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General

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Department of Energy

memorandum

Albuquerque Operations Office
Los Alamos Area Office
Los Alamos, New Mexico 87544

DATE: JUN 1 2 1995

REPLY TO ATTN OF: LAAMEP:8KZ-001

SUBJECT: Ground Water Protection Management Program Plan (GWPMPP)

TO: Steve Yanicek, NMED, AIP Point of Contact, LANL, MS-J993

Confirming discussions with you, the next GWPMPP team meeting between the Los Alamos National Laboratory, the New Mexico Environment Department (NMED) Agreement in Principle (AIP) staff, and the DOE is scheduled on June 22, 1995 at the Los Alamos Area Office. The purpose of the meeting is to allow the team to review and discuss NMED AIP comments on the adequacy of the draft plan. The team's goal will be to achieve a technical consensus on an acceptable management plan that cost effectively meets all regulatory or DOE Order requirements to ensure protection of the environment. A final GWPMPP will then be developed and DOE/LANL will continue moving forward with implementation.

Attached is a proposed agenda for the meeting (Attachment 1). As noted above, the meeting format is intended to generate both a discussion and consensus by the team of (1) the DOE Order or HSWA Permit or other regulatory requirement, (2) whether the GWPMPP adequately meets the requirement, and (3) the most cost effective action that satisfies the requirement. We are looking for the AIP to facilitate presentation of NMED comments at the meeting. Bruce Gallaher, LANL, ESH-18 Hydrology Team Leader, will facilitate the team technical discussion in order to effectively manage development of consensus.

DOE is also submitting to you for NMED review prior to the meeting a draft Quality Objective Plan (Attachment 2) outlining the decision-making process for acquisition of hydrogeologic and sampling data as a supplement to the well location rationale. This supplement will ultimately be incorporated into the GWPMPP.

If you have any questions, comments or suggested changes to the meeting agenda, please contact me at 667-5027, or Ken Zamora of my staff at 665-5047.

Joseph C. Vozella
Assistant Area Manager
Office Of Environment and Projects

Attachments

cc:
See page 2

12627

Ground Water Protection Management Program Plan (GWPMPP)
Meeting Agenda

LOS ALAMOS AREA OFFICE

8:30 A.M./JUNE 22, 1995/ROOM 100

		Responsibility
I.	Introduction	B. Gallaher
II.	NMED AIP Presentation of Technical Comments / GWPMPP Team Discussion and Development of Technical Concensus	NMED AIP / B. Gallaher

- Discussion of DOE Order or Regulatory Requirement
- Technical Conclusion
    - Fails to meet Requirements
    - Exceeds Requirements
- NMED Recommended or Alternative Action(s)

III.	Status of Implementation	R. Hull

- Quality Objectives Plan Incorporation
- Status Report on Ground Water Protection Activities
- Selection of Project Leader

IV.	Next Steps	S. Rae

- Schedule
- Stakeholder Involvement
- Management Review

Quality Objectives for LANL's Groundwater Monitoring Network

Introduction

The overall objective of the monitoring network is to provide the information necessary to manage and protect the groundwater resource in and around Los Alamos National Laboratory. This activity is carried out in accordance with DOE Order 5400.1, and various federal and state regulations and permits. This paper and the associated tables describe the quality objectives (i.e., monitoring requirements) for both the existing and proposed monitoring activities as they are currently established.

The monitoring network described is not focused on any one programmatic driver (e.g., DOE Order 5400.1) but attempts to address all regulatory issues which impact groundwater activities. The existing network is not complete (i.e., not yet installed and used) and plans for enhancements to this network are not complete due to pending work plan development for the Environmental Restoration Program (ER). It is recognized that this network plan description does not yet incorporate all the necessary strategies and plans for addressing contaminant plume distribution and migration. Those aspects of the monitoring plan will be forthcoming when the RCRA Facility Investigation workplans have been completed.

Existing Monitoring Network

Groundwater protection activities at LANL include an extensive groundwater monitoring system for assessment of water quality and detection of contaminants in the water supply. The monitoring network includes both wells and springs in and around the Laboratory. Wells include those completed in the main aquifer, the intermediate perched groundwater zone, and the alluvial perched groundwater zone.

The wells and springs included in the monitoring network are discussed below. Tables 1 and 2 are associated with this discussion, providing this information in tabular form.

Existing Main Aquifer Wells

The quality of water in the main aquifer is tested at various locations in and around the Laboratory at least once a year. There are eight deep test wells and 12 supply wells which belong to the DOE. There are also 11 main aquifer wells near the Rio Grande that are sampled which do not belong to the DOE (Figure 1). These wells are on San Ildefonso Pueblo land and are sampled under the Memoranda of Understanding (MOU) between the Bureau of Indian Affairs (BIA), the DOE, and the Laboratory.

Deep test wells include TW-1 and TW-2 in Pueblo Canyon, TW-3 in Los Alamos Canyon, TW-4 in Acid Canyon, TW-8 in Mortandad Canyon, and DT-5A, DT-9, and DT-10 on Frijoles Mesa. Test wells TW-1, TW-2, TW-3, and TW-8 are located in canyons that have received or are now receiving industrial effluents. The test wells were constructed between 1949 and 1960 using cable-tool drilling methods. All test wells are equipped with pumps and continuous recording transducers.

DOE supply wells include the Guaje well field, the Pajarito Mesa wells, and the Otowi well O-4. The Guaje wells are G-1, G-1A, G-2, G-4, and G-5 in Guaje Canyon and G-6 in Rendija Canyon. The Pajarito Mesa wells are PM-1 and PM-3 in Sandia Canyon, PM-2 in Pajarito Canyon, PM-4 in Cañada del Buey, and PM-5 on Pajarito Mesa. Otowi well O-4 is in Los

Alamos Canyon. These wells are also equipped with dedicated pumps and continuous recording water-level transducers.

Main aquifer wells on San Ildefonso Pueblo lands which are sampled under the MOU include LA-1A, LA-1B, LA-2, LA-5, Otowi House well ,Halladay House well, New Community well, Martinez House well, Sanchez House well, and Pajarito Well Pumps 1 and 2. Wells LA-1A and LA-1B are observation wells while the rest are supply wells for the San Ildefonso Pueblo. Other Indian wells that are sometimes sampled for special studies are the Westside Artesian well, Eastside Artesian well, and Don Juan Playhouse well (Figure 1).

The depth to water varies between wells that are located in canyon bottoms and those located on mesa tops. Depth to water also varies with location on the Pajarito Plateau, depending on how close to the mountains or to the eastern edge of the plateau the well is located. Information on well depths and screened intervals is given in Table 3.

Main aquifer wells are sampled annually for five radiochemical components (Cs-137, Pu-238, Pu-239,240, Total U, H-3, and gross gamma activity), secondary water quality standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, and pH), and miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_3, HCO_3, PO_4, total hardness, total suspended solids, and conductivity). Wells in former or active effluent release areas are also sampled periodically for Am-241 and Sr-90. Water supply samples are also analyzed annually for gross alpha and gross beta activity and Ra-226 if necessary. The results of these sampling events are presented in the annual Environmental Surveillance Reports.

Main aquifer wells are sampled triennially (every 3 years) for primary water quality standard trace elements (Ag, As, Ba, Cd, CN, Cr, F, Hg, N, Pb, and Se) and for organics (volatiles, semivolatiles, the 129 priority pollutants, individual herbicides, pesticides, PCBs, oils, or solvents).

Existing Intermediate Perched Groundwater Wells

Perched groundwater systems of limited extent occur in the conglomerates and basalts beneath the alluvium in portions of Pueblo, Los Alamos, and Sandia Canyons. Perched groundwater in Pueblo Canyon is routinely sampled from two test wells.

Well TW-1A is located in lower Pueblo Canyon and is completed at a depth of 225 ft into basalts. These basalts are known to have received discharge from the no longer existant Bayo Canyon Treatment Plant. Well TW-2A is located in the middle of Pueblo Canyon and is completed to a depth of 132 ft into conglomerates. Locations are shown on Figure 2.

Intermediate perched groundwater wells are sampled annually for the five radiochemical components, secondary water quality standards, and miscellaneous chemicals. They are also sampled periodically for Am-241 and Sr-90, gross alpha and beta activity, and Ra-226. The same wells are sampled triennially for primary water quality standards and for organics.

Existing Alluvial Perched Groundwater Wells

Perched alluvial groundwater zones are known to exist in Pueblo, Los Alamos, Mortandad, and Pajarito Canyons. The perched alluvial groundwater zones are sampled by means of 23 shallow observation wells. Seventeen wells are sampled annually as part of the environmental surveillance activities. Seven of the 17 and six other wells are designated for quarterly sampling in response to an EPA request. There are also 14 other alluvial wells which are monitored on a regular basis but are not sampled because they are dry or do not contain enough water.

Groundwater in the alluvium of Pueblo Canyon is sampled at one observation well near the confluence with Los Alamos Canyon. Well APCO-1 was completed in 1990 as part of the HSWA Special Permit Condition requirements to evaluate the extent of the perched groundwater zone. This and other well locations are shown on Figure 2.

Los Alamos Canyon alluvial perched groundwater is sampled at six observation wells. Well LAO-C is near the western Laboratory boundary, well LAO-4.5 is near the eastern boundary, and wells LAO-1, LAO-2, LAO-3, and LAO-4 are spaced across the length of the canyon between the two wells. Well LAO-1 is below the site where the Omega West Reactor is located. Wells LAO-2, and LAO-3 are located near the confluence with DP Canyon which received sanitary effluent from TA-21. Information on depths of wells and screened intervals is given in Table 3.

Mortandad Canyon alluvial perched groundwater is also sampled at six observation wells. Mortandad Canyon receives waste water and treated effluent from the operations at TA-46 and TA-50. It is the major release area for treated radioactive effluents. Wells MCO-3, MCO-4, MCO-5, MCO-6, MCO-7, and MCO-7.5 are located in the upper part of the canyon and cover about a two mile section corresponding to the known extent of saturation. Well MCO-7.5 is located below the Mortandad Canyon sediment traps.

Pajarito Canyon alluvial perched groundwater is sampled at three observation wells. Wells PCO-1, PCO-2, and PCO-3 are located in the lower part of the canyon below runoff from the waste processing, storage, and disposal Areas G and L at TA-54.

In Cañada del Buey, well CDBO-6 is the final well sampled as part of the annual environmental surveillance activities. This well was completed in 1992 to study the effects of effluent release from the TA-46 Sanitary Waste Water Systems Consolidation (SWSC) Project on the canyon environment. Effluent from the SWSC Project is not currently discharged into Cañada del Buey and the water in CDBO-6 is thought to be from discharge during the start-up of the pump in supply well PM-4 (Purtymun, 1995).

Perched alluvial groundwater wells are sampled annually for the five radiochemical components, secondary water quality standards, and miscellaneous chemicals. They are also sampled periodically for Am-241 and Sr-90, gross alpha and beta activity, and Ra-226. All alluvial wells are sampled triennially for primary water quality standards and for organics with the exception of MCO-3, PCO-3 and LAO-4.5. These three wells are sampled annually for organics, primary water quality standards, and Ag, Ni, and Be as required by Module II of the Laboratory's RCRA operating permit.

