—
Aluminum	2	1200	01/28/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	2	1200	01/28/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	2	1200	01/28/02	F	1	1	410	—	—	—	—	—
Ammonia (as N)	2	1200	01/28/02	NF	1	1	410	—	—	—	—	—
Antimony	2	1200	01/28/02	F	1	0	—	[0.31]	6	0/1	—	—
Antimony	2	1200	01/28/02	NF	1	0	—	[0.13]	—	—	—	—
Arsenic	2	1200	01/28/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	2	1200	01/28/02	NF	1	0	—	[5]	—	—	—	—
Barium	2	1200	01/28/02	F	1	1	92.6	—	2000	0/1	1000	0/1
Barium	2	1200	01/28/02	NF	1	1	98.5	—	—	—	—	—
Beryllium	2	1200	01/28/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	2	1200	01/28/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	2	1200	01/28/02	F	1	0	—	[100]	—	—	—	—
Cadmium	2	1200	01/28/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	2	1200	01/28/02	NF	1	0	—	[1]	—	—	—	—

Table D-2 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	2	1200	01/28/02	F	1	1	19400	—	—	—	—	—
Calcium	2	1200	01/28/02	NF	1	1	20000	—	—	—	—	—
Chloride	2	1200	01/28/02	F	1	1	2850	—	250000	0/1	250000	0/1
Chromium	2	1200	01/28/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	2	1200	01/28/02	NF	1	1	1.64	—	—	—	—	—
Cobalt	2	1200	01/28/02	F	1	1	2.26	—	—	—	50	0/1
Cobalt	2	1200	01/28/02	NF	1	1	1.94	—	—	—	—	—
Copper	2	1200	01/28/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	2	1200	01/28/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	2	1200	01/28/02	F	1	1	201	—	4000	0/1	1600	0/1
Iron	2	1200	01/28/02	F	1	1	14800	—	300	1/1	1000	1/1
Iron	2	1200	01/28/02	NF	1	1	18300	—	—	—	—	—
Lead	2	1200	01/28/02	F	1	1	0.29	—	15	0/1	50	0/1
Lead	2	1200	01/28/02	NF	1	1	0.17	—	—	—	—	—
Magnesium	2	1200	01/28/02	F	1	1	4710	—	—	—	—	—
Magnesium	2	1200	01/28/02	NF	1	1	4910	—	—	—	—	—
Manganese	2	1200	01/28/02	F	1	1	2330	—	50	1/1	200	1/1
Manganese	2	1200	01/28/02	NF	1	1	2300	—	—	—	—	—
Mercury	2	1200	01/28/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	2	1200	01/28/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	2	1200	01/28/02	F	1	1	17.8	—	100	0/1	200	0/1
Nickel	2	1200	01/28/02	NF	1	1	18.4	—	—	—	—	—
Nitrate + Nitrite (as N)	2	1200	01/28/02	F	1	0	—	[50]	10000	0/1	—	—
Nitrate + Nitrite (as N)	2	1200	01/28/02	NF	1	0	—	[50]	—	—	—	—
Phosphorus (total)	2	1200	01/28/02	F	1	0	—	[50]	—	—	—	—
Potassium	2	1200	01/28/02	F	1	1	2080	—	—	—	—	—
Potassium	2	1200	01/28/02	NF	1	1	2190	—	—	—	—	—

Table D-2 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	2	1200	01/28/02	F	1	0	—	[5]	50	0/1	50	0/1
Selenium	2	1200	01/28/02	NF	1	0	—	[5]	—	—	—	—
Silver	2	1200	01/28/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	2	1200	01/28/02	NF	1	0	—	[5]	—	—	—	—
Sodium	2	1200	01/28/02	F	1	1	14100	—	—	—	—	—
Sodium	2	1200	01/28/02	NF	1	1	15400	—	—	—	—	—
Sulfate	2	1200	01/28/02	F	1	1	580	—	250000	0/1	600000	0/1
Thallium	2	1200	01/28/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	2	1200	01/28/02	NF	1	0	—	[0.5]	—	—	—	—
Total Kjeldahl Nitrogen	2	1200	01/28/02	F	1	1	810	—	—	—	—	—
Vanadium	2	1200	01/28/02	F	1	0	—	[5]	—	—	—	—
Vanadium	2	1200	01/28/02	NF	1	0	—	[5]	—	—	—	—
Zinc	2	1200	01/28/02	F	1	0	—	[5.9]	5000	0/1	10000	0/1
Zinc	2	1200	01/28/02	NF	1	0	—	[5.23]	—	—	—	—
Stable Isotope (‰)												
δD	2	1200	01/28/02	NF	1	1	—	—	—	—	—	—
$\delta^{15}N$	2	1200	01/28/02	NF	1	1	+6.5	—	—	—	—	—
$\delta^{16}O$	2	1200	01/28/02	NF	1	1	—	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

Table D-3
Well CdV-R-37-2 Screen 3 First Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	3	1359	01/29/02	NF[e]	1	1	65000	—[f]	—	—	—	—
Dissolved Oxygen	3	1359	01/29/02	NF	1	1	6900	—	—	—	—	—
pH	3	1359	01/29/02	NF	1	1	7.47	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	3	1359	01/29/02	NF	1	1	128	—	—	0/1	—	0/1
Temperature (°C)	3	1359	01/29/02	NF	1	1	16.7	—	—	0/1	—	0/1
Turbidity (NTU[g])	3	1359	01/29/02	NF	1	1	0.84	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	3	1359	01/29/02	F[h]	1	1	56300	—	—	—	—	—
Aluminum	3	1359	01/29/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	3	1359	01/29/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	3	1359	01/29/02	F	1	0	—	[50]	—	—	—	—
Ammonia (as N)	3	1359	01/29/02	NF	1	0	—	[50]	—	—	—	—
Antimony	3	1359	01/29/02	F	1	0	—	[0.12]	6	0/1	—	—
Antimony	3	1359	01/29/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	3	1359	01/29/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	3	1359	01/29/02	NF	1	0	—	[5]	—	—	—	—
Barium	3	1359	01/29/02	F	1	1	12.6	—	2000	0/1	1000	0/1
Barium	3	1359	01/29/02	NF	1	1	11.9	—	—	—	—	—
Beryllium	3	1359	01/29/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	3	1359	01/29/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	3	1359	01/29/02	F	1	0	—	[100]	—	—	—	—
Cadmium	3	1359	01/29/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	3	1359	01/29/02	NF	1	0	—	[1]	—	—	—	—

Table D-3 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	3	1359	01/29/02	F	1	1	10400	—	—	—	—	—
Calcium	3	1359	01/29/02	NF	1	1	10200	—	—	—	—	—
Chloride	3	1359	01/29/02	F	1	1	1680	—	250000	0/1	250000	0/1
Chromium	3	1359	01/29/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	3	1359	01/29/02	NF	1	1	2.98	—	—	—	—	—
Cobalt	3	1359	01/29/02	F	1	0	—	[5]	—	—	50	0/1
Cobalt	3	1359	01/29/02	NF	1	0	—	[5]	—	—	—	—
Copper	3	1359	01/29/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	3	1359	01/29/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	3	1359	01/29/02	F	1	1	203	—	4000	0/1	1600	0/1
Iron	3	1359	01/29/02	F	1	1	209	—	300	0/1	1000	0/1
Iron	3	1359	01/29/02	NF	1	1	163	—	—	—	—	—
Lead	3	1359	01/29/02	F	1	1	0.31	—	15	0/1	50	0/1
Lead	3	1359	01/29/02	NF	1	0	—	[2]	—	—	—	—
Magnesium	3	1359	01/29/02	F	1	1	3090	—	—	—	—	—
Magnesium	3	1359	01/29/02	NF	1	1	3060	—	—	—	—	—
Manganese	3	1359	01/29/02	F	1	1	32.3	—	50	0/1	200	0/1
Manganese	3	1359	01/29/02	NF	1	1	24.2	—	—	—	—	—
Mercury	3	1359	01/29/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	3	1359	01/29/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	3	1359	01/29/02	F	1	0	—	[5]	100	0/1	200	0/1
Nickel	3	1359	01/29/02	NF	1	1	1.29	—	—	—	—	—
Nitrate + Nitrite (as N)	3	1359	01/29/02	F	1	1	460	—	10000	0/1	—	—
Nitrate + Nitrite (as N)	3	1359	01/29/02	NF	1	1	460	—	—	—	—	—
Phosphorus (total)	3	1359	01/29/02	F	1	0	—	[50]	—	—	—	—
Potassium	3	1359	01/29/02	F	1	1	1440	—	—	—	—	—
Potassium	3	1359	01/29/02	NF	1	1	1430	—	—	—	—	—