Other alluvial groundwater wells that were installed as part of the HSWA Special Permit Condition requirements include LAO-3A, LAO-4.5C, LAO-6A, MCO-4B, MCO-6B, and MCO-7A. These wells, their pairs mentioned above, and APCO-1 are to be sampled on a quarterly basis during 1995 in response to an EPA request (DOE, 1994). These wells will be sampled for the five radiochemical components, Am-241 and Sr-90, gross alpha and beta activity, and Ra-226. They will also be sampled for primary and secondary water quality standards, miscellaneous chemicals and organics. If no organics are detected in the first sampling event, a more appropriate sampling schedule for organics will be chosen on a well-by-well basis.

Other alluvial wells at the Laboratory are monitored on a regular basis but are not sampled because they are dry or do not contain enough water. These include LAO-4.5A, LAO-4.5B, MCO-4A, MCO-6A, SCO-1, SCO-2, FCO-1, WCO-1, WCO-2, WCO-3, CDBO-4, CDBO-5,

CDBO-7, and CDBO-8. These wells will be sampled if water is ever present in sufficient amounts.

Springs

There are 32 natural springs in and around the Laboratory which are used to monitor water quality of the main aquifer, the intermediate perched groundwater zone and the alluvial perched groundwater zone.

Main aquifer springs sampled include 24 springs in White Rock Canyon and five springs on Indian land near the confluence of Los Alamos Canyon with the Rio Grande (Figure 1).White Rock Canyon springs are sampled annually for the five radiochemical components, secondary water quality standards, miscellaneous chemicals, and PCBs. Springs on San Ildefonso Pueblo land are sampled annually for the five radiochemical components, secondary water quality standards, and miscellaneous chemicals and periodically for Am-241 and Sr-90, gross alpha and beta activity, and Ra-226. These springs are also sampled triennially for primary water quality standards and for organics.

The intermediate perched groundwater zone is regularly sampled at Basalt Spring (Figure 2). This spring is located in lower Los Alamos Canyon just outside the Laboratory boundary. This spring is sampled annually for the five radiochemical components, secondary water quality standards, and miscellaneous chemicals. It is also sampled periodically for Am-241 and Sr-90, gross alpha and beta activity, and Ra-226. As a location specified in Module II of the RCRA operating permit, this spring is sampled annually for organics, primary water quality standards, and Ag, Ni, and Be.

Two springs associated with the alluvial groundwater zone are the Water Canyon Gallery and Hamilton Bend Spring (Figure 2). The Water Canyon Gallery is located near the western boundary of the Laboratory and is used as part of the Laboratory water supply. Hamilton Bend Spring is located in Pueblo Canyon below the site of the former Central sanitary treatment plant. A study in the mid 1960s associated the flow from this spring with effluent from the plant (Purtymun, 1995). At present Hamilton Bend Spring only flows at times of high rainfall or snowmelt.

The Water Canyon Gallery is sampled annually for the five radiochemical components, secondary water quality standards, and miscellaneous chemicals, and periodically for Am-241 and Sr-90, gross alpha and beta activity, and Ra-226. The spring is also sampled triennially for primary water quality standards and for organics. Hamilton Bend Spring is sampled whenever possible for the same constituents.

There are many other springs located in and around the laboratory. There are 12 other springs situated on the eastern flank of the mountains and one on Indian land just east of the Laboratory boundary in Los Alamos Canyon (LA Spring). There are also some springs within the Laboratory boundary including DP Spring, Otowi Seep, Homestead Spring, Stormer Spring, Charlie Spring, Skating Rink Spring, Bulldog Spring, Burning Ground Spring, SWSC Line Spring, TA-16 Spring, and TA-18 Spring. Many of these springs are sampled occasionally for special studies or background water chemistry but are not included as part of the normal environmental surveillance activites.

Proposed Monitoring Network Enhancements

The proposed expansion of the LANL groundwater monitoring network will create a more extensive, multipurpose network to provide a more thorough understanding of water supply issues, potential contamination and contaminant migration; and recharge mechanisms to the aquifer. A judgmental process was used to determine the number of proposed wells and their locations in order to fill known hydrogeologic data gaps, investigate potential contaminant migration, and facilitate compliance with DOE Order 5400.1, and regulatory issues.

The proposed network enhancements include installation of additional wells to the main aquifer, the intermediate perched groundwater zone, and the alluvial perched groundwater zone. It is the Laboratory's belief that these network enhancements will begin to answer many of the existing questions about hydrogeology and contaminant transport. It is not unlikely that further questions will be raised during installation and subsequent sampling of the monitoring network enhancements. This may determine the need for additional wells, constituent analyses, and hydrogeologic studies. It is also possible that, as new hydrogeologic information is obtained, proposed well locations may be changed to address new issues.

Proposed Main Aquifer Wells

Twenty-three wells are proposed by the Water Quality and Hydrology Group for the purpose of characterization of the main aquifer including evaluating recharge and potential flow directions, and monitoring water quality and water supply. The proposed main aquifer wells can be roughly grouped by these purposes although there is intentional overlap. Well locations are shown on Figure 3. Location rationale and sampling objectives are given in Table 4.

Valuable hydrogeologic data can be collected during the drilling of all wells to help characterize recharge to the main aquifer. However, proposed wells in Water Canyon (PWC-1 and PWC-2), in Potrillo Canyon (PPOC-2) in Sandia Canyon (PSC-1) and on both sides of the Pajarito Fault Zone (PPFZ-1 and PPFZ-2) have been specifically located to address this issue.

Wells proposed for evaluating and monitoring the water quality of the main aquifer are located near facilities that discharge or have in the past discharged liquid wastes. These locations are proposed to facilitate RCRA compliance and include two wells associated with the new MWDF and HWTF (PPC-1 and PPC-2), one with the existing HWTF (PTSC-1), three with MDAs (PWC-1, PPC-3, and PPC-4), one with the Mortandad Canyon sediment traps (PMC-1), one with the Sandia Canyon lagoons (PSC-1), one with the TA-33 tritium release site (PAC-1), and a replacement well for TW-1 (PPBC-1).

Locations of wells proposed for filling hydrogeologic data gaps are distributed across the Laboratory so that as much information as possible can be obtained, including information on groundwater flow direction. Proposed wells include two in existing supply well fields (PGC-1 and PLAC-2), two in the townsites (PLATS-1 and PMC-2), four near the western boundary (PLAC-1, PWC-1, PPC-1, and PPOC-1), one south of the boundary (PBHQ-1), one near the northern boundary (PBC-1), and one near the Rio Grande in White Rock Canyon (PCDB-1).

This variability of information desired from each proposed well location means that the objectives of each well must be examined on a case-by-case basis. Objectives for each of the wells may include all or some of the following:

- Geohydrologic analyses of core samples (e.g., hydraulic conductivity, moisture content, moisture characteristic curve, specific particle density, air permeability, and unsaturated conductivity).

- Isotopic analyses and geochemical properties of core and aquifer water samples (e.g., $^{2}H/H$, $^{18}O/^{16}O$, stable and radioactive chlorine isotopes, tritium, and total organic carbon/dissolved organic carbon, cation exchange capacity, bromine, pH, and nitrogen).
- Total hole air flow anemometry.
- Borehole geophysics (e.g., epithermal neutron, gamma-gamma, natural gamma, spectral gamma, magnetic susceptibility, and electro-magnetic induction).
- Full suite of radiologic analyses for selected samples including groundwater.
- Full suite of geochemical analyses for selected water samples.
- Aquifer testing (e.g., testing of discrete water-bearing zones, pump tests, slug tests, etc.).
- Monitoring (sampling for geochemical, radiochemical, and isotopic constituents and monitoring to determine if fluctuations of the potentiometric surface exist).

Once drilled, all wells will be sampled on a quarterly basis for a sufficient amount of time to determine if variations in quality exist. After that time, the sampling frequency will be re-evaluated on a well-by-well basis. Initial sampling will include sampling for the five radiochemical components (Cs-137, Pu-238, Pu-239,240, Total U, H-3, and gross gamma activity), and possibly for Am-241 and Sr-90, gross alpha and gross beta activity, and Ra-226. The wells will also be sampled for primary (Ag, As, Ba, Cd, CN, Cr, F, Hg, N, Pb, and Se) and secondary water quality standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, and pH), miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_3, HCO_3, PO_4, total hardness, total suspended solids, and conductivity), and organics (volatiles, semivolatiles, the 129 priority pollutants, individual herbicides, pesticides, PCBs, oils, or solvents).

If, during the initial sampling event, no organics are found, a more appropriate sampling schedule for organics will be chosen on a well-by-well basis. Also, if certain radiochemical components are not found, their sampling schedule will be adjusted as well.

Once completed, proposed intermediate wells will become part of the environmental surveillance monitoring network.

Proposed Intermediate Perched Groundwater Wells

Fourteen wells are proposed for completion into the intermediate perched groundwater zone. The objectives for these wells are to determine the extent and character of intermediate perched groundwater zones, replace existing wells in areas of known contamination, and investigate areas of possible recharge to the main aquifer. Well locations are shown on Figure 4. Location rationale and sampling objectives are given in Table 5.

Seven of the wells are proposed for the purpose of determining the extent of saturation and to characterize the water quality. Some of these wells will be located in canyons that are receiving or have received liquid wastes. These wells include one in Bayo Canyon (PIBC-1), one in Pueblo Canyon (PIPBC-3), one in Los Alamos Canyon (PILC-3), two in Sandia Canyon (PISC-1 and PISC-2), one in Mortandad Canyon (PIMC-1), and one in Pajarito Canyon (PIPC-1).

Three wells are proposed for the purpose of replacing existing intermediate depth wells of questionable construction. Wells TW-1A, TW-2A, and LADP-3 are located in areas of known

contamination and are to be replaced by wells PIPBC-1 and PIPBC-2 in Pueblo Canyon, and PILC-2 in Los Alamos Canyon.

Four wells are proposed for the purpose of investigating water loss questions and possible recharge to the main aquifer. These wells are PILC-1 in upper Los Alamos Canyon, PICDV-1 in upper Cañada del Buey, PIWC-1 in upper Water Canyon, and PIPOC-1 in Potrillo Canyon.

The variability of information desired from each proposed intermediate well location means that the specific objectives of each well must be examined on a case-by-case basis. Objectives for each of the wells may include all or some of the bulleted items stated above.

Consistent with the proposed main aquifer wells, intermediate wells will also be sampled on a quarterly basis for a sufficient amount of time to determine if variations in quality exist. After that time, the sampling frequency will be re-evaluated on a well-by-well basis. Initial sampling will include sampling for the five radiochemical components, and possibly for Am-241 and Sr-90, gross alpha and gross beta activity, and Ra-226. The wells will also be sampled for primary and secondary water quality standards, miscellaneous chemicals, and organics.

If, during the initial sampling event, no organics are found, a more appropriate sampling schedule for organics will be chosen on a well-by-well basis. Also, if certain radiochemical components are not found, their sampling schedule will be adjusted as well.

Once completed, proposed intermediate wells will become part of the environmental surveillance monitoring network.

Proposed Alluvial Perched Groundwater Wells

Forty-eight to 58 wells are proposed by the Water Quality and Hydrology Group for completion into the alluvial groundwater zone. The objectives for these wells are to investigate the extent of alluvial groundwater zones, replace existing wells in areas of known contamination, and study the lateral extent of moisture under the mesas. Well locations are shown in Figure 5. Location rationale and sampling objectives are given in Table 6.

Because ER Project activities mainly focus on the unsaturated zone and the alluvial perched zones, some well objectives may be accommodated by those activities. In these cases, well locations may be moved to satisfy other objectives or removed from the proposed list.

Twelve wells are proposed for investigation of the extent of alluvial groundwater and for characterization of the water. Of these proposed wells, five are in Pajarito Canyon (PAPC-1 through PAPC-4 and PAPC-6), five are in Water Canyon (PAWC-1 through PAWC-5), one is in Cañon de Valle (PACDV-1), and one is in Ancho Canyon (PAAC-1).

Sixteen wells are proposed for the purpose of replacing existing alluvial wells of questionable construction. Proposed wells PALC-1, PALC-2 and PALC-4 through PALC-7 are to replace Los Alamos Canyon wells LAO-C, LAO-1 through LAO-4, and LAO-4.5. Proposed well PAPBC-1 is to replace well APCO-1. Proposed wells PAMC-1, and PAMC-3 through PAMC-7 are to replace Mortandad Canyon wells MCO-3, MCO-4 through MCO-7, and MCO-7.5. Proposed wells PAPC-7 through PAPC-9 are to replace Pajarito Canyon wells PCO-1 through PCO-3.

Five well transects are proposed for the purpose of studying the lateral extent of moisture across the canyon bottoms and underneath the mesas. These transects are to consist of four to six wells spread across the width of the canyon. Transects are proposed for middle Los Alamos Canyon (PALC-3 through PALC-3E), middle Sandia Canyon (PASC-1 through PASC-1E),

upper Mortandad Canyon (PAMC-2 through PAMC-2E), upper Cañada del Buey (PACDB-1 through PACDB-1E), and middle Pajarito Canyon (PAPC-5 through PAPC-5E).

The variability of information desired from each proposed alluvial well location means that the specific objectives of each well must be examined on a case-by-case basis. Objectives for each of the wells may include all or some of the bulleted items stated above.

Consistent with other proposed wells, alluvial wells will also be sampled on a quarterly basis for a sufficient amount of time to determine if variations in quality exist. After that time, the sampling frequency will be re-evaluated on a well-by-well basis. Initial sampling will include sampling for the five radiochemical components, and possibly for Am-241 and Sr-90, gross alpha and gross beta activity, and Ra-226. The wells will also be sampled for primary and secondary water quality standards, miscellaneous chemicals, and organics.

If, during the initial sampling event, no organics are found, a more appropriate sampling schedule for organics will be chosen on a well-by-well basis. Also, if certain radiochemical components are not found, their sampling schedule will be adjusted as well.

Once completed, proposed alluvial wells will become part of the environmental surveillance monitoring network.

References

Purtymun, 1995. Purtymun, W.D., Geologic And Hudrologic Records of Observation Wells, Test Holes, Test Wells, Supply Wells, Springs, and Surface Water Stations in the Los Alamos Area. LA-12883-MS.

DOE, 1994. Certified letter from Ted Taylor (DOE) to William Honker (EPA Region 6). August 19, 1994.

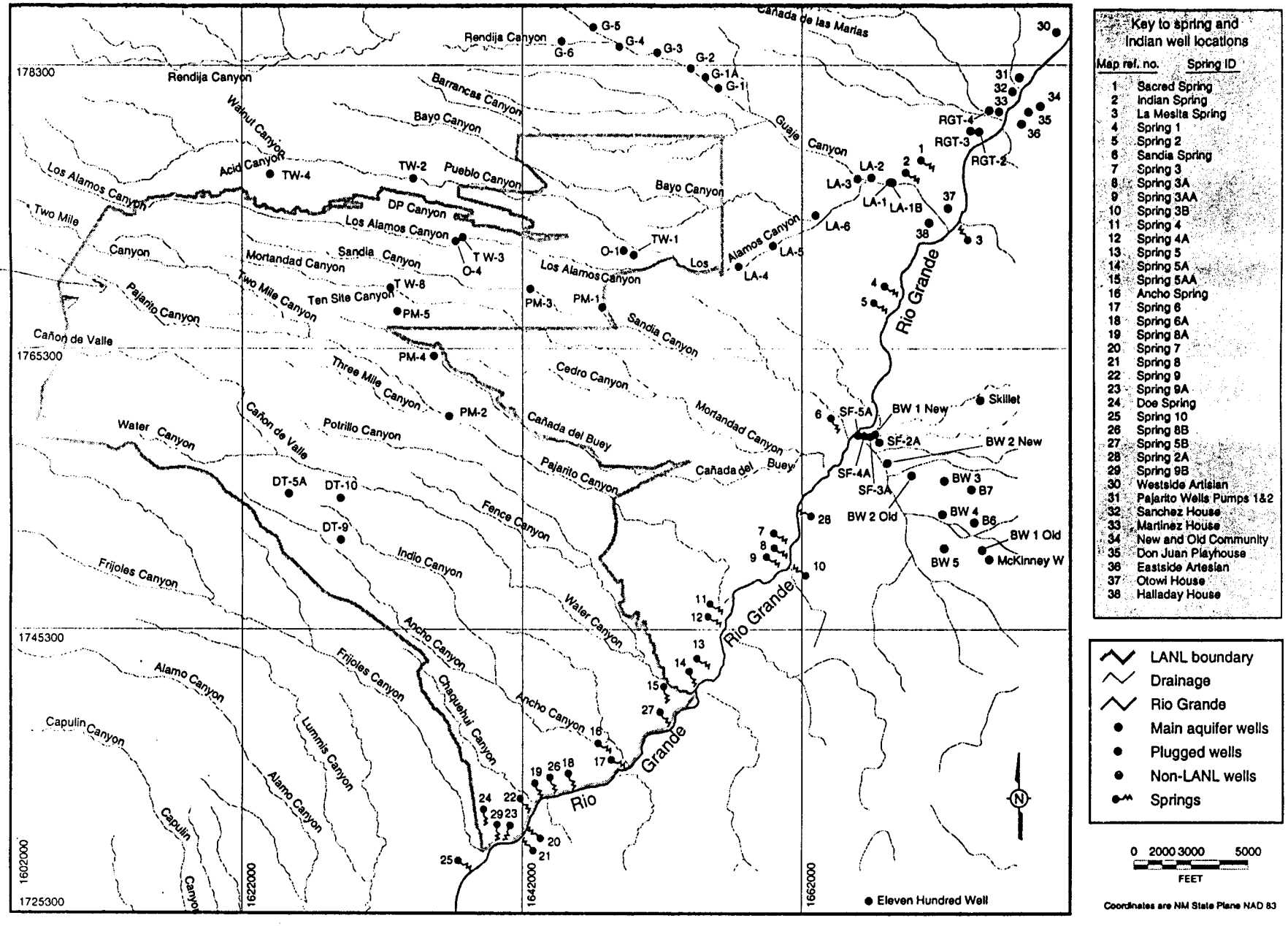


Figure 1. Main aquifer wells and springs.

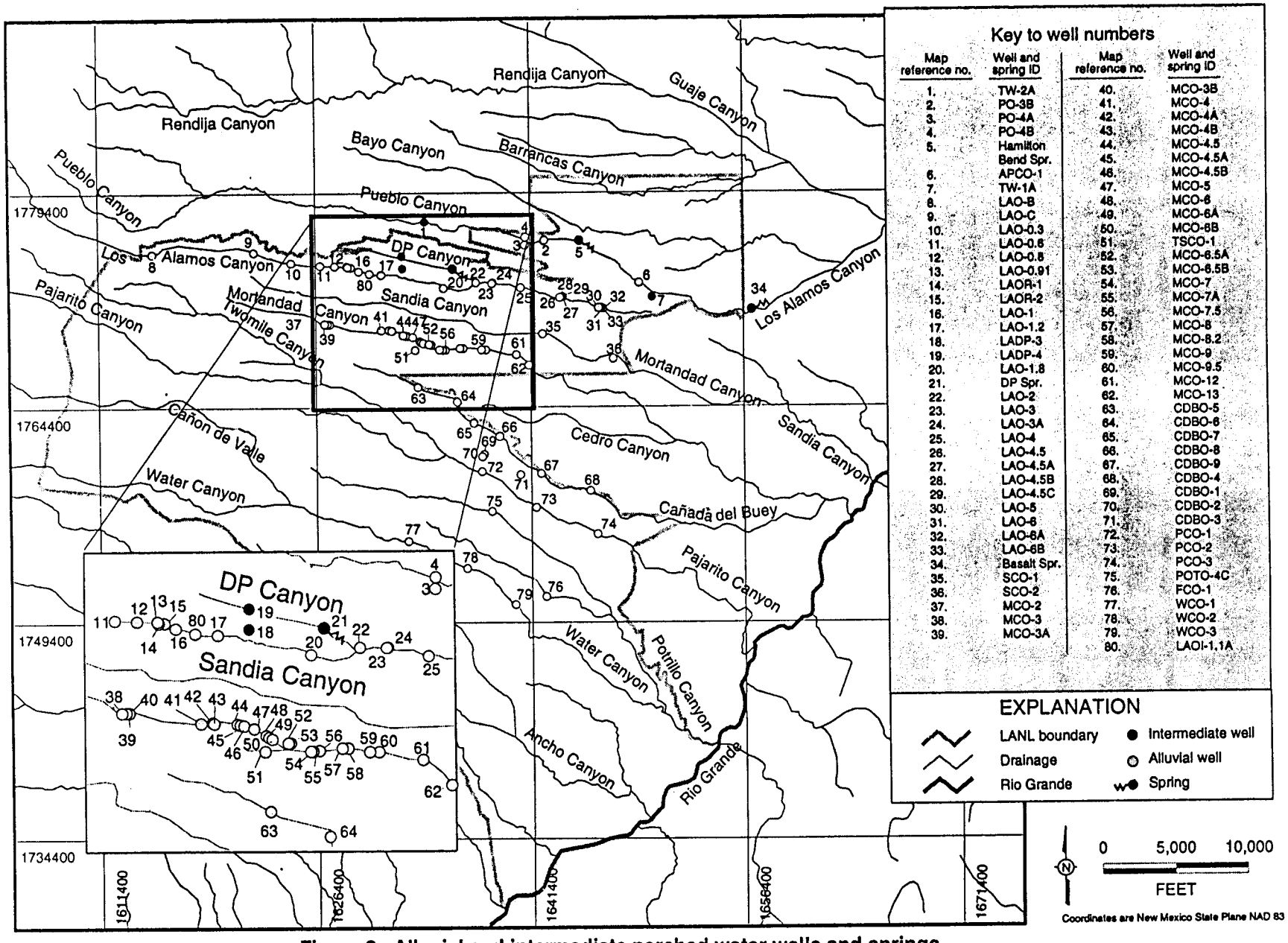
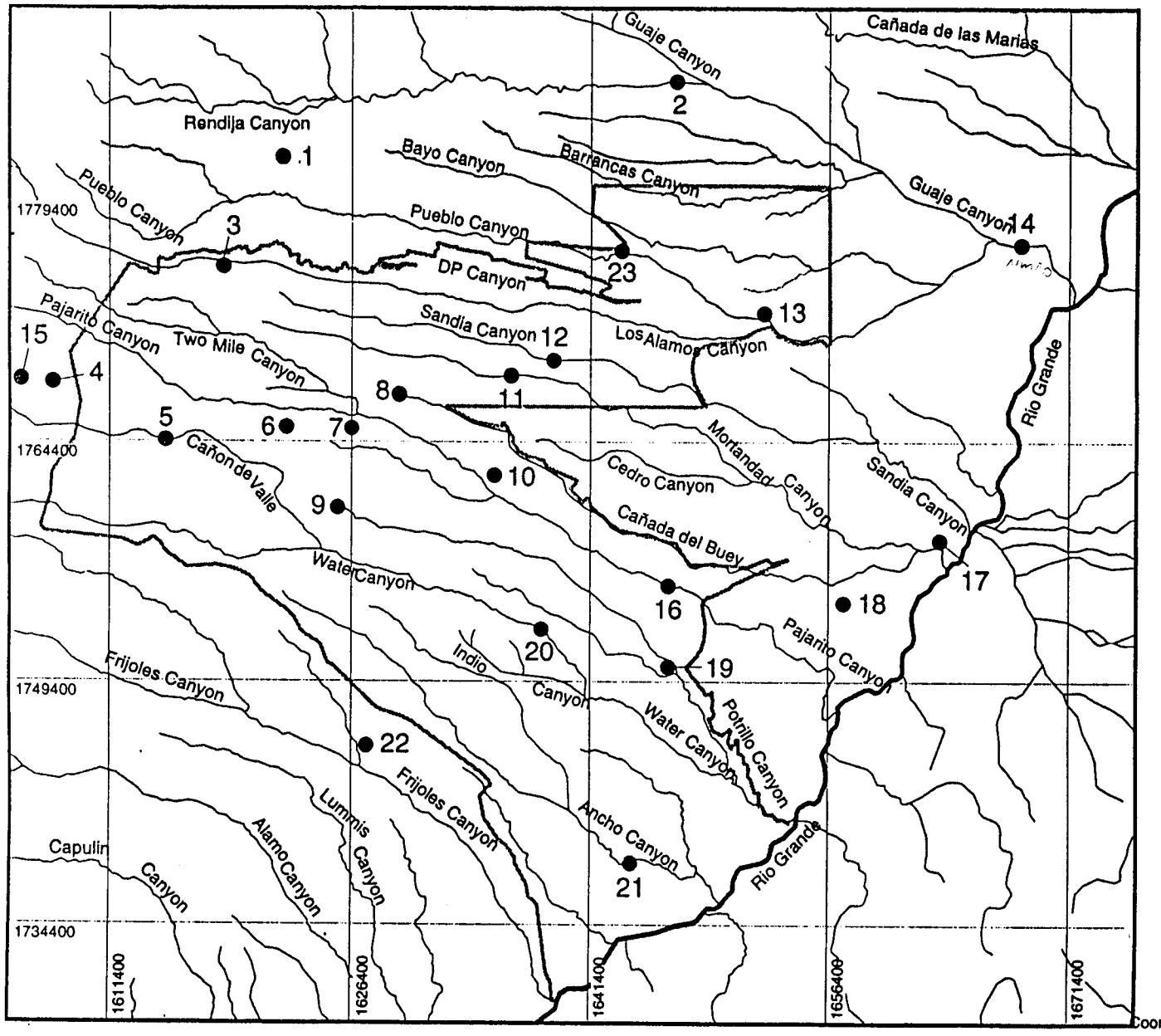