Table D-3 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	3	1359	01/29/02	F	1	0	—	[5]	50	0/1	50	0/1
Selenium	3	1359	01/29/02	NF	1	0	—	[5]	—	—	—	—
Silver	3	1359	01/29/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	3	1359	01/29/02	NF	1	0	—	[5]	—	—	—	—
Sodium	3	1359	01/29/02	F	1	1	13400	—	—	—	—	—
Sodium	3	1359	01/29/02	NF	1	1	12700	—	—	—	—	—
Sulfate	3	1359	01/29/02	F	1	1	1820	—	250000	0/1	600000	0/1
Thallium	3	1359	01/29/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	3	1359	01/29/02	NF	1	0	—	[0.5]	—	—	—	—
Total Kjeldahl Nitrogen	3	1359	01/29/02	F	1	1	140	—	—	—	—	—
Vanadium	3	1359	01/29/02	F	1	1	6.89	—	—	—	—	—
Vanadium	3	1359	01/29/02	NF	1	1	7.49	—	—	—	—	—
Zinc	3	1359	01/29/02	F	1	0	—	[6.82]	5000	0/1	10000	0/1
Zinc	3	1359	01/29/02	NF	1	0	—	[6]	—	—	—	—
Stable Isotope (‰)												
δD	3	1359	01/29/02	NF	1	1	—	—	—	—	—	—
$\delta^{15}N$	3	1359	01/29/02	NF	1	1	+4.2	—	—	—	—	—
$\delta^{18}O$	3	1359	01/29/02	NF	1	1	—	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

Table D-4
Well CdV-R-37-2 Screen 4 First Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	4	1551	01/30/02	NF[e]	1	1	86000	—[f]	—	—	—	—
Dissolved Oxygen	4	1551	01/30/02	NF	1	1	4800	—	—	—	—	—
pH	4	1551	01/30/02	NF	1	1	6.97	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	4	1551	01/30/02	NF	1	1	172	—	—	0/1	—	0/1
Temperature (°C)	4	1551	01/30/02	NF	1	1	16.5	—	—	0/1	—	0/1
Turbidity (NTU[g])	4	1551	01/30/02	NF	1	1	4.08	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	4	1551	01/30/02	F[h]	1	1	60600	—	—	—	—	—
Aluminum	4	1551	01/30/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	4	1551	01/30/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	4	1551	01/30/02	F	1	1	320	—	—	—	—	—
Ammonia (as N)	4	1551	01/30/02	NF	1	1	300	—	—	—	—	—
Antimony	4	1551	01/30/02	F	1	0	—	[0.2]	6	0/1	—	—
Antimony	4	1551	01/30/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	4	1551	01/30/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	4	1551	01/30/02	NF	1	1	7.62	—	—	—	—	—
Barium	4	1551	01/30/02	F	1	1	26	—	2000	0/1	1000	0/1
Barium	4	1551	01/30/02	NF	1	1	30	—	—	—	—	—
Beryllium	4	1551	01/30/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	4	1551	01/30/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	4	1551	01/30/02	F	1	0	—	[100]	—	—	—	—
Cadmium	4	1551	01/30/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	4	1551	01/30/02	NF	1	0	—	[1]	—	—	—	—

Table D-4 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	4	1551	01/30/02	F	1	1	10800	—	—	—	—	—
Calcium	4	1551	01/30/02	NF	1	1	10900	—	—	—	—	—
Chloride	4	1551	01/30/02	F	1	1	2450	—	250000	0/1	250000	0/1
Chromium	4	1551	01/30/02	F	1	1	0.875	—	100	0/1	50	0/1
Chromium	4	1551	01/30/02	NF	1	1	4.18	—	—	—	—	—
Cobalt	4	1551	01/30/02	F	1	0	—	[1.41]	—	—	50	0/1
Cobalt	4	1551	01/30/02	NF	1	0	—	[1.46]	—	—	—	—
Copper	4	1551	01/30/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	4	1551	01/30/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	4	1551	01/30/02	F	1	0	—	[100]	4000	0/1	1600	0/1
Iron	4	1551	01/30/02	F	1	1	13700	—	300	1/1	1000	1/1
Iron	4	1551	01/30/02	NF	1	1	14600	—	—	—	—	—
Lead	4	1551	01/30/02	F	1	1	0.52	—	15	0/1	50	0/1
Lead	4	1551	01/30/02	NF	1	1	0.28	—	—	—	—	—
Magnesium	4	1551	01/30/02	F	1	1	3070	—	—	—	—	—
Magnesium	4	1551	01/30/02	NF	1	1	3110	—	—	—	—	—
Manganese	4	1551	01/30/02	F	1	1	318	—	50	1/1	200	1/1
Manganese	4	1551	01/30/02	NF	1	1	294	—	—	—	—	—
Mercury	4	1551	01/30/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	4	1551	01/30/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	4	1551	01/30/02	F	1	1	1.66	—	100	0/1	200	0/1
Nickel	4	1551	01/30/02	NF	1	1	3.79	—	—	—	—	—
Nitrate + Nitrite (as N)	4	1551	01/30/02	F	1	0	—	[50]	10000	0/1	—	—
Nitrate + Nitrite (as N)	4	1551	01/30/02	NF	1	0	—	[50]	—	—	—	—
Phosphorus (total)	4	1551	01/30/02	F	1	1	130	—	—	—	—	—
Potassium	4	1551	01/30/02	F	1	1	2100	—	—	—	—	—
Potassium	4	1551	01/30/02	NF	1	1	2170	—	—	—	—	—

Table D-4 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	4	1551	01/30/02	F	1	0	—	[5]	50	0/1	50	0/1
Selenium	4	1551	01/30/02	NF	1	0	—	[5]	—	—	—	—
Silver	4	1551	01/30/02	F	1	0	—	[0.751]	100	0/1	50	0/1
Silver	4	1551	01/30/02	NF	1	0	—	[1.09]	—	—	—	—
Sodium	4	1551	01/30/02	F	1	1	14300	—	—	—	—	—
Sodium	4	1551	01/30/02	NF	1	1	13700	—	—	—	—	—
Sulfate	4	1551	01/30/02	F	1	0	—	[400]	250000	0/1	600000	0/1
Thallium	4	1551	01/30/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	4	1551	01/30/02	NF	1	0	—	[0.5]	—	—	—	—
Total Kjeldahl Nitrogen	4	1551	01/30/02	F	1	1	540	—	—	—	—	—
Vanadium	4	1551	01/30/02	F	1	0	—	[5]	—	—	—	—
Vanadium	4	1551	01/30/02	NF	1	1	1.16	—	—	—	—	—
Zinc	4	1551	01/30/02	F	1	1	5.69	—	5000	0/1	10000	0/1
Zinc	4	1551	01/30/02	NF	1	1	7.85	—	—	—	—	—
Stable Isotope (‰)												
δD	4	1551	01/30/02	NF	1	1	—	—	—	—	—	—
$\delta^{15}N$	4	1551	01/30/02	NF	1	1	ISV[i]	—	—	—	—	—
$\delta^{18}O$	4	1551	01/30/02	NF	1	1	—	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

[i] ISV = Insufficient sample volume.

Table D-5
Well CdV-R-37-2 Screen 2 First Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Acetone	2	1200	01/28/02	NF[e]	1	1	19.2	—[f]	—	—	—	—
Dichlorobenzene[1,4-]	2	1200	01/28/02	NF	1	1	0.21	—	75	0/2	—	—
Total Organic Carbon	2	1200	01/28/02	NF	1	1	4870	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.
[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.
[c] NMED = New Mexico Environment Department.
[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.
[e] NF = Nonfiltered.
[f] — = Not available or not applicable.

Table D-6
Well CdV-R-37-2 Screen 3 First Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Acetone	3	1359	01/29/02	NF[e]	1	1	48.9	—[f]	—	—	—	—
Total Organic Carbon	3	1359	01/29/02	NF	1	1	714	—	—	—	—	—
Trichlorophenol[2,4,6-]	3	1359	01/29/02	NF	1	1	1.4	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.
[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.
[c] NMED = New Mexico Environment Department.
[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.
[e] NF = Nonfiltered.
[f] — = Not available or not applicable.