Figure 2. Alluvial and intermediate perched water wells and springs.



Key to well locations

Map reference no.	Proposed well ID
1	PLATS-1
2	PGC-1
3	PLAC-1
4	PPFZ-1
5	PWC-1
6	PPC-1
7	PPC-2
8	PTSC-1
9	PPOC-1
10	PPC-3
11	PMC-1
12	PSC-1
13	PPBC-1
14	PLAC-2
15	PPFZ-2
16	PPC-4
17	PMC-2
18	PCDB-1
19	PPOC-2
20	PWC-2
21	PAC-1
22	PBHQ
23	PBC-1

EXPLANATION

- LANL boundary
- Drainage
- Rio Grande
- Proposed well

0 5,000 10,000
FEET

Coordinates are New Mexico State Plane NAD 83

Figure 3. Proposed main aquifer well locations.

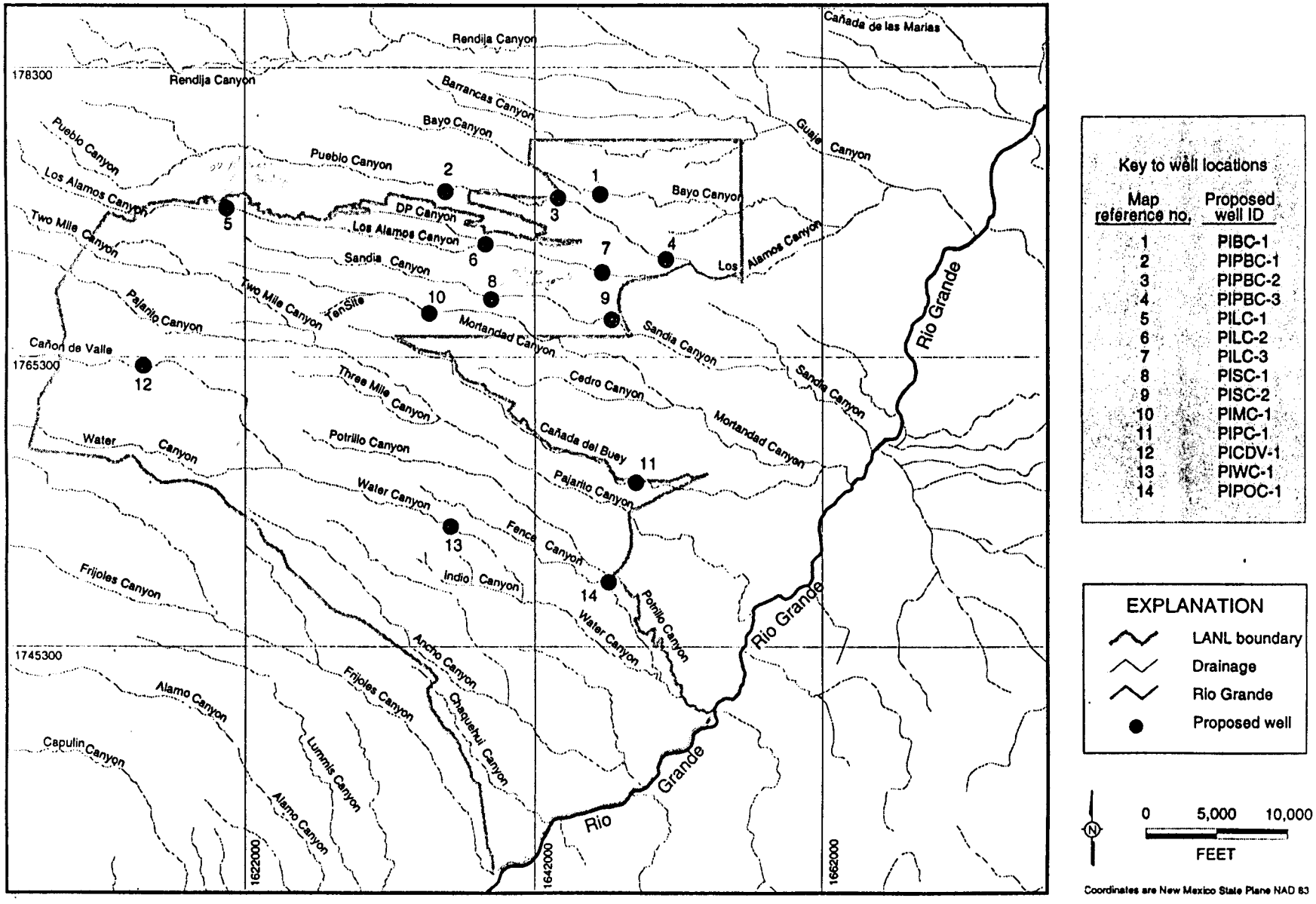


Figure 4. Proposed intermediate aquifer well locations.

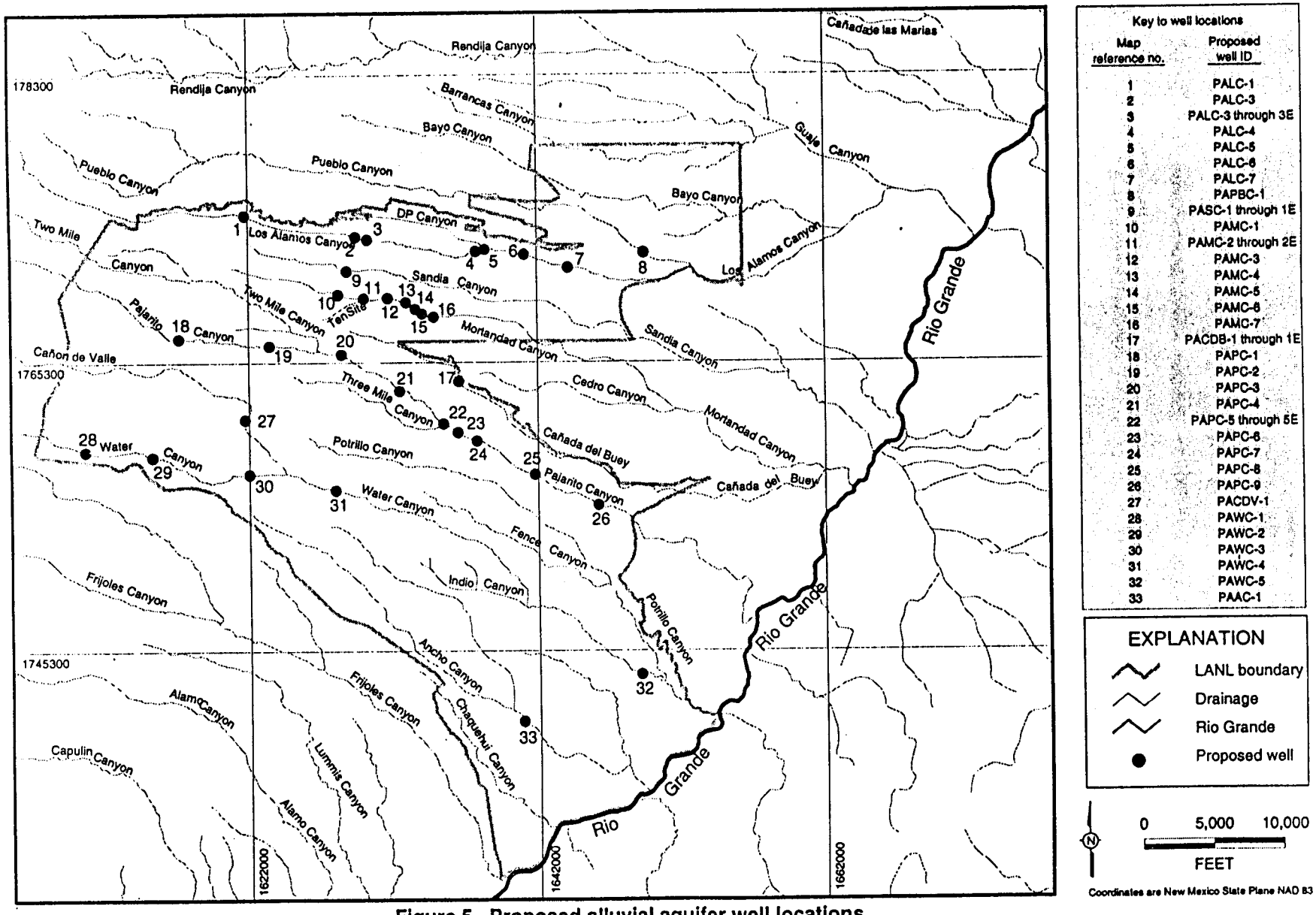


Figure 5. Proposed alluvial aquifer well locations.

Table 1. Objectives For Existing Wells

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[d]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
Main Aquifer Wells									
DT-5A	Frijoles Mesa, TA-49	Hydrologic Characterization of main aquifer	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	1987	Pb	Special Study
DT-9	Frijoles Mesa, TA-49	Hydrologic Characterization of main aquifer	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
DT-10	Frijoles Mesa, TA-49	Hydrologic Characterization of main aquifer	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
TW-1	LA Canyon	Monitor main aquifer downgradient of old TA-45 treatment plant	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
TW-2	Pueblo Canyon	Monitor main aquifer downgradient of old TA-45 treatment plant	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Apr-80	Some misc and Fe, Mn, Li, SO_4, Cl, and F	Special Study - Geothermal Investigation
TW-3	LA Canyon	Monitor main aquifer below LA Canyon alluvial perched GW zone	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Apr-80	Some misc and Fe, Mn, Li, SO_4, Cl, and F	Special Study - Geothermal Investigation
TW-4	Pueblo Canyon	Monitor main aquifer in vicinity of old TA-21 treatment plant	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
TW-8	Mortandad Canyon	Monitor main aquifer below Mortandad Canyon	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
G-1	Guaje Canyon near confluence with Barrancas Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality
G-1A	Guaje Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality
G-2	Guaje Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality
G-3[a]	Guaje Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-67	Ca, Mg, and Si	Special Study - Power plant water quality

Table 1. Continued

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[d]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
G-4	Guaje Canyon near confluence with Rendija Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality
G-5	Guaje Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-67	Ca, Mg, and Si	Special Study - Power plant water quality
G-6	Rendija Canyon near confluence with Guaje Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality
LA-1A	LA Canyon near confluence with Rio Grande	Observation for San Ildefonso Pueblo	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA			
LA-1B	LA Canyon near confluence with Rio Grande	Observation for San Ildefonso Pueblo	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality
LA-2	LA Canyon near intersection of SR 30 and SR 502	Water supply for San Ildefonso Pueblo	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-67	Ca, Mg, and Si	Special Study - Power plant water quality
LA-5	LA Canyon near confluence with Pueblo Canyon	Water supply for San Ildefonso Pueblo	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-67	Ca, Mg, and Si	Special Study - Power plant water quality
O-1[a]	Pueblo Canyon near confluence with LA Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA			
O-4	LA Canyon near confluence with DP Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA			
PM-1	Middle Sandia Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80 Apr-67	Some misc and Fe, Mn, Li, SO_4, Cl, and F Ca, Mg, and Si	Special Study - Geothermal Investigation Special Study - Power plant water quality

Table 1. Continued

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[d]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
							Mar-69	Sand content	Special Study - Pajarito sand pumpage
PM-2	Middle Pajarito Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-80	Some misc and Fe, Mn, Li, SO_4, Cl, and F	Special Study - Geothermal Investigation
							Apr-67	Ca, Mg, and Si	Special Study - Power plant water quality
							Mar-69	Sand content	Special Study - Pajarito sand pumpage
PM-3	Middle Sandia Canyon	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA	Apr-67	Ca, Mg, and Si	Special Study - Power plant water quality
							Mar-69	Sand content	Special Study - Pajarito sand pumpage
PM-4	Upper Canada del Buey	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA			
PM-5	Pajarito Mesa	Water supply for LA Townsite and LANL	Annual	Annual Triennial Annual	RI, WQ2, Misc, Org, WQ1 RIII	DOE Order 5400.1 HSWA (Sec. C, Pt.2) SDWA			
Halladay House	San Ildefonso Pueblo, near LA-1B	Water supply for the Halladay house					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]
Otowi House	San Ildefonso Pueblo, near LA-1B	Water supply for the Otowi house					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]
Martinez house	San Ildefonso Pueblo	Water supply for the Martinez house					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]
Sanchez House	San Ildefonso Pueblo	Water supply for the Sanchez house					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]
New Community Well	San Ildefonso Pueblo	Near Pueblo dwelling, water supply for the dwelling					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]
Pajarito Well Pump 1	San Ildefonso Pueblo	Water supply					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]
Pajarito Well Pump 2	San Ildefonso Pueblo	Water supply					Annual	RI, WQ2, Misc, Org, WQ1	MOU[e]

Table 1. Continued

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring Frequency	Environmental Monitoring Constituents[d]	Environmental Monitoring Programmatic Drivers	Other Sampling Events Frequency	Other Sampling Events Constituents	Other Sampling Events Reason
Intermediate Perched Zone Wells									
TW-1A	LA Canyon	Monitor intermediate perched zone downgradient of old TA-45 treatment plant	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
TW-2A	Pueblo Canyon	Monitor intermediate perched zone downgradient of old TA-45 treatment plant	Annual	Annual Triennial	RI, WQ2, Misc, Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Alluvial Perched Zone Wells									
APCO-1	Pueblo Canyon, near confluence with LA Canyon	HSWA permit requirement to investigate extent of saturation and contamination	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
CDBO-4[b]	Canada del Buey	Observation					Annual	RI, RII, WQ1, WQ2, Misc, Org	NMWQR (SWSC Discharge Plan)
CDBO-5[b]	Canada del Buey	Observation					Annual	RI, RII, WQ1, WQ2, Misc, Org	NMWQR (SWSC Discharge Plan)
CDBO-6	Canada del Buey	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Annual	RI, RII, WQ1, WQ2, Misc, Org	NMWQR (SWSC Discharge Plan)
CDBO-7[b]	Canada del Buey	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Annual	RI, RII, WQ1, WQ2, Misc, Org	NMWQR (SWSC Discharge Plan)
CDBO-8[b]	Canada del Buey	Observation					Annual	RI, RII, WQ1, WQ2, Misc, Org	NMWQR (SWSC Discharge Plan)
FCO-1[b]	Fence Canyon, TA-68	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-1	LA Canyon TA-2/21	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
LAO-2	LA Canyon, near confluence with DP Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
LAO-3	LA Canyon, near confluence with DP Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling

Table 1. Continued

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[d]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
LAO-3A	LA Canyon, near confluence with DP Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-4	LA Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
LAO-4.5	LA Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
							Annual	Org, WQ1, WQ2, Ag, Ni, and Be	RCRA Module II
LAO-4.5A[b]	LA Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-4.5B[b]	LA Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-4.5C	LA Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-6	LA Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-6A	LA Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
LAO-C	LA Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
MCO-3	Mortandad Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Annual	Org, WQ1, WQ2, Ag, Ni, and Be	RCRA Module II
MCO-4	Mortandad Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling

Table 1. Continued

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring Frequency	Environmental Monitoring Constituents[d]	Environmental Monitoring Programmatic Drivers	Other Sampling Events Frequency	Other Sampling Events Constituents	Other Sampling Events Reason
MCO-4A[b]	Mortandad Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-4B	Mortandad Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-5	Mortandad Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
MCO-6	Mortandad Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-6A[b]	Mortandad Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-6B	Mortandad Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-7	Mortandad Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-7A	Mortandad Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
MCO-7.5	Mortandad Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
PCO-1	Pajarito Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
PCO-2	Pajarito Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
PCO-3	Pajarito Canyon	Observation	Annual	Annual Triennial	RI, RII, WQ2, Misc Org, WQ1	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Annual	Org, WQ1, WQ2, Ag, Ni, and Be	RCRA Module II

Table 1. Continued

Well ID	Location[c]	Location Rationale	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[d]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
SCO-1[b]	Sandia Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
SCO-2[b]	Sandia Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
WCO-1[b]	Water Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
WCO-2[b]	Water Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling
WCO-3[b]	Water Canyon	HSWA permit requirement to investigate extent of saturation and contamination					Quarterly for 1995	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE response to EPA request for additional sampling

[a] G-3 taken off-line in 1989 due to pumpage of sand; O-1 has no pump

[b] These wells are dry but are monitored at the given frequency and will be sampled if water is ever present

[c] For specific location see Table 3: Table of Wells and Springs in the Los Alamos Area

[d] Constituents:

- RI Radiochemistry I (Cs-137, H-3, Pu-238, Pu-239 +240, total U, and gross gamma activity)
- RII Radiochemistry II (Am-241, and Sr-90)
- RIII Radiochemisty III (Gross alpha activity, gross beta activity, and Ra-226 if necessary)
- WQ1 Primary Drinking Water Standards (Ag, As, Ba,Cd, CN, Cr, F, Hg, N, Pb, and Se)
- WQ2 Secondary Standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, pH)
- Misc Miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_4, HCO_3, PO_4, total hardness, total suspended solids, and conductivity)
- Org Organics (volatiles, semivolatiles, the 129 priority pollutants, herbicides, pesticides, PCBs, oils or solvents)

[e] MOU is the Memoranda of Understanding between the DOE, LANL, and San Ildefonso Pueblo for environmental sampling to be conducted on the Pueblo

Table 2. Objectives For Springs

Station	Location[b]	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[c]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
Main Aquifer Springs								
Ancho Spring	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Doe Spring	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Rio Spring 2A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 3	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Rio Spring 3A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 3AA	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 3B	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Rio Spring 4	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 4A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 5	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 5A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 5AA	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 5B	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 6	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 6A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study

Table 2. Continued

Station	Location[b]	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[c]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
Rio Spring 7	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Rio Spring 8	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Rio Spring 8A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 8B	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Sep-90	B, Cl, Li, NO_3, and isotopes of H and O	Special Isotopic study
Rio Spring 9	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 9A	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 9B	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Rio Spring 10	White Rock Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Sandia Spring	White Rock Canyon					Annual	RI, WQ2, Misc, PCBs	MOU[d]
Sacred Spring	Lower LA Canyon					Annual Apr-80	RI, WQ2, Misc, PCBs Some misc and Fe, Mn, Li, SO_4, Cl, and F	MOU[d] Special Study - Geothermal Investigation
Indian Spring[a]	Lower LA Canyon					Annual	RI, WQ2, Misc, PCBs	MOU[d]
La Mesita Spring	White Rock Canyon					Annual	RI, WQ2, Misc, PCBs	MOU[d]
Rio Spring 1	White Rock Canyon					Annual	RI, WQ2, Misc, PCBs	MOU[d]
Rio Spring 2	White Rock Canyon					Annual	RI, WQ2, Misc, PCBs	MOU[d]

Table 2. Continued

Station	Location[b]	Overall Frequency	Environmental Monitoring: Frequency	Environmental Monitoring: Constituents[c]	Environmental Monitoring: Programmatic Drivers	Other Sampling Events: Frequency	Other Sampling Events: Constituents	Other Sampling Events: Reason
Intermediate Perched Zone Springs								
Basalt Spring	Lower LA Canyon					Annual	RI, WQ2, Misc, PCBs	MOU[d]
						Annual	Org, WQ1 and Ag, Ni, and Be	RCRA Module II
						Apr-80	Some misc and Fe, Mn, Li, SO_4, Cl, and F	Special Study - Geothermal Investigation
Alluvial Perched Zone Springs								
Water Canyon Gallery	Flank of Jemez Mtns	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Apr-80	Some misc and Fe, Mn, Li, SO_4, Cl, and F	Special Study - Geothermal Investigation
Hamilton Bend Spring[a]	Pueblo Canyon	Annual	Annual Annual	RI, WQ2, Misc, PCBs " " "	DOE Order 5400.1 HSWA (Sec. C, Pt.2)			
Other Springs								
DP Spring	DP Canyon							
Los Alamos Spring	Lower LA Canyon							
Otowi Seep	Pueblo Canyon							
TA-16	TA-16							
SWSC Line Spring	TA-16							
Burning Ground Spring	TA-16							
Bulldog Spring	TA-9							
TA-18 Spring	TA-18							
Homestead Spring								
Stormer Spring								
Charlie Spring								
Skating Rink Spring	Upper LA Canyon							
American Spring	Flank of Jemez Mtns							
Apache Spring	Flank of Jemez Mtns							
Armstead Spring	Flank of Jemez Mtns							
Frijoles Spring 1	Flank of Jemez Mtns							
Frijoles Spring 2	Flank of Jemez Mtns							
Guaje Spring 1	Flank of Jemez Mtns							
Guaje Spring 2	Flank of Jemez Mtns							
PC Spring	Flank of Jemez Mtns							
Quemazon Spring	Flank of Jemez Mtns							