Table D-7
Well CdV-R-37-2 Screen 4 First Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Acetone	4	1551	01/30/02	NF[e]	1	1	46.3	—[f]	—	—	—	—
Total Organic Carbon	4	1551	01/30/02	NF	1	1	3870	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

Table D-8
Well CdV-R-37-2 Screen 2 First Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	2	1200	01/28/02	NF[c]	1	0	—[d]	[0.128]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-9
Well CdV-R-37-2 Screen 3 First Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	3	1359	01/29/02	NF[c]	1	0	—[d]	[–0.223]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-10
Well CdV-R-37-2 Screen 4 First Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	4	1551	01/30/02	NF[c]	1	0	—[d]	[0.032]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-11
Well CdV-R-37-2 Screen 2 Second Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	2	1200	04/23/02	NF[e]	1	1	80000	—[f]	—	—	—	—
Dissolved Oxygen	2	1200	04/23/02	NF	1	1	1700	—	—	—	—	—
pH	2	1200	04/23/02	NF	1	1	6.76	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	2	1200	04/23/02	NF	1	1	262	—	—	0/1	—	0/1
Temperature (°C)	2	1200	04/23/02	NF	1	1	19.7	—	—	0/1	—	0/1
Turbidity (NTU[g])	2	1200	04/23/02	NF	1	1	4.91	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	2	1200	04/23/02	F[h]	1	1	90500	—	—	—	—	—
Aluminum	2	1200	04/23/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	2	1200	04/23/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	2	1200	04/23/02	F	1	1	510	—	—	—	—	—
Antimony	2	1200	04/23/02	F	1	0	—	[0.119]	6	0/1	—	—
Antimony	2	1200	04/23/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	2	1200	04/23/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	2	1200	04/23/02	NF	1	0	—	[5]	—	—	—	—
Barium	2	1200	04/23/02	F	1	1	140	—	2000	0/1	1000	0/1
Barium	2	1200	04/23/02	NF	1	1	147	—	—	—	—	—
Beryllium	2	1200	04/23/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	2	1200	04/23/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	2	1200	04/23/02	F	1	0	—	[200]	—	—	—	—
Cadmium	2	1200	04/23/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	2	1200	04/23/02	NF	1	0	—	[1]	—	—	—	—
Calcium	2	1200	04/23/02	F	1	1	20300	—	—	—	—	—

Table D-11 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	2	1200	04/23/02	NF	1	1	20400	—	—	—	—	—
Chloride	2	1200	04/23/02	F	1	1	2880	—	250000	0/1	250000	0/1
Chromium	2	1200	04/23/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	2	1200	04/23/02	NF	1	1	5.4	—	—	—	—	—
Cobalt	2	1200	04/23/02	F	1	1	2.09	—	—	—	50	0/1
Cobalt	2	1200	04/23/02	NF	1	1	2	—	—	—	—	—
Copper	2	1200	04/23/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	2	1200	04/23/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	2	1200	04/23/02	F	1	1	302	—	4000	0/1	1600	0/1
Iron	2	1200	04/23/02	F	1	1	17200	—	300	1/1	1000	1/1
Iron	2	1200	04/23/02	NF	1	1	19700	—	—	—	—	—
Lead	2	1200	04/23/02	F	1	0	—	[2]	15	0/1	50	0/1
Lead	2	1200	04/23/02	NF	1	1	0.258	—	—	—	—	—
Magnesium	2	1200	04/23/02	F	1	1	5180	—	—	—	—	—
Magnesium	2	1200	04/23/02	NF	1	1	5200	—	—	—	—	—
Manganese	2	1200	04/23/02	F	1	1	3190	—	50	1/1	200	1/1
Manganese	2	1200	04/23/02	NF	1	1	3240	—	—	—	—	—
Mercury	2	1200	04/23/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	2	1200	04/23/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	2	1200	04/23/02	F	1	1	14.9	—	100	0/1	200	0/1
Nickel	2	1200	04/23/02	NF	1	1	19	—	—	—	—	—
Nitrate + Nitrite (as N)	2	1200	04/23/02	F	1	0	—	[50]	10000	0/1	—	—
Oxalate	2	1200	04/23/02	F	1	0	—	[1000]	—	—	—	—
Phosphorus (total)	2	1200	04/23/02	F	1	0	—	[30]	—	—	—	—
Potassium	2	1200	04/23/02	F	1	1	2220	—	—	—	—	—
Potassium	2	1200	04/23/02	NF	1	1	2210	—	—	—	—	—
Selenium	2	1200	04/23/02	F	1	0	—	[5]	50	0/1	50	0/1

Table D-11 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	2	1200	04/23/02	NF	1	0	—	[5]	—	—	—	—
Silver	2	1200	04/23/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	2	1200	04/23/02	NF	1	0	—	[5]	—	—	—	—
Sodium	2	1200	04/23/02	F	1	1	13900	—	—	—	—	—
Sodium	2	1200	04/23/02	NF	1	1	13700	—	—	—	—	—
Sulfate	2	1200	04/23/02	F	1	0	—	[400]	250000	0/1	600000	0/1
Thallium	2	1200	04/23/02	F	1	1	0.014	—	2	0/1	—	—
Thallium	2	1200	04/23/02	NF	1	1	0.017	—	—	—	—	—
Total Kjeldahl Nitrogen	2	1200	04/23/02	F	1	1	830	—	—	—	—	—
Vanadium	2	1200	04/23/02	F	1	0	—	[5]	—	—	—	—
Vanadium	2	1200	04/23/02	NF	1	0	—	[5]	—	—	—	—
Zinc	2	1200	04/23/02	F	1	1	5.8	—	5000	0/1	10000	0/1
Zinc	2	1200	04/23/02	NF	1	1	8.37	—	—	—	—	—
Stable Isotope (‰)												
δD	2	1200	04/23/02	NF	1	1	–82	—	—	—	—	—
$\delta^{15}N$	2	1200	04/23/02	NF	1	1	+2	—	—	—	—	—
$\delta^{16}O$	2	1200	04/23/02	NF	1	1	–11.8	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

Table D-12
Well CdV-R-37-2 Screen 3 Second Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	3	1359	04/24/02	NF[e]	1	1	62000	—[f]	—	—	—	—
Dissolved Oxygen	3	1359	04/24/02	NF	1	1	8100	—	—	—	—	—
pH	3	1359	04/24/02	NF	1	1	7.18	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	3	1359	04/24/02	NF	1	1	128	—	—	0/1	—	0/1
Temperature (°C)	3	1359	04/24/02	NF	1	1	20.1	—	—	0/1	—	0/1
Turbidity (NTU[g])	3	1359	04/24/02	NF	1	1	0.71	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	3	1359	04/24/02	F[h]	1	1	60300	—	—	—	—	—
Aluminum	3	1359	04/24/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	3	1359	04/24/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	3	1359	04/24/02	F	1	0	—	[50]	—	—	—	—
Antimony	3	1359	04/24/02	F	1	0	—	[2]	6	0/1	—	—
Antimony	3	1359	04/24/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	3	1359	04/24/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	3	1359	04/24/02	NF	1	0	—	[5]	—	—	—	—
Barium	3	1359	04/24/02	F	1	1	13	—	2000	0/1	1000	0/1
Barium	3	1359	04/24/02	NF	1	1	14.7	—	—	—	—	—
Beryllium	3	1359	04/24/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	3	1359	04/24/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	3	1359	04/24/02	F	1	0	—	[200]	—	—	—	—
Cadmium	3	1359	04/24/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	3	1359	04/24/02	NF	1	0	—	[1]	—	—	—	—
Calcium	3	1359	04/24/02	F	1	1	10000	—	—	—	—	—