Table 2. Continued

			Environmental Monitoring			Other Sampling Events		
Station	Location[b]	Overall Frequency	Frequency	Constituents[c]	Programmatic Drivers	Frequency	Constituents	Reason
Reservoir Spring	Flank of Jemez Mtns							
Valle Spring 1	Flank of Jemez Mtns							
Valle Spring 2	Flank of Jemez Mtns							

[a] Springs that flow intermittently but are included as part of the annual environmental surveillance activities

[b] For specific location see Table 3: Table of Wells and Springs in the Los Alamos Area

[c] Constituents:

- RI Radiochemistry I (Cs-137, H-3, Pu-238, Pu-239 +240, total U, and gross gamma activity)
- RII Radiochemistry II (Am-241, and Sr-90)
- RIII Radiochemisty III (Gross alpha activity, gross beta activity, and Ra-226 if necessary)
- WQ1 Primary Drinking Water Standards (Ag, As, Ba,Cd, CN, Cr, F, Hg, N, Pb, and Se)
- WQ2 Secondary Standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, pH)
- Misc Miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_4, HCO_3, PO_4, total hardness, total suspended solids, and conductivity)
- Org Organics (volatiles, semivolatiles, the 129 priority pollutants, herbicides, pesticides, PCBs, oils or solvents)

[d] MOU is the Memoranda of Understanding between the DOE, LANL, and San Ildefonso Pueblo for environmental sampling to be conducted on the Pueblo

Table 3. Wells and Springs in Los Alamos and Surrounding Areas.

Wells in Los Alamos and Surrounding Area

STATION	DATE INSTALLED	X-COORDINATE	Y-COORDINATE	ELEVATION	DEPTH CASE	SCREEN INTERVAL	PURPOSE	COMMENTS
Main								
BW-1new	1977	1667244	1759262	5500				
BW-1old	1971	1674752	1750944	5860				
BW-2 new	1977	1668044	1757062	5535				Flowing
BW-2 old		1669844	1756262	5620				
BW-3	1972	1670299	1756095	5620				
BW-4	1972	1672031	1753367	5650				Flowing
BW-5		1672116	1750941	5680				
BW-6	1972	1674202	1752890	5720				Flowing
BW-7	1972	1674157	1755217	5710				
DT-10	1960	1628988	1754449	7020	1409	1080-1390	Test	To be plugged
DT-5A	1960	1625310	1754789	7144	1821	1172-1392	Test	To be plugged
DT-9	1960	1628994	1751493	6936	1501	1040-1500	Test	To be plugged
Eleven Hundred	1952 ?	1666744	1726162	6636	1086		Stock	Also called Trick Well
G-1	1950	1656191	1783609	5973	2000	282-1980	Supply	
G-1A	1954	1655241	1784353	6014	1519	272-1513	Supply	
G-2	1954	1654210	1785123	6056	1970	281-1960	Supply	
G-3	1951	1651676	1786218	6139	1792	441-1785	Supply	Not on line
G-4	1951	1648949	1786452	6229	1930	426-1925	Supply	
G-5	1951	1646950	1787907	6306	1840	462-1830	Supply	
G-6	1964	1644824	1786851	6422	1530		Supply	
LA-1	1946	1668082	1776927	5624	870	60-865	Supply	Plugged 1993
LA-1A							Observation	
LA-1B	1960	1668248	1776952	5602	1750	326-1690	Supply	No pump
LA-2	1946	1666924	1777219	5651	870	105-865	Supply	Pump
LA-3	1947	1665991	1777185	6578	870	105-865	Supply	Plugged 1993
LA-4	1948	1657448	1771233	5975	1964	754-1964	Supply	Plugged 1993
LA-5	1948	1659826	1772533	5840	1750	440-1740	Supply	No pump
LA-6	1948	1662882	1774593	5770	1490	420-1778	Supply	Plugged 1993
McKinney		1675247	1750237	6050				
O-1	1991	1649396	1772232	6396	2497	1017-2477	Supply	
O-4	1991	1637337	1772995	6627	2596	1115-2596	Supply	

STATION	DATE INSTALLED	X-COORDINATE	Y-COORDINATE	ELEVATION	DEPTH CASE	SCREEN INTERVAL	PURPOSE	COMMENTS
PM-1	1965	1647734	1768112	6520	2499	945-2479	Supply	
PM-2	1965	1636786	1760326	6715	2300	1001-2280	Supply	
PM-3	1966	1642631	1769426	6640	2552	956-2532	Supply	
PM-4	1981	1635717	1764674	6920	2875	1260-2854	Supply	
PM-5	1982	1633083	1767809	7095	3093	1440-3072	Supply	
RGT-2	1946	1674676	1780561	5525			Test Hole	Open hole
RGT-3	1946	1674074	1780579	5545			Test Hole	Open hole
RGT-4	1946	1675266	1781956	5537			Test Hole	Open hole
SF-2A	1986	1667580	1758621	5540	1872	1850-1860	Observation	
SF-3A	1987	1604344	1766562	5480	294	274-284	Observation	
SF-4A	1988	1567744	1780862	5470	280	260-270	Observation	
SF-5A	1988	1581244	1799062	5455	300	280-290	Observation	
Skillet	1972	1674657	1761459	5860	1700		Observation	Recorder 1972
TW-1	1950	1650041	1772077	6369	642	632-642	Test	To be plugged
TW-2	1949	1634231	1777268	6648	834	779-789	Test	Screen removed 1990; to be plugged
TW-3	1949	1637727	1773138	6595	815	805-815	Test	To be plugged
TW-4	1950	1624028	1777680	7256	1205	1195-1205	Test	To be plugged
TW-8	1960	1632574	1769507	6878	1065	953-1065	Test	To be plugged
Intermediate								
LADP-3	1993	1632989	1773469	6755	326	316-326	Test	To be plugged
LADP-4	1993	1775718	1633176	7051			Test	
LAOI-1 1A	1994						Observation	
TW-1A	1950	1650057	1772066	6369	225	215-225	Test	To be plugged
TW-2A	1949	1634185	1777288	6650	132	127-132	Test	To be plugged
Alluvial								
APCO-1	1990	1649210	1773020	6368	19.7	4.7-14.7	Observation	HSWA Special Permit
CDBO-1	1985	1637969	1760944	6758	13	5-13	Observation	
CDBO-2	1985	1638119	1761103	6748	12	6-18	Observation	
CDBO-3	1985	1640677	1759611	6670	12	2-12	Observation	
CDBO-4	1985	1645475	1758547	6565	12	8-12	Observation	
CDBO-5	1992	1633583	1765818	6879	17	7-17	Observation	
CDBO-6	1992	1636209	1764760	6817	49	34-44	Observation	Water from PM-4 pump startup
CDBO-7	1992	1637400	1763301	6871	44	29-39	Observation	Water from Pm-4 pump startup

STATION	DATE INSTALLED	X-COORDINATE	Y-COORDINATE	ELEVATION	DEPTH CASE	SCREEN INTERVAL	PURPOSE	COMMENTS
CDBO-8	1992	1639294	1762366	6722	23	13-23	Observation	
CDBO-9	1992	1652119	1759703	6634	34	19-29	Observation	
FCO-1	1989	1642412	1751182	6509	12.4	2.4-12.4	Observation	Dry; HSWA Special Permit
LAO-0.3	1994	1624799	1774512	6968	8.33	5.9-10.9	Observation	
LAO-0.6	1994	1626748	1774333	6910	10.54	8.0-13.0	Observation	
LAO-0.8	1994	1627700	1774275	6887	7.5	7.5-12.5	Observation	
LAO-0.91	1994	1628654	1774207	6862	9.5	9.5-14.5	Observation	
LAO-1	1966	1629395	1773956	6836	25.4	8-28	Observation	
LAO-1.2	1969	1632644	1773956	6740	18	8-18	Observation	
LAO-1.8	1969	1635446	1172661	6680	18	8-18	Observation	
LAO-2	1966	1637608	1773096	6593	29	12-32	Observation	
LAO-3	1966	1638011	1773098	6578	24	16-32	Observation	
LAO-3A	1989	1637981	1773100	6579	15	4.7-14.7	Observation	
LAO-4	1966	1640752	1772729	6519	24	14-24	Observation	
LAO-4.5	1969	1643659	1772088	6452	40	10-40	Observation	Obstruction in well
LAO-4.5A	1989	1643500	1772052	6460	18.5	8.5-18.5	Observation	Dry; HSWA Special Permit
LAO-4.5B	1989	1643512	1772055	6459	34.9	24.9-34.9	Observation	Dry; HSWA Special Permit
LAO-4.5C	1989	1643547	1772077	6458	23.3	13.3-23.3	Observation	HSWA Special Permit
LAO-5	1966	1646203	1771425	6395	25	5-25	Observation	Dry
LAO-6	1966	1646222	1771330	6395	16	6-16	Observation	Dry
LAO-6A	1989	1646222	1771344	6396	14.2	4.2-14.2	Observation	HSWA Special Permit
LAO-B	1994	1615149	1775170	7323	14.24	11.8-26.8	Observation	
LAO-C	1970	1622158	1775250	7050	12.2	3-13	Observation	
LAOR-1		1628595	1774282	6865			Observation	
LAOR-2		1628875	1774202	6853			Observation	
MCO-12	1971	1640444	1768162	6702	108	88-108	Observation	Replaces original MCO-12
MCO-13	1980	1641280	1767460	6674	107	87-107	Observation	Dry
MCO-2	1960	1634044	1768652	7133	9	2-9	Observation	Abandoned
MCO-3	1967	1627363	1770237	7053	12	2-12	Observation	
MCO-4	1963	1631214	1769788	6900	19	14-19	Observation	
MCO-4A	1989	1632029	1769700	6888	19.4	9.4-19.4	Observation	HSWA Special Permit
MCO-4B	1990	1632036	1769697	6888	33.9	8.9-28.9	Observation	HSWA Special Permit
MCO-5	1965	1632466	1769538	6848	46	21-46	Observation	
MCO-6	1974	1633635	1769013	6878	47	27-47	Observation	Replaces original MCO-6
MCO-6.5A	1961	1634144	1768762	6840	45	25-45	Observation	