Table D-12 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	3	1359	04/24/02	NF	1	1	10000	—	—	—	—	—
Chloride	3	1359	04/24/02	F	1	1	1680	—	250000	0/1	250000	0/1
Chromium	3	1359	04/24/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	3	1359	04/24/02	NF	1	1	4.66	—	—	—	—	—
Cobalt	3	1359	04/24/02	F	1	0	—	[5]	—	—	50	0/1
Cobalt	3	1359	04/24/02	NF	1	0	—	[5]	—	—	—	—
Copper	3	1359	04/24/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	3	1359	04/24/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	3	1359	04/24/02	F	1	1	295	—	4000	0/1	1600	0/1
Iron	3	1359	04/24/02	F	1	1	208	—	300	0/1	1000	0/1
Iron	3	1359	04/24/02	NF	1	1	589	—	—	—	—	—
Lead	3	1359	04/24/02	F	1	0	—	[2]	15	0/1	50	0/1
Lead	3	1359	04/24/02	NF	1	0	—	[2]	—	—	—	—
Magnesium	3	1359	04/24/02	F	1	1	3010	—	—	—	—	—
Magnesium	3	1359	04/24/02	NF	1	1	3010	—	—	—	—	—
Manganese	3	1359	04/24/02	F	1	1	24	—	50	0/1	200	0/1
Manganese	3	1359	04/24/02	NF	1	1	36.8	—	—	—	—	—
Mercury	3	1359	04/24/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	3	1359	04/24/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	3	1359	04/24/02	F	1	0	—	[0.8]	100	0/1	200	0/1
Nickel	3	1359	04/24/02	NF	1	0	—	[3.47]	—	—	—	—
Nitrate + Nitrite (as N)	3	1359	04/24/02	F	1	1	410	—	10000	0/1	—	—
Oxalate	3	1359	04/24/02	F	1	0	—	[1000]	—	—	—	—
Phosphorus (total)	3	1359	04/24/02	F	1	0	—	[40]	—	—	—	—
Potassium	3	1359	04/24/02	F	1	1	1440	—	—	—	—	—
Potassium	3	1359	04/24/02	NF	1	1	1460	—	—	—	—	—
Selenium	3	1359	04/24/02	F	1	0	—	[5]	50	0/1	50	0/1

Table D-12 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	3	1359	04/24/02	NF	1	0	—	[5]	—	—	—	—
Silver	3	1359	04/24/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	3	1359	04/24/02	NF	1	0	—	[5]	—	—	—	—
Sodium	3	1359	04/24/02	F	1	1	12200	—	—	—	—	—
Sodium	3	1359	04/24/02	NF	1	1	12500	—	—	—	—	—
Sulfate	3	1359	04/24/02	F	1	1	1610	—	250000	0/1	600000	0/1
Thallium	3	1359	04/24/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	3	1359	04/24/02	NF	1	0	—	[0.5]	—	—	—	—
Total Kjeldahl Nitrogen	3	1359	04/24/02	F	1	1	140	—	—	—	—	—
Vanadium	3	1359	04/24/02	F	1	1	7.76	—	—	—	—	—
Vanadium	3	1359	04/24/02	NF	1	1	8.08	—	—	—	—	—
Zinc	3	1359	04/24/02	F	1	1	4.93	—	5000	0/1	10000	0/1
Zinc	3	1359	04/24/02	NF	1	1	10.9	—	—	—	—	—
Stable Isotope (‰)												
δD	3	1359	04/24/02	NF	1	1	–81	—	—	—	—	—
$\delta^{15}N$	3	1359	04/24/02	NF	1	1	–0.2	—	—	—	—	—
$\delta^{18}O$	3	1359	04/24/02	NF	1	1	–10.6	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

Table D-13
Well CdV-R-37-2 Screen 4 Second Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	4	1551	04/25/02	NF[e]	1	1	69000	—[f]	—	—	—	—
Dissolved Oxygen	4	1551	04/25/02	NF	1	1	7600	—	—	—	—	—
pH	4	1551	04/25/02	NF	1	1	6.89	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	4	1551	04/25/02	NF	1	1	143	—	—	0/1	—	0/1
Temperature (°C)	4	1551	04/25/02	NF	1	1	19.1	—	—	0/1	—	0/1
Turbidity (NTU[g])	4	1551	04/25/02	NF	1	1	1.22	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	4	1551	04/25/02	F[h]	1	1	55300	—	—	—	—	—
Aluminum	4	1551	04/25/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	4	1551	04/25/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	4	1551	04/25/02	F	1	1	330	—	—	—	—	—
Antimony	4	1551	04/25/02	F	1	0	—	[2]	6	0/1	—	—
Antimony	4	1551	04/25/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	4	1551	04/25/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	4	1551	04/25/02	NF	1	1	4.78	—	—	—	—	—
Barium	4	1551	04/25/02	F	1	1	22.6	—	2000	0/1	1000	0/1
Barium	4	1551	04/25/02	NF	1	1	22.9	—	—	—	—	—
Beryllium	4	1551	04/25/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	4	1551	04/25/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	4	1551	04/25/02	F	1	0	—	[200]	—	—	—	—
Cadmium	4	1551	04/25/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	4	1551	04/25/02	NF	1	1	0.055	—	—	—	—	—
Calcium	4	1551	04/25/02	F	1	1	8760	—	—	—	—	—

Table D-13 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	4	1551	04/25/02	NF	1	1	8940	—	—	—	—	—
Chromium	4	1551	04/25/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	4	1551	04/25/02	NF	1	1	2.9	—	—	—	—	—
Cobalt	4	1551	04/25/02	F	1	0	—	[5]	—	—	50	0/1
Cobalt	4	1551	04/25/02	NF	1	0	—	[5]	—	—	—	—
Copper	4	1551	04/25/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	4	1551	04/25/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	4	1551	04/25/02	F	1	1	187	—	4000	0/1	1600	0/1
Iron	4	1551	04/25/02	F	1	1	7910	—	300	1/1	1000	1/1
Iron	4	1551	04/25/02	NF	1	1	7510	—	—	—	—	—
Lead	4	1551	04/25/02	F	1	1	0.084	—	15	0/1	50	0/1
Lead	4	1551	04/25/02	NF	1	1	0.17	—	—	—	—	—
Magnesium	4	1551	04/25/02	F	1	1	2640	—	—	—	—	—
Magnesium	4	1551	04/25/02	NF	1	1	2720	—	—	—	—	—
Manganese	4	1551	04/25/02	F	1	1	216	—	50	1/1	200	1/1
Manganese	4	1551	04/25/02	NF	1	1	208	—	—	—	—	—
Mercury	4	1551	04/25/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	4	1551	04/25/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	4	1551	04/25/02	F	1	1	4.32	—	100	0/1	200	0/1
Nickel	4	1551	04/25/02	NF	1	1	5.26	—	—	—	—	—
Nitrate + Nitrite (as N)	4	1551	04/25/02	F	1	0	—	[30]	10000	0/1	—	—
Oxalate	4	1551	04/25/02	F	1	0	—	[1000]	—	—	—	—
Phosphorus (total)	4	1551	04/25/02	F	1	1	140	—	—	—	—	—
Potassium	4	1551	04/25/02	F	1	1	2250	—	—	—	—	—
Potassium	4	1551	04/25/02	NF	1	1	2270	—	—	—	—	—
Selenium	4	1551	04/25/02	F	1	0	—	[5]	50	0/1	50	0/1
Selenium	4	1551	04/25/02	NF	1	0	—	[5]	—	—	—	—

Table D-13 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Silver	4	1551	04/25/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	4	1551	04/25/02	NF	1	0	—	[5]	—	—	—	—
Sodium	4	1551	04/25/02	F	1	1	11500	—	—	—	—	—
Sodium	4	1551	04/25/02	NF	1	1	11500	—	—	—	—	—
Sulfate	4	1551	04/25/02	F	1	1	942	—	250000	0/1	600000	0/1
Thallium	4	1551	04/25/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	4	1551	04/25/02	NF	1	0	—	[0.5]	—	—	—	—
Total Kjeldahl Nitrogen	4	1551	04/25/02	F	1	1	460	—	—	—	—	—
Vanadium	4	1551	04/25/02	F	1	0	—	[5]	—	—	—	—
Vanadium	4	1551	04/25/02	NF	1	0	—	[5]	—	—	—	—
Zinc	4	1551	04/25/02	F	1	1	5.72	—	5000	0/1	10000	0/1
Zinc	4	1551	04/25/02	NF	1	1	6.63	—	—	—	—	—
Stable Isotope (‰)												
δD	4	1551	04/25/02	NF	1	1	–81	—	—	—	—	—
$\delta^{15}N$	4	1551	04/25/02	NF	1	1	ISV[i]	—	—	—	—	—
$\delta^{18}O$	4	1551	04/25/02	NF	1	1	–11.9	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

[i] ISV = Insufficient sample volume.

Table D-14
Well CdV-R-37-2 Screen 2 Second Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Total Organic Carbon	2	1200	04/23/02	NF[e]	1	1	5660	—[f]	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

Table D-15
Well CdV-R-37-2 Screen 3 Second Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Total Organic Carbon	3	1359	04/24/02	NF[e]	1	1	518	—[f]	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

Table D-16
Well CdV-R-37-2 Screen 4 Second Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Total Organic Carbon	4	1551	04/25/02	NF[e]	1	1	1380	—[f]	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

Table D-17
Well CdV-R-37-2 Screen 2 Second Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	2	1200	04/23/02	NF[c]	1	0	—[d]	[0.287]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-18
Well CdV-R-37-2 Screen 3 Second Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	3	1359	04/24/02	NF[c]	1	0	—[d]	[0.383]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-19
Well CdV-R-37-2 Screen 4 Second Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	4	1551	04/25/02	NF[c]	1	0	—[d]	[0.351]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-20
Well CdV-R-37-2 Screen 2 Third Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	2	1200	07/18/02	NF[e]	1	1	131000	—[f]	—	—	—	—
Dissolved Oxygen	2	1200	07/18/02	NF	1	1	1900	—	—	—	—	—
pH	2	1200	07/18/02	NF	1	1	6.81	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	2	1200	07/18/02	NF	1	1	279	—	—	0/1	—	0/1
Temperature (°C)	2	1200	07/18/02	NF	1	1	22.2	—	—	0/1	—	0/1
Turbidity (NTU[g])	2	1200	07/18/02	NF	1	1	12.9	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	2	1200	07/18/02	F[h]	1	1	107000	—	—	—	—	—
Aluminum	2	1200	07/18/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	2	1200	07/18/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	2	1200	07/18/02	F	1	1	520	—	—	—	—	—
Antimony	2	1200	07/18/02	F	1	0	—	[2]	6	0/1	—	—
Antimony	2	1200	07/18/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	2	1200	07/18/02	F	1	1	2.45	—	50	0/1	100	0/1
Arsenic	2	1200	07/18/02	NF	1	1	3.73	—	—	—	—	—
Barium	2	1200	07/18/02	F	1	1	163	—	2000	0/1	1000	0/1
Barium	2	1200	07/18/02	NF	1	1	174	—	—	—	—	—
Beryllium	2	1200	07/18/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	2	1200	07/18/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	2	1200	07/18/02	F	1	0	—	[200]	—	—	—	—
Cadmium	2	1200	07/18/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	2	1200	07/18/02	NF	1	1	0.046	—	—	—	—	—
Calcium	2	1200	07/18/02	F	1	1	21300	—	—	—	—	—

Table D-20 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	2	1200	07/18/02	NF	1	1	21400	—	—	—	—	—
Chloride	2	1200	07/18/02	F	1	1	2780	—	250000	0/1	250000	0/1
Chromium	2	1200	07/18/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	2	1200	07/18/02	NF	1	0	—	[5]	—	—	—	—
Cobalt	2	1200	07/18/02	F	1	1	1.45	—	—	—	50	0/1
Cobalt	2	1200	07/18/02	NF	1	1	1.51	—	—	—	—	—
Copper	2	1200	07/18/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	2	1200	07/18/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	2	1200	07/18/02	F	1	1	272	—	4000	0/1	1600	0/1
Iron	2	1200	07/18/02	F	1	1	16400	—	300	1/1	1000	1/1
Iron	2	1200	07/18/02	NF	1	1	21800	—	—	—	—	—
Lead	2	1200	07/18/02	F	1	0	—	[2]	15	0/1	50	0/1
Lead	2	1200	07/18/02	NF	1	1	0.187	—	—	—	—	—
Magnesium	2	1200	07/18/02	F	1	1	5840	—	—	—	—	—
Magnesium	2	1200	07/18/02	NF	1	1	5760	—	—	—	—	—
Manganese	2	1200	07/18/02	F	1	1	296	—	50	1/1	200	1/1
Manganese	2	1200	07/18/02	NF	1	1	226	—	—	—	—	—
Mercury	2	1200	07/18/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	2	1200	07/18/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	2	1200	07/18/02	F	1	1	9.77	—	100	0/1	200	0/1
Nickel	2	1200	07/18/02	NF	1	1	8.83	—	—	—	—	—
Nitrate + Nitrite (as N)	2	1200	07/18/02	F	1	0	—	[20]	10000	0/1	—	—
Oxalate	2	1200	07/18/02	F	1	0	—	[1000]	—	—	—	—
Phosphorus (total)	2	1200	07/18/02	F	1	0	—	[50]	—	—	—	—
Potassium	2	1200	07/18/02	F	1	1	2470	—	—	—	—	—
Potassium	2	1200	07/18/02	NF	1	1	2500	—	—	—	—	—
Selenium	2	1200	07/18/02	F	1	0	—	[5]	50	0/1	50	0/1

Table D-20 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	2	1200	07/18/02	NF	1	0	—	[5]	—	—	—	—
Silver	2	1200	07/18/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	2	1200	07/18/02	NF	1	0	—	[5]	—	—	—	—
Sodium	2	1200	07/18/02	F	1	1	15800	—	—	—	—	—
Sodium	2	1200	07/18/02	NF	1	1	15600	—	—	—	—	—
Sulfate	2	1200	07/18/02	F	1	0	—	[400]	250000	0/1	600000	0/1
Thallium	2	1200	07/18/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	2	1200	07/18/02	NF	1	1	0.022	—	—	—	—	—
Total Kjeldahl Nitrogen	2	1200	07/18/02	F	1	1	700	—	—	—	—	—
Vanadium	2	1200	07/18/02	F	1	0	—	[5]	—	—	—	—
Vanadium	2	1200	07/18/02	NF	1	0	—	[5]	—	—	—	—
Zinc	2	1200	07/18/02	F	1	1	3.24	—	5000	0/1	10000	0/1
Zinc	2	1200	07/18/02	NF	1	1	8.04	—	—	—	—	—
Stable Isotope (‰)												
δD	2	1200	07/18/02	NF	1	1	–76	—	—	—	—	—
$\delta^{15}N$	2	1200	07/18/02	NF	1	1	NRL[i]	—	—	—	—	—
$\delta^{18}O$	2	1200	07/18/02	NF	1	1	–11.6	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

[i] NRL = Not returned from the laboratory.

Table D-21
Well CdV-R-37-2 Screen 3 Third Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	3	1359	07/19/02	NF[e]	1	1	55000	—[f]	—	—	—	—
Dissolved Oxygen	3	1359	07/19/02	NF	1	1	7800	—	—	—	—	—
pH	3	1359	07/19/02	NF	1	1	7.28	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	3	1359	07/19/02	NF	1	1	128	—	—	0/1	—	0/1
Temperature (°C)	3	1359	07/19/02	NF	1	1	24.4	—	—	0/1	—	0/1
Turbidity (NTU[g])	3	1359	07/19/02	NF	1	1	0.98	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	3	1359	07/19/02	F[h]	1	1	57400	—	—	—	—	—
Aluminum	3	1359	07/19/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	3	1359	07/19/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	3	1359	07/19/02	F	1	0	—	[50]	—	—	—	—
Antimony	3	1359	07/19/02	F	1	0	—	[2]	6	0/1	—	—
Antimony	3	1359	07/19/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	3	1359	07/19/02	F	1	1	2.45	—	50	0/1	100	0/1
Arsenic	3	1359	07/19/02	NF	1	0	—	[5]	—	—	—	—
Barium	3	1359	07/19/02	F	1	1	12.3	—	2000	0/1	1000	0/1
Barium	3	1359	07/19/02	NF	1	1	12.8	—	—	—	—	—
Beryllium	3	1359	07/19/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	3	1359	07/19/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	3	1359	07/19/02	F	1	1	125	—	—	—	—	—
Cadmium	3	1359	07/19/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	3	1359	07/19/02	NF	1	0	—	[1]	—	—	—	—
Calcium	3	1359	07/19/02	F	1	1	10100	—	—	—	—	—