STATION	DATE INSTALLED	X-COORDINATE	Y-COORDINATE	ELEVATION	DEPTH CASE	SCREEN INTERVAL	PURPOSE	COMMENTS
MCO-6.5B	1961	1624144	1768762	6839	42	22-42	Observation	
MCO-6A	1989	1633833	1768962	6850	36	22.7-32.7	Observation	HSWA Special Permit
MCO-6B	1990	1633631	1768984	6850	47.1	22-42	Observation	HSWA Special Permit
MCO-7	1960	1634518	1768510	6827	69	39-69	Observation	
MCO-7.5	1961	1635455	1768441	6808	60	35-60	Observation	
MCO-7A	1989	1634503	1768509	6828	44.8	34.8-44.8	Observation	HSWA Special Permit
MCO-8	1960	1636021	1768529	6796	84	64-84	Observation	Damaged beyond repair 1976
MCO-8.2	1961	1636044	1768562	6782	70	60-70	Observation	
MCO-9	1961	1638058	1768371	6747	55	45-55	Observation	Dry
MCO-9.5	1961	1628844	1768362	6740	46	26-46	Observation	Dry
PCO-1	1985	1637919	1759991	6687	12.3	4.3-12.3	Observation	
PCO-2	1985	1641700	1757443	6618	9.5	1.5-9.5	Observation	
PCO-3	1985	1646089	1755489	6547	17.7	5.7-17.7	Observation	
PO-3B	1956	1642444	1776062	6250	59	49-59	Observation	
PO-4A	1956	1641044	1775762	6524	21	12-21	Observation	
PO-4B	1956	1625444	1770162	6542	36	31-36	Observation	
POTO-4C	1989	1638644	1757062	6620	48	28-38	Observation	
SCO-1	1989	1642298	1769502	6619	19.3	9.3-19.3	Observation	Dry; HSWA Special Permit
SCO-2	1989	1647259	1767864	6501	19.4	9.4-19.4	Observation	Dry; HSWA Special Permit
SIMO-1	1990	1641799	1766653	6650	104	50-60	Observation	Dry
TSCO-1	1961	1633344	1768462	6857	35	15-35	Observation	
WCO-1	1989	1632759	1755069	6616	34.4	24.4-34.4	Observation	Dry; HSWA Special Permit
WCO-2	1989	1636870	1753228	6625	23.5	13.5-23.5	Observation	Dry; HSWA Special Permit
WCO-3	1989	1640213	1750620	6436	12.4	9-14	Observation	Dry
No map designation								
LAO-0.7							Observation	
MCO-4.9	1973	1632372	1769609	6880	30		Observation	
MT-1	1988	1635263	1768496	6812	69	39-59		Test
MT-2	1988	1636022	1768547	6797	64	44-54		Test
MT-3	1988	1635982	1768659	6797	74	44-64		Test
MT-4	1988	1636559	1768634	6785	74	54-64		Test
POTO-4A	1989	1638644	1757062	6620	174	154-164	Observation	
POTO-4B	1989	1638644	1757062	6620	99	79-89	Observation	
POTO-5A	1989	1638644	1757062	6620	77.5	57.5-67.5	Observation	
POTO-5B	1989	1638644	1757062	6620	27	7-17	Observation	

STATION	DATE INSTALLED	X-COORDINATE	Y-COORDINATE	ELEVATION	DEPTH CASE	SCREEN INTERVAL	PURPOSE	COMMENTS
SF-2B	1986	1667580	1758621	5540	824	802-812	Observation	
SF-2C	1986	1667580	1758621	5540	356	324-334	Observation	
SF-3B	1988	1587244	1778062	5480	169	149-159	Observation	
SF-3C	1988	1584244	1773062	5480	60	40-50	Observation	
SF-4B	1988	1571244	1788062	5470	110	110-120	Observation	Flowing
SF-4C	1988	1570244	1804062	5470	60	40-50	Observation	
SF-5B	1988	1584244	1794062	5455	160	140-150	Observation	
SF-5C	1988	1604144	1782562	5455	69	49-59	Observation	
Fenton Hill								
FH-1	1976	1515244	1775862	8690	450		Supply	
Location 27		1524144	1773662	7650			Observation	Artesian well overflow from tank
Location 4		1522444	1773062	7760			Observation	Hofheins, Community water source
Location 42		1521644	1772362	7840			Observation	Goldstone well
Location 47		1524844	1770762	7640			Observation	Lewis well
Location 48		1524844	1771262	7630			Observation	La Cueva lumber yard well
Location 53		1529044	1776762	7835			Observation	Crane, Sulphur Creek well
Location 54		1528444	1776262	7795			Observation	Hansen, Sulphur Creek well
Location 55		1528744	1776662	7805			Observation	Olsen, Sulphur Creek well
No map designation								
FH-2	1980	1515244	1775862	8691	450		Supply	
FH-3	1980	1515244	1775862	8692	460		Supply	

Springs in Los Alamos Area

STATION	DESCRIPTION	X-COORDINATE	Y-COORDINATE	ELEVATION
Alluvial				
DP Spring	DP Canyon	1636615	1773713	
Hamilton Bend Spring	Lower Pueblo Canyon	1642844	1776162	
Water Canyon Gallery	Flank of mountains	1604144	1762562	8000
Intermediate				
Basalt Spring	Lower LA Canyon	1656544	1770762	6000
Main				
Ancho Spring	Group I	1645644	1739962	5700
Doe Spring	Group II	1642325	1733598	5600
Indian Spring	Lower LA Canyon	1665944	1777262	5640
La Mesita Spring	Group IV	1656544	1770762	5580
Rio Spring 1	Group III	1667928	1767857	5615
Rio Spring 10	Group II	1638023	1728162	5360
Rio Spring 2	Group III	1667312	1766348	5600
Rio Spring 3	Group I	1661487	1753562	5560
Rio Spring 3A	Group I	1661520	1753298	5560
Rio Spring 3AA	Group I	1661291	1751050	5560
Rio Spring 3B	Group IV	1661354	1749814	5500
Rio Spring 4	Group I	1656028	1747887	5570
Rio Spring 4A	Group I	1656144	1747862	5570
Rio Spring 5	Group I	1656056	1742541	5770
Rio Spring 5A	Group II	1655365	1742005	5395
Rio Spring 5AA	Group I	1651144	1742562	5760
Rio Spring 6	Group II	1648882	1735517	5380

STATION	DESCRIPTION	X-COORDINATE	Y-COORDINATE	ELEVATION
Rio Spring 6A	Group II	1646562	1734272	5375
Rio Spring 7	Group II	1645044	1733562	5370
Rio Spring 8	Group II	1644444	1733462	5370
Rio Spring 8A	Group II	1643818	1733508	5520
Rio Spring 9	Group II	1643435	1733317	5485
Rio Spring 9A	Group II	1642742	1733147	5525
Sacred Spring	Lower LA Canyon	1670044	1780362	5640
Sandia Spring	Group I	1663182	1761490	5700
No map designation American Spring	Group I	1601044	1760062	8280
Ancha	Group IV	0	0	0
Apache Spring	Flank of mountains	1599144	1753662	8320
Armstead Spring	Flank of mountains	1599744	1762762	8216
Bulldog Spring	TA-9			
Burning Ground Spring	TA-16			
Canada Spring	Group IV			5780
Charlie Spring				
Frijoles Spring 1	Flank of mountains	1592344	1759562	8430
Frijoles Spring 2	Flank of mountains	1589344	1759362	8430
Guaje Spring 1	Flank of mountains	1600444	1797762	8850
Guaje Spring 2	Flank of mountains	1600444	1796062	8840
Homestead Spring				
JS-2,3	Fenton Hill	1509544	1735762	6220
JS-4,5	Fenton Hill	1511044	1741162	6265
Location 31	Fenton Hill	1491145	1767262	7600
Location 39	Fenton Hill	1502145	1770362	7880
Location 6	Fenton Hill	1523844	1772862	7670
Location JF-1 (Hot Spring)	Fenton Hill	1522544	1757562	6780

STATION	DESCRIPTION	X-COORDINATE	Y-COORDINATE	ELEVATION
Location JF-5 (Hot Spring)	Fenton Hill	1510844	1743662	6400
Los Alamos Spring	Lower LA Canyon	1657444	1770962	6000
Otowi Seep	TA-74			
PC Spring	Flank of mountains	1601844	1773262	8660
Quemazon Spring	Flank of mountains	1603044	1788462	8660
Reservoir Spring	Flank of mountains	1605944	1778862	8000
Rio Spring 2A	Group IV	1662644	1754862	5495
Rio Spring 5B	Group II	1651044	1738162	5390
Rio Spring 8B	Group II	1643244	1733562	5480
Rio Spring 9B	Group II	1642437	1732938	
RV-2 (Hot Spring)	Fenton Hill	1523244	1796862	8360
RV-4 (Hot Spring)	Fenton Hill	1528044	1764762	7360
RV-5 (Hot Spring)	Fenton Hill	1528544	1753962	7340
Skating Rink Spring	Upper LA Canyon			
Stormer Spring				
SWSC Line Spring	TA-16			
TA-16	TA-16			
TA-18 Spring	TA-18	1634193	1760782	
Valle Spring 1	Flank of mountains	1604144	1766462	8260
Valle Spring 2	Flank of mountains	1604344	1766562	8240
VG Spring 4	Valle Grande	1587244	1778062	8600
VG Spring 5	Valle Grande	1584244	1773062	8524
VG Spring 6	Valle Grande	1567744	1780862	8640
VG Spring 7	Valle Grande	1571244	1788062	8700
VT Spring 1	Valle Toledo	1570244	1804062	8570
VT Spring 2	Valle Toledo	1581244	1799062	8732
VT Spring 3	Valle Toledo	1584244	1794062	8868

Table 4. Objectives For Proposed Main Aquifer Wells

Well ID	Proposed Location	Location Rationale	Sampling Information: Frequency	Sampling Information: Constituents[b]	Sampling Information: Programmatic Drivers	WL Measurements: Frequency	WL Measurements: Method
Water Quality and Hydrology Group							
PLATS-1	Los Alamos Townsite	Hydrogeologic control, background water quality	Quarterly[a]	RI, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PGC-1	Guaje Canyon near well field	Observation, facilitate compliance with RCRA issues (top of aquifer)	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PLAC-1	Upper Los Alamos Canyon near well H-19, TA-3	Hydrogeologic control, background water quality	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPFZ-1	East Pajarito Fault Zone, TA-8	Recharge information, Hydrogeological control near west boundary	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PWC-1	Area P, upper Water Canyon near west boundary, TA-16	Hydrogeologic control in SW corner, facilitate compliance with RCRA issues, answer questions left by drilling of SHB-3	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPC-1	Near new MWDF, Pajarito Canyon, TA-67	Hydrogeologic control, address RCRA issues for new facility, observation	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPC-2	Near new HWTF, Pajarito Canyon, TA-67	Address RCRA issues for new facility, observation	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PTSC-1	Near HWTF, Ten Site Canyon, TA-35	Address TA-35 and waste discharge from new facility	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPOC-1	Near OBOD area Potrillo Canyon, TA-15	Hydrogeologic control	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPC-3	Area J, Pajarito Canyon, TA-54	Address RCRA issues, upgradient from Area L (chemical waste) and Area G (rad waste)	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PMC-1	Near sediment traps, Mortandad Canyon,TA-5	RCRA compliance, downgradient from sediment traps	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PSC-1	Near lagoons, Sandia Canyon, TA-53	Address discharge from lagoons, possible effect on intermediate groundwater	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPBC-1	Near well TW-1, Pueblo Canyon, TA-74	Check for tritium, replace TW-1	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PLAC-2	In LA well field	Observation well near Rio Grande with controlled screen length	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPFZ-2	West of Pajarito Fault Zone	Hydrogeologic control west of boundary, recharge information	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPC-4	Area G, Pajarito Canyon, TA-54	Address RCRA issues, downgradient of radioctive waste disposal area	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PMC-2	In White Rock Townsite, Mortandad Canyon	Hydrogeologic control, downgradient of sediment traps, observation near Rio Grande	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer

Table 4. Continued

Well ID	Proposed Location	Location Rationale	Sampling Information: Frequency	Sampling Information: Constituents[b]	Sampling Information: Programmatic Drivers	WL Measurements: Frequency	WL Measurements: Method
PCDB-1	Below White Rock, near Rio Grande and Cañada del Buey	Hydrogeologic control, observation near Rio Grande	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PPOC-2	Near SR 4, Potrillo Canyon, TA-36	Address surface water loss questions	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PWC-2	Water Canyon, TA-68	Address surface water loss questions	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PAC-1	Below TA-33, Ancho Canyon, TA-70	Below TA-33 tritium release site	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PBHQ-1	Near Bandelier HQ	Hydrogeologic control, observation	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PBC-1	Bayo Canyon, TA-74	Hydrogeologic control, continuity of perched zone	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
Environmental Restoration Project							
No. of Wells							
6	Los Alamos/Pueblo Canyons	ER characterization of nature and extent of contamination					
6	Mortandad Canyon	ER characterization of nature and extent of contamination					
3	Pajarito Canyon	ER characterization of nature and extent of contamination					
3	Sandia Canyon/Cañada del Buey	ER characterization of nature and extent of contamination					

[a] Sampling will be quarterly for a sufficient amount of time to determine if seasonal variations in water quality exist. After that time, sampling frequencies will be determined on a well by well basis.

[b] If no organics are found in the first sampling event, their sampling schedule will be modified on a well-by-well basis.

[c] Constituents:

- RI — Radiochemistry I (Cs-137, H-3, Pu-238, Pu-239 +240, total U, and gross gamma activity)
- RII — Radiochemistry II (Am-241, and Sr-90)
- RIII — Radiochemisty III (Gross alpha activity, gross beta activity, and Ra-226 if necessary)
- WQ1 — Primary Drinking Water Standards (Ag, As, Ba,Cd, CN, Cr, F, Hg, N, Pb, and Se)
- WQ2 — Secondary Standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, pH)
- Misc — Miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_4, HCO_3, PO_4, total hardness, total suspended solids, and conductivity)
- Org — Organics (volatiles, semivolatiles, the 129 priority pollutants, herbicides, pesticides, PCBs, oils or solvents)

Table 5. Objectives For Proposed Intermediate Wells

Well ID	Proposed Location	Location Rationale	Sampling Information			WL Measurements	
			Frequency	Constituents[b]	Programmatic Drivers	Frequency	Method
PIBC-1	Middle Bayo Canyon, TA-74	To investigate continuity of perched zone	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PIPBC-1	Near TW-2, Pueblo Canyon	Replacement for TW-2A	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PIPBC-2	Near TW-1, Pueblo Canyon, TW-74	Replacement for TW-1A	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PIPBC-3	Lower Pueblo Canyon, TA-74	Part of RFI Work Plan for OU 1098	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PILC-1	Upper Los Alamos Canyon, TA-43	Identification of source for water discovered in the Puye Formation and to further characterize the water	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PILC-2	Middle Los Alamos Canyon, TA-72	Replacement of LADP-3	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PILC-3	Near TW-3 and O-4, Los Alamos Canyon, TA-73	Investigate perched groundwater encountered during drilling of O-4; near confluence of Los Alamos and DP Canyons	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PISC-1	Middle Sandia Canyon, TA-72	Near proposed main aquifer well PSC-1 to address lagoon discharge effects on perched zone	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PISC-2	Near PM-1, Sandia Canyon, TA-72	Measure and sample perched groundwater encountered during drilling of PM-4	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PIMC-1	Middle Mortandad Canyon, TA-5	Near proposed main aquifer well PMC-1 to address effects of sediment traps on possible perched groundwater	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PIPC-1	Lower Pajarito Canyon, TA-54, near Area G	Near proposed main aquifer well PPC-4 to address possible presence of perched groundwater	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PICDV-1	Upper Cañon de Valle, TA-16	Near proposed main aquifer well PWC-1 to answer questions left by drilling of SHB-3 and investigate possible perched groundwater	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer

Table 5. Continued

Well ID	Proposed Location	Location Rationale	Sampling Information: Frequency	Sampling Information: Constituents[b]	Sampling Information: Programmatic Drivers	WL Measurements: Frequency	WL Measurements: Method
PIWC-1	Upper Water Canyon, TA-68	Near proposed main aquifer well PWC-2 to answer water loss questions and investigate possible perched groundwater	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer
PIPOC-1	Near confluence of Portrillo and Fence Canyons, TA-36	Near proposed main aquifer well PPOC-2 to answer water loss questions and investigate possible perched groundwater	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Dedicated transducer

[a] Sampling will be quarterly for a sufficient amount of time to determine if seasonal variations in water quality exist. After that time, sampling frequencies will be determined on a well by well basis.

[b] If no organics are found in the first sampling event, their sampling schedule will be modified on a well-by-well basis.

[c] Constituents:

- RI — Radiochemistry I (Cs-137, H-3, Pu-238, Pu-239 +240, total U, and gross gamma activity)
- RII — Radiochemistry II (Am-241, and Sr-90)
- RIII — Radiochemisty III (Gross alpha activity, gross beta activity, and Ra-226 if necessary)
- WQ1 — Primary Drinking Water Standards (Ag, As, Ba,Cd, CN, Cr, F, Hg, N, Pb, and Se)
- WQ2 — Secondary Standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, pH)
- Misc — Miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_4, HCO_3, PO_4, total hardness, total suspended solids, and conductivity)
- Org — Organics (volatiles, semivolatiles, the 129 priority pollutants, herbicides, pesticides, PCBs, oils or solvents)

Table 6. Objectives For Proposed Alluvial Wells

Well ID	Proposed Location	Rationale	Sampling Information: Frequency	Sampling Information: Constituents[b]	Sampling Information: Programmatic Drivers	WL Measurements: Frequency	WL Measurements: Method
PALC-1	Upper Los Alamos Canyon, TA-43	Replace monitoring well LAO-C	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PALC-2	Middle Los Alamos Canyon, TA-2 / TA-21	Replace monitoring well LAO-1	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PALC-3 through PALC-3E	Middle Los Alamos Canyon, TA-21	Transect consisting of 4 to 6 wells across the width of the Canyon for lateral control on extent of moisture across canyon and under mesa	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PALC-4	Middle Los Alamos Canyon, TA-73	Replace monitoring well LAO-2	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PALC-5	Middle Los Alamos Canyon, TA-73	Replace monitoring well LAO-3	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PALC-6	Middle Los Alamos Canyon TA-73	Replace monitoring well LAO-4	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PALC-7	Middle Los Alamos Canyon TA-72	Replace monitoring well LAO-4.5	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPBC-1	Lower Pueblo Canyon TA-72	Replace monitoring well APCO-1	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PASC-1 through PASC-1E	Middle Sandia Canyon, TA-60	Transect consisting of 4 to 6 wells across the width of the Canyon for lateral control on extent of moisture across canyon and under mesa	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAMC-1	Upper Mortandad Canyon, TA-60	Replace monitoring well MCO-3	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAMC-2 though PAMC-2E	Upper Mortandad Canyon, TA-60	Transect consisting of 4 to 6 wells across the width of the Canyon for lateral control on extent of moisture across canyon and under mesa	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAMC-3	Upper Mortandad Canyon, TA-60	Replace monitoring well MCO-4	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAMC-4	Upper Mortandad Canyon, TA-5	Replace monitoring well MCO-5	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAMC-5	Upper Mortandad Canyon, TA-5	Replace monitoring well MCO-6	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt 2)	Quarterly	Water level indicator

Table 6. Continued

Well ID	Proposed Location	Rationale	Sampling Information: Frequency	Sampling Information: Constituents[b]	Sampling Information: Programmatic Drivers	WL Measurements: Frequency	WL Measurements: Method
PAMC-6	Upper Mortandad Canyon, TA-5	Replace monitoring well MCO-7	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAMC-7	Upper Mortandad Canyon, TA-5	Replace monitoring well MCO-7.5	Quarterly[a]	RI, RII, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PACDB-1 though PACDB-1E	Upper Canada del Buey, TA-54	Transect consisting of 4 to 6 wells across the width of the Canyon for lateral control on extent of moisture across canyon and under mesa	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-1	Upper Pajarito Canyon, TA-14	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-2	Upper Pajarito Canyon, TA-67	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-3	Middle Pajarito Canyon, TA-46	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-4	Middle Pajarito Canyon, TA-18	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-5 though PAPC 5E	Middle Pajarito Canyon, TA-18	Transect consisting of 4 to 6 wells across the width of the Canyon for lateral control on extent of moisture across canyon and under mesa	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-6	Middle Pajarito Canyon, TA-36	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-7	Middle Pajarito Canyon, TA-36	Replace monitoring well PCO-1	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-8	Lower Pajarito Canyon, TA-36	Replace monitoring well PCO-2	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAPC-9	Lower Pajarito Canyon, TA-36	Replace monitoring well PCO-3	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PACDV-1	Lower Cañon de Valle, TA-15	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec C, Pt.2)	Quarterly	Water level indicator
PAWC-1	Upper Water Canyon, TA-28	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAWC-2	Upper Water Canyon, TA-16	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAWC-3	Upper Water Canyon, TA-37	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator

Table 6. Continued

Well ID	Proposed Location	Rationale	Sampling Information: Frequency	Sampling Information: Constituents[b]	Sampling Information: Programmatic Drivers	WL Measurements: Frequency	WL Measurements: Method
PAWC-4	Middle Water Canyon, TA-15	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAWC-5	Lower Water Canyon, TA-71	Investigate extent of saturated alluvium	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator
PAAC-1	Lower Ancho Canyon, TA-70, near State Road	AIP requested well to verify no perched water	Quarterly[a]	RI, RIII, WQ1, WQ2, Misc, Org	DOE Order 5400.1 HSWA (Sec. C, Pt.2)	Quarterly	Water level indicator

[a] Sampling will be quarterly for a sufficient amount of time to determine if seasonal variations in water quality exist. After that time, sampling frequencies will be determined on a well by well basis.

[b] If no organics are found in the first sampling event, their sampling schedule will be modified on a well-by-well basis.

[c] Constituents:

- RI Radiochemistry I (Cs-137, H-3, Pu-238, Pu-239 +240, total U, and gross gamma activity)
- RII Radiochemistry II (Am-241, and Sr-90)
- RIII Radiochemisty III (Gross alpha activity, gross beta activity, and Ra-226 if necessary)
- WQ1 Primary Drinking Water Standards (Ag, As, Ba,Cd, CN, Cr, F, Hg, N, Pb, and Se)
- WQ2 Secondary Standards (Cl, Cu, Fe, Mn, SO_4, Zn, TDS, pH)
- Misc Miscellaneous chemicals (SiO_2, Ca, Mg, K, Na, CO_4, HCO_3, PO_4, total hardness, total suspended solids, and conductivity)
- Org Organics (volatiles, semivolatiles, the 129 priority pollutants, herbicides, pesticides, PCBs, oils or solvents)