Table D-21 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	3	1359	07/19/02	NF	1	1	10300	—	—	—	—	—
Chloride	3	1359	07/19/02	F	1	1	1750	—	250000	0/1	250000	0/1
Chromium	3	1359	07/19/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	3	1359	07/19/02	NF	1	1	4.09	—	—	—	—	—
Cobalt	3	1359	07/19/02	F	1	0	—	[5]	—	—	50	0/1
Cobalt	3	1359	07/19/02	NF	1	0	—	[5]	—	—	—	—
Copper	3	1359	07/19/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	3	1359	07/19/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	3	1359	07/19/02	F	1	1	214	—	4000	0/1	1600	0/1
Iron	3	1359	07/19/02	F	1	1	167	—	300	0/1	1000	0/1
Iron	3	1359	07/19/02	NF	1	1	588	—	—	—	—	—
Lead	3	1359	07/19/02	F	1	0	—	[2]	15	0/1	50	0/1
Lead	3	1359	07/19/02	NF	1	0	—	[2]	—	—	—	—
Magnesium	3	1359	07/19/02	F	1	1	3120	—	—	—	—	—
Magnesium	3	1359	07/19/02	NF	1	1	3150	—	—	—	—	—
Manganese	3	1359	07/19/02	F	1	1	23.2	—	50	0/1	200	0/1
Manganese	3	1359	07/19/02	NF	1	1	32.6	—	—	—	—	—
Mercury	3	1359	07/19/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	3	1359	07/19/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	3	1359	07/19/02	F	1	0	—	[5]	100	0/1	200	0/1
Nickel	3	1359	07/19/02	NF	1	1	1.68	—	—	—	—	—
Nitrate + Nitrite (as N)	3	1359	07/19/02	F	1	1	370	—	10000	0/1	—	—
Oxalate	3	1359	07/19/02	F	1	0	—	[1000]	—	—	—	—
Phosphorus (total)	3	1359	07/19/02	F	1	0	—	[50]	—	—	—	—
Potassium	3	1359	07/19/02	F	1	1	1400	—	—	—	—	—
Potassium	3	1359	07/19/02	NF	1	1	1430	—	—	—	—	—
Selenium	3	1359	07/19/02	F	1	0	—	[5]	50	0/1	50	0/1

Table D-21 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	3	1359	07/19/02	NF	1	0	—	[5]	—	—	—	—
Silver	3	1359	07/19/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	3	1359	07/19/02	NF	1	0	—	[5]	—	—	—	—
Sodium	3	1359	07/19/02	F	1	1	12200	—	—	—	—	—
Sodium	3	1359	07/19/02	NF	1	1	12200	—	—	—	—	—
Sulfate	3	1359	07/19/02	F	1	1	1530	—	250000	0/1	600000	0/1
Thallium	3	1359	07/19/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	3	1359	07/19/02	NF	1	1	0.02	—	—	—	—	—
Total Kjeldahl Nitrogen	3	1359	07/19/02	F	1	1	130	—	—	—	—	—
Vanadium	3	1359	07/19/02	F	1	1	6.77	—	—	—	—	—
Vanadium	3	1359	07/19/02	NF	1	1	7.73	—	—	—	—	—
Zinc	3	1359	07/19/02	F	1	1	2.33	—	5000	0/1	10000	0/1
Zinc	3	1359	07/19/02	NF	1	1	4.49	—	—	—	—	—
Stable Isotope (‰)												
δD	3	1359	07/19/02	NF	1	1	–75	—	—	—	—	—
$\delta^{15}N$	3	1359	07/19/02	NF	1	1	NRL[i]	—	—	—	—	—
$\delta^{18}O$	3	1359	07/19/02	NF	1	1	–11.6	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

[i] NRL = Not returned from the laboratory.

Table D-22
Well CdV-R-37-2 Screen 4 Third Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	4	1551	07/22/02	NF[e]	1	1	57000	—[f]	—	—	—	—
Dissolved Oxygen	4	1551	07/22/02	NF	1	1	7900	—	—	—	—	—
pH	4	1551	07/22/02	NF	1	1	6.81	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	4	1551	07/22/02	NF	1	1	133	—	—	0/1	—	0/1
Temperature (°C)	4	1551	07/22/02	NF	1	1	21.8	—	—	0/1	—	0/1
Turbidity (NTU[g])	4	1551	07/22/02	NF	1	1	1.19	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	4	1551	07/22/02	F[h]	1	1	51500	—	—	—	—	—
Aluminum	4	1551	07/22/02	F	1	0	—	[50]	50	0/1	5000	0/1
Aluminum	4	1551	07/22/02	NF	1	0	—	[50]	—	—	—	—
Ammonia (as N)	4	1551	07/22/02	F	1	1	270	—	—	—	—	—
Antimony	4	1551	07/22/02	F	1	0	—	[2]	6	0/1	—	—
Antimony	4	1551	07/22/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	4	1551	07/22/02	F	1	1	2.69	—	50	0/1	100	0/1
Arsenic	4	1551	07/22/02	NF	1	0	—	[5]	—	—	—	—
Barium	4	1551	07/22/02	F	1	1	19.1	—	2000	0/1	1000	0/1
Barium	4	1551	07/22/02	NF	1	1	19.2	—	—	—	—	—
Beryllium	4	1551	07/22/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	4	1551	07/22/02	NF	1	0	—	[0.2]	—	—	—	—
Bromide	4	1551	07/22/02	F	1	0	—	[200]	—	—	—	—
Cadmium	4	1551	07/22/02	F	1	0	—	[1]	5	0/1	10	0/1
Cadmium	4	1551	07/22/02	NF	1	0	—	[1]	—	—	—	—
Calcium	4	1551	07/22/02	F	1	1	8360	—	—	—	—	—

Table D-22 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Calcium	4	1551	07/22/02	NF	1	1	8200	—	—	—	—	—
Chloride	4	1551	07/22/02	F	1	1	1750	—	250000	0/1	250000	0/1
Chromium	4	1551	07/22/02	F	1	0	—	[5]	100	0/1	50	0/1
Chromium	4	1551	07/22/02	NF	1	0	—	[5]	—	—	—	—
Cobalt	4	1551	07/22/02	F	1	0	—	[5]	—	—	50	0/1
Cobalt	4	1551	07/22/02	NF	1	0	—	[5]	—	—	—	—
Copper	4	1551	07/22/02	F	1	0	—	[5]	1300	0/1	1000	0/1
Copper	4	1551	07/22/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	4	1551	07/22/02	F	1	1	196	—	4000	0/1	1600	0/1
Iron	4	1551	07/22/02	F	1	1	6320	—	300	1/1	1000	1/1
Iron	4	1551	07/22/02	NF	1	1	7000	—	—	—	—	—
Lead	4	1551	07/22/02	F	1	0	—	[2]	15	0/1	50	0/1
Lead	4	1551	07/22/02	NF	1	1	0.112	—	—	—	—	—
Magnesium	4	1551	07/22/02	F	1	1	2560	—	—	—	—	—
Magnesium	4	1551	07/22/02	NF	1	1	2520	—	—	—	—	—
Manganese	4	1551	07/22/02	F	1	1	185	—	50	1/1	200	0/1
Manganese	4	1551	07/22/02	NF	1	1	182	—	—	—	—	—
Mercury	4	1551	07/22/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	4	1551	07/22/02	NF	1	0	—	[0.2]	—	—	2	0/1
Nickel	4	1551	07/22/02	F	1	1	3.87	—	100	0/1	200	0/1
Nickel	4	1551	07/22/02	NF	1	1	3.72	—	—	—	—	—
Nitrate + Nitrite (as N)	4	1551	07/22/02	F	1	0	—	[20]	10000	0/1	—	—
Oxalate	4	1551	07/22/02	F	1	0	—	[1000]	—	—	—	—
Phosphorus (total)	4	1551	07/22/02	F	1	1	60	—	—	—	—	—
Potassium	4	1551	07/22/02	F	1	1	2240	—	—	—	—	—
Potassium	4	1551	07/22/02	NF	1	1	2230	—	—	—	—	—
Selenium	4	1551	07/22/02	F	1	0	—	[5]	50	0/1	50	0/1

Table D-22 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Selenium	4	1551	07/22/02	NF	1	0	—	[5]	—	—	—	—
Silver	4	1551	07/22/02	F	1	0	—	[5]	100	0/1	50	0/1
Silver	4	1551	07/22/02	NF	1	0	—	[5]	—	—	—	—
Sodium	4	1551	07/22/02	F	1	1	11300	—	—	—	—	—
Sodium	4	1551	07/22/02	NF	1	1	11000	—	—	—	—	—
Sulfate	4	1551	07/22/02	F	1	1	552	—	250000	0/1	600000	0/1
Thallium	4	1551	07/22/02	F	1	0	—	[0.5]	2	0/1	—	—
Thallium	4	1551	07/22/02	NF	1	0	—	[0.5]	—	—	—	—
Total Kjeldahl Nitrogen	4	1551	07/22/02	F	1	1	410	—	—	—	—	—
Vanadium	4	1551	07/22/02	F	1	0	—	[5]	—	—	—	—
Vanadium	4	1551	07/22/02	NF	1	1	0.656	—	—	—	—	—
Zinc	4	1551	07/22/02	F	1	1	4.41	—	5000	0/1	10000	0/1
Zinc	4	1551	07/22/02	NF	1	1	4.93	—	—	—	—	—
Stable Isotope (‰)												
δD	4	1551	07/22/02	NF	1	1	–77	—	—	—	—	—
$\delta^{15}N$	4	1551	07/22/02	NF	1	1	NRL[i]	—	—	—	—	—
$\delta^{18}O$	4	1551	07/22/02	NF	1	1	–11.8	—	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

[i] NRL = Not returned from the laboratory.

Table D-23
Well CdV-R-37-2 Screen 2 Third Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Total Organic Carbon	2	1200	07/18/02	NF[e]	1	1	6200	—[f]	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.
[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.
[c] NMED = New Mexico Environment Department.
[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.
[e] NF = Nonfiltered.
[f] — = Not available or not applicable.

Table D-24
Well CdV-R-37-2 Screen 3 Third Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Total Organic Carbon	3	1359	07/19/02	NF[e]	1	1	603	—[f]	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.
[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.
[c] NMED = New Mexico Environment Department.
[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.
[e] NF = Nonfiltered.
[f] — = Not available or not applicable.

Table D-25
Well CdV-R-37-2 Screen 4 Third Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Total Organic Carbon	4	1551	07/22/02	NF[e]	1	1	1560	—[f]	—	—	—	—

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

Table D-26
Well CdV-R-37-2 Screen 2 Third Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	2	1200	07/18/02	NF[c]	1	0	—[d]	[0.383]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NF = Nonfiltered.

[d] — = Not available or not applicable.

Table D-27
Well CdV-R-37-2 Screen 3 Third Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	3	1359	07/19/02	NF[c]	1	0	—[d]	[0.064]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.
[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.
[c] NF = Nonfiltered.
[d] — = Not available or not applicable.

Table D-28
Well CdV-R-37-2 Screen 4 Third Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Tritium	4	1551	07/22/02	NF[c]	1	0	—[d]	[0.160]	20000	0/1

[a] The static water level for the regional aquifer at CdV-R-37-2 was 1195.6 ft when the well was drilled.
[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.
[c] NF = Nonfiltered.
[d] — = Not available or not applicable.

Table D-29
Well R-13 Screen 1 First Round Sample Results: Data Summary for Inorganic Chemicals

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Field Parameter												
Field Alkalinity (total as $CaCO_3$)	1	935.4–1018	07/03/02	NF[e]	1	1	60000	—[f]	—	—	—	—
Dissolved Oxygen	1	935.4–1018	07/03/02	NF	1	1	5900	—	—	—	—	—
pH	1	935.4–1018	07/03/02	NF	1	1	8.06	—	>6 & <9	0/1	>6 & <9	0/1
Specific Conductance (µS/cm)	1	935.4–1018	07/03/02	NF	1	1	142	—	—	0/1	—	0/1
Temperature (°C)	1	935.4–1018	07/03/02	NF	1	1	21.2	—	—	0/1	—	0/1
Turbidity (NTU[g])	1	935.4–1018	07/03/02	NF	1	1	0.27	—	—	0/1	—	0/1
Analyte												
Lab Alkalinity (total as $CaCO_3$)	1	935.4–1018	07/03/02	F[h]	1	1	69000	—	—	—	—	—
Aluminum	1	935.4–1018	07/03/02	F	1	1	21.1	—	50	0/1	5000	0/1
Aluminum	1	935.4–1018	07/03/02	NF	1	1	19	—	—	—	—	—
Ammonia	1	935.4–1018	07/03/02	F	1	0	—	[50]	—	—	—	—
Antimony	1	935.4–1018	07/03/02	F	1	0	—	[2]	6	0/1	—	—
Antimony	1	935.4–1018	07/03/02	NF	1	0	—	[2]	—	—	—	—
Arsenic	1	935.4–1018	07/03/02	F	1	0	—	[5]	50	0/1	100	0/1
Arsenic	1	935.4–1018	07/03/02	NF	1	0	—	[5]	—	—	—	—
Barium	1	935.4–1018	07/03/02	F	1	1	28.4	—	2000	0/1	1000	0/1
Barium	1	935.4–1018	07/03/02	NF	1	1	28.3	—	—	—	—	—
Beryllium	1	935.4–1018	07/03/02	F	1	0	—	[0.2]	4	0/1	—	—
Beryllium	1	935.4–1018	07/03/02	NF	1	0	—	[0.2]	—	—	—	—
Boron	1	935.4–1018	07/03/02	F	1	0	—	[50]	—	—	750	0/1
Boron	1	935.4–1018	07/03/02	NF	1	0	—	[50]	—	—	—	—
Bromide	1	935.4–1018	07/03/02	F	1	0	—	[200]	—	—	—	—
Cadmium	1	935.4–1018	07/03/02	F	1	0	—	[1]	5	0/1	10	0/1

Table D-29 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Cadmium	1	935.4–1018	07/03/02	NF	1	0	—	[1]	—	—	—	—
Calcium	1	935.4–1018	07/03/02	F	1	1	13600	—	—	—	—	—
Calcium	1	935.4–1018	07/03/02	NF	1	1	13600	—	—	—	—	—
Chloride	1	935.4–1018	07/03/02	F	1	1	2220	—	250000	0/1	250000	0/1
Chromium	1	935.4–1018	07/03/02	F	1	0	—	[4.18]	100	0/1	50	0/1
Chromium	1	935.4–1018	07/03/02	NF	1	0	—	[4.28]	—	—	—	—
Cobalt	1	935.4–1018	07/03/02	F	1	0	—	[5]	—	—	50	0/1
Cobalt	1	935.4–1018	07/03/02	NF	1	0	—	[0.625]	—	—	—	—
Copper	1	935.4–1018	07/03/02	F	1	1	1.76	—	1300	0/1	1000	0/1
Copper	1	935.4–1018	07/03/02	NF	1	0	—	[5]	—	—	—	—
Cyanide (total)	1	935.4–1018	07/03/02	NF	1	0	—	[5]	—	—	—	—
Fluoride	1	935.4–1018	07/03/02	F	1	1	326	—	4000	0/1	1600	0/1
Iron	1	935.4–1018	07/03/02	F	1	1	91.2	—	300	0/1	1000	0/1
Iron	1	935.4–1018	07/03/02	NF	1	1	86.8	—	—	—	—	—
Lead	1	935.4–1018	07/03/02	F	1	1	0.069	—	15	0/1	50	0/1
Lead	1	935.4–1018	07/03/02	NF	1	1	0.096	—	—	—	—	—
Magnesium	1	935.4–1018	07/03/02	F	1	1	3260	—	—	—	—	—
Magnesium	1	935.4–1018	07/03/02	NF	1	1	3270	—	—	—	—	—
Manganese	1	935.4–1018	07/03/02	F	1	1	6.5	—	50	0/1	200	0/1
Manganese	1	935.4–1018	07/03/02	NF	1	1	6.6	—	—	—	—	—
Mercury	1	935.4–1018	07/03/02	F	1	0	—	[0.2]	2	0/1	—	—
Mercury	1	935.4–1018	07/03/02	NF	1	0	—	[0.2]	—	—	2	0/1
Molybdenum	1	935.4–1018	07/03/02	F	1	1	1.09	—	—	—	—	—
Molybdenum	1	935.4–1018	07/03/02	NF	1	1	1.1	—	—	—	—	—
Nickel	1	935.4–1018	07/03/02	F	1	0	—	[5]	100	0/1	200	0/1
Nickel	1	935.4–1018	07/03/02	NF	1	0	—	[5]	—	—	—	—
Nitrate + Nitrite (as N)	1	935.4–1018	07/03/02	F	1	1	740	—	10000	0/1	—	—

Table D-29 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Oxalate	1	935.4–1018	07/03/02	F	1	0	—	[1000]	—	—	—	—
Perchlorate	1	935.4–1018	07/03/02	F	1	0	—	[4]	—	—	—	—
Phosphorus (total)	1	935.4–1018	07/03/02	F	1	1	20	—	—	—	—	—
Potassium	1	935.4–1018	07/03/02	F	1	1	1290	—	—	—	—	—
Potassium	1	935.4–1018	07/03/02	NF	1	1	1290	—	—	—	—	—
Selenium	1	935.4–1018	07/03/02	F	1	0	—	[5]	50	0/1	50	0/1
Selenium	1	935.4–1018	07/03/02	NF	1	0	—	[5]	—	—	—	—
Silica	1	935.4–1018	07/03/02	F	1	1	33500	—	—	—	—	—
Silica	1	935.4–1018	07/03/02	NF	1	1	33500	—	—	—	—	—
Silver	1	935.4–1018	07/03/02	F	1	0	—	[2.12]	100	0/1	50	0/1
Silver	1	935.4–1018	07/03/02	NF	1	0	—	[2.43]	—	—	—	—
Sodium	1	935.4–1018	07/03/02	F	1	1	9380	—	—	—	—	—
Sodium	1	935.4–1018	07/03/02	NF	1	1	9420	—	—	—	—	—
Strontium	1	935.4–1018	07/03/02	F	1	1	52.4	—	—	—	—	—
Strontium	1	935.4–1018	07/03/02	NF	1	1	51.9	—	—	—	—	—
Sulfate	1	935.4–1018	07/03/02	F	1	1	2790	—	250000	0/1	600000	0/1
Thallium	1	935.4–1018	07/03/02	F	1	1	0.058	—	2	0/1	—	—
Thallium	1	935.4–1018	07/03/02	NF	1	1	0.343	—	—	—	—	—
Total Kjeldahl Nitrogen	1	935.4–1018	07/03/02	F	1	1	30	—	—	—	—	—
Total Kjeldahl Nitrogen	1	935.4–1018	07/03/02	NF	1	1	100	—	—	—	—	—
Uranium	1	935.4–1018	07/03/02	F	1	1	0.469	—	20	0/1	5000	0/1
Uranium	1	935.4–1018	07/03/02	NF	1	1	0.469	—	—	—	—	—
Vanadium	1	935.4–1018	07/03/02	F	1	0	—	[6.57]	—	—	—	—
Vanadium	1	935.4–1018	07/03/02	NF	1	0	—	[6.38]	—	—	—	—
Zinc	1	935.4–1018	07/03/02	F	1	1	5.78	—	5000	0/1	10000	0/1
Zinc	1	935.4–1018	07/03/02	NF	1	1	3.17	—	—	—	—	—

Table D-29 (continued)

Parameter and Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Stable Isotope (‰)												
δD	1	935.4–1018	07/03/02	NF	1	1	–74	—	—	—	—	—
$\delta^{15}N$	1	935.4–1018	07/03/02	NF	1	1	NRL[i]	—				
$\delta^{18}O$	1	935.4–1018	07/03/02	NF	1	1	–10.8	—	—	—	—	—

[a] The static water level for the regional aquifer at R-13 was 833.7 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] NTU = Nephelometric turbidity unit.

[h] F = Filtered.

[i] NRL = Not returned from the laboratory.

Table D-30
Well R-13 Screen 1 First Round Sample Results: Data Summary for Detected Organic Chemicals

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (µg/L)	Non-detected Value (µg/L)	Drinking Water MCL[b] (µg/L)	Frequency of Detects > Drinking Water MCL	NMED[c] Groundwater Standard[d] (µg/L)	Frequency of Detects > NMED Groundwater Standard
Acetone	1	935.4–1018	07/03/02	NF[e]	1	1	71.2	—[f]	—	—	—	—
Dissolved Organic Carbon	1	935.4–1018	07/03/02	F[g]	1	1	700	—	—	—	—	—
Endrin	1	935.4–1018	07/03/02	NF	1	1	0.0084	—	2	0/1	—	—
Humic Substances, Hydrophilic Acids	1	935.4–1018	07/03/02	F	1	1	200	—	—	—	—	—
Humic Substances, Hydrophilic Bases	1	935.4–1018	07/03/02	F	1	1	—	100	—	—	—	—
Humic Substances, Hydrophilic Neutrals	1	935.4–1018	07/03/02	F	1	1	—	100	—	—	—	—
Humic Substances, Hydrophilic Total	1	935.4–1018	07/03/02	F	1	1	200	—	—	—	—	—
Humic Substances, Hydrophobic Acids	1	935.4–1018	07/03/02	F	1	1	100	—	—	—	—	—
Humic Substances, Hydrophobic Bases	1	935.4–1018	07/03/02	F	1	1	—	100	—	—	—	—
Humic Substances, Hydrophobic Neutrals	1	935.4–1018	07/03/02	F	1	1	400	—	—	—	—	—
Humic Substances, Hydrophobic Total	1	935.4–1018	07/03/02	F	1	1	500	—	—	—	—	—
Toluene	1	935.4–1018	07/03/02	NF	1	1	2.8	—	1000	0/1	750	0/1
Total Organic Carbon	1	935.4–1018	07/03/02	NF	1	1	356	—	—	—	—	—

[a] The static water level for the regional aquifer at R-13 was 833.7 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] NMED = New Mexico Environment Department.

[d] State of New Mexico groundwater standards are from *New Mexico Water Quality Control Commission Regulations, Ground and Surface Water Protection*, 20 NMAC 6.2.

[e] NF = Nonfiltered.

[f] — = Not available or not applicable.

[g] F = Filtered.

Table D-31
Well R-13 Screen 1 First Round Sample Results: Data Summary for Radionuclides

Analyte	Screen	Depth (ft)[a]	Collection Date	Field Preparation	Number of Analyses	Number of Detects	Detected Value (pCi/L)	Nondetected Value (pCi/L)	Drinking Water MCL[b] (pCi/L)	Frequency of Detects > Drinking Water MCL
Americium-241	1	935.4–1018	07/03/02	F[c]	1	0	—[d]	[0.0178]	15[e]	0/1
Americium-241	1	935.4–1018	07/03/02	NF[f]	1	0	—	[0.00876]	—	—
Cesium-137	1	935.4–1018	07/03/02	F	1	0	—	[0.601]	—	—
Cesium-137	1	935.4–1018	07/03/02	NF	1	0	—	[–1.14]	—	—
Gross Alpha Radiation	1	935.4–1018	07/03/02	NF	1	0	—	[0.604]	—	—
Gross Beta Radiation	1	935.4–1018	07/03/02	NF	1	0	—	[2.32]	—	—
Plutonium-238	1	935.4–1018	07/03/02	F	1	0	—	[–0.00425]	15	0/1
Plutonium-238	1	935.4–1018	07/03/02	NF	1	0	—	[–0.011]	—	—
Plutonium-239	1	935.4–1018	07/03/02	F	1	0	—	[0.0106]	15	0/1
Plutonium-239	1	935.4–1018	07/03/02	NF	1	0	—	[0.00438]	—	—
Strontium-90	1	935.4–1018	07/03/02	F	1	0	—	[–0.0479]	8	0/1
Strontium-90	1	935.4–1018	07/03/02	NF	1	0	—	[0.0324]	—	—
Tritium	1	935.4–1018	07/03/02	NF	1	0	—	[0.06]	20000	0/1
Uranium-234	1	935.4–1018	07/03/02	F	1	1	0.339	—	—	—
Uranium-234	1	935.4–1018	07/03/02	NF	1	1	0.3	—	—	—
Uranium-235	1	935.4–1018	07/03/02	F	1	0	—	[0.0305]	—	—
Uranium-235	1	935.4–1018	07/03/02	NF	1	0	—	[0]	—	—
Uranium-238	1	935.4–1018	07/03/02	F	1	1	0.149	—	—	—
Uranium-238	1	935.4–1018	07/03/02	NF	1	1	0.155	—	—	—

[a] The static water level for the regional aquifer at R-13 was 833.7 ft when the well was drilled.

[b] MCL = Maximum contaminant level. US Environmental Protection Agency (EPA) MCLs are from *National Primary Drinking Water Regulations*, 40 CFR Part 141. US EPA secondary MCLs are from *National Secondary Drinking Water Regulations*, 40 CFR Part 143. State of New Mexico MCLs are from *Drinking Water Regulations*, 20 NMAC 7.1.

[c] F = Filtered.

[d] — = Not available or not applicable.

[e] Based on an MCL of 15 pCi/L (including radium-226, but excluding radon and uranium).

[f] NF = Nonfiltered.