

SNL MWL 07

07-018



**National Nuclear Security Administration**  
Sandia Site Office  
P.O. Box 5400  
Albuquerque, New Mexico 87185-5400



APR 17 2007

**CERTIFIED MAIL-RETURN RECEIPT REQUESTED**

Mr. James Bearzi  
Chief  
Hazardous Waste Bureau  
New Mexico Environment Department  
2905 Rodeo Park Rd. East, Building 1  
Santa Fe, New Mexico 87505



Dear Mr. Bearzi:

On behalf of the Department of Energy (DOE) and Sandia Corporation (Sandia), DOE is submitting a copy of the Plug and Abandonment/Replacement Plan for groundwater monitoring well MWL-BW1. This plan was developed in response to the New Mexico Environment Department (NMED) letter, dated March 26, 2007 entitled "Replacement of Mixed Waste Landfill Groundwater Monitoring Well MWL-BW1; Sandia National Laboratories, EPA ID NM5890110518".

The enclosed Plug and Abandonment/Replacement Plan for MWL-BW1 describes how the well will be replaced, and includes a tentative schedule for implementation of this work. The proposed replacement well will be drilled with air-rotary casing hammer techniques and screened with PVC casing. The replacement well will be located upgradient (east) of the Mixed Waste Landfill (MWL).

The NMED letter expressed concerns regarding use of de-ionized water to collect the April 2006 water sample from MWL-BW1. De-ionized water is routinely used to decontaminate the portable non-dedicated piston pump and spool prior to sampling in accordance with field operating procedures. A check valve is used to prevent backflow through the system, and the de-ionized water remaining in the tubing is completely purged prior to collection of the sample. Purge volumes and indicator parameters are closely monitored, and the transition from de-ionized water to groundwater is clear and well-defined based on conductivity. Hence, there is no potential for dilution of contaminants or alteration of the general chemistry of the samples; a concern expressed by NMED in the letter of March 23, 2007.

The NMED letter also requested a list of other wells at the MWL, or elsewhere at Sandia, where current water levels have fallen to levels such that representative groundwater samples cannot be obtained. The water level in TAV-MW1 was measured at 1.48 ft above the bottom of the well screen; this well is scheduled for plug and abandonment/replacement in the latter half of FY 2007. All other wells in the current Sandia monitoring network have sufficient groundwater to allow representative samples to be collected.

James Bearzi

(2)

APR 17 2007

If you have any questions, please contact me at (505)845-6036, or Dan Pellegrino of my staff at (505) 845-6089.

Sincerely,

  
for Patty Wagner  
Manager

Enclosure

cc w/enclosure:

W. Moats, NMED-HWB (Via Certified Mail)  
J. Kieling, NMED-HWB  
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J. Estrada, NNSA/SSO, MS 0184

## CERTIFICATION STATEMENT FOR APPROVAL AND FINAL RELEASE OF DOCUMENTS

Document title: **Plug and Abandonment/Replacement Plan for MWL-BW1, April  
2007**

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Document author: **Mike Skelly, Dept. 6765**

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I certify under penalty of law that this document and all attachments were prepared under my direction or supervision according to a system designed to ensure that qualified personnel properly gather and evaluate 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 or imprisonment for knowing violations.

Signature: \_\_\_\_\_

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Les E. Shephard  
Vice President  
Energy, Security & Defense Technologies Division 6000  
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Albuquerque, New Mexico 87185  
Operator

4/10/07  
Date

and

Signature: \_\_\_\_\_

*Patty Wagner*  
Patty Wagner  
Manager  
U.S. Department of Energy  
National Nuclear Security Administration  
Sandia Site Office  
Owner and Co-Operator

4/10/07  
Date

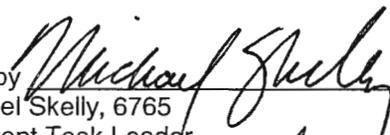
**Monitoring Well Plug and Abandonment Plan  
and  
Replacement Well Construction Plan**

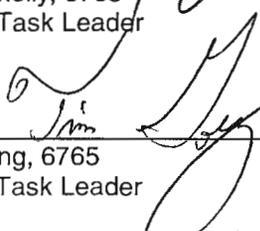
**Decommissioning of  
Groundwater Monitoring Well MWL-BW1**

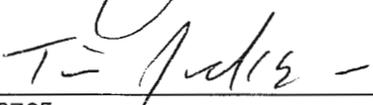
**Installation of Replacement  
Groundwater Monitoring Well MWL-BW2**

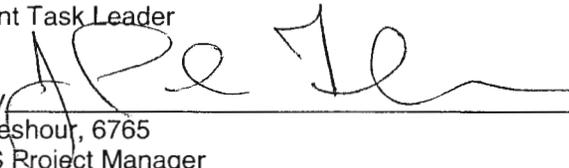
**Environmental Restoration Project  
Sandia National Laboratories, New Mexico**

**Plan Authorization and Implementation**

Prepared by  Date 09 APR 07  
Michael Skelly, 6765  
Assistant Task Leader

Reviewed by  Date 04-09-07  
Tim Goering, 6765  
Assistant Task Leader

Reviewed by  Date 4-9-07  
Tim Jackson, 6765  
Assistant Task Leader

Approved by  Date 4-9-07  
Paul Freshour, 6765  
ER/LTS Project Manager

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## 1 Project and Site Information

Task Description: Sandia National Laboratories/New Mexico (SNL/NM) decommissioning with plug and abandonment of one groundwater monitoring well, and installation of one replacement groundwater monitoring well

Case No.: 98026.01.08

Project Leader/Department No.: Paul Freshour/6765

Scheduled Start Date: June 2007

Estimated Completion Date: August 2007

Operations/Technical Area: Mixed Waste Landfill/Technical Area III

## 2 Regulatory Criteria

This Plug and Abandonment (P&A) Plan outlines the activities and procedures to decommission existing groundwater monitoring well MWL-BW1, and install replacement groundwater monitoring well MWL-BW2.

Regulatory guidance for well plug and abandonment can be found in New Mexico Environment Department, Hazardous Waste Bureau (NMED/HWB) requirements. Section VIII.C of the Compliance Order on Consent (the Order) discusses well abandonment (NMED April 2004):

*“Wells shall be abandoned when they are no longer required in the monitoring network, no longer provide representative groundwater samples because of falling water levels or insufficient productivity, or become damaged beyond repair. The goal of well abandonment is to seal the well in such a manner that it cannot act as a conduit for the migration of contaminants from either the ground surface to the saturated zone or between saturated zones. Respondents shall prepare an abandonment plan for any and all wells that are to be plugged and abandoned, and shall submit the plan to the Department for approval. Respondents shall not abandon any groundwater monitoring well without prior written approval of the Department.”*

Further guidance for well P&A procedures can be found in the New Mexico Office of the State Engineer (OSE) “Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells” (NM OSE August 2005):

*“To plug a well, the entire well shall be filled from the bottom upwards to land surface using a tremie pipe. The well shall be plugged with neat cement slurry, bentonite based plugging material, or other sealing material approved by the state engineer for use in the plugging of non-artesian wells”*

The OSE guidance also states that:

*“Wells encountering contaminated water or soil may require coordination between the office of the state engineer and the New Mexico environment department (or other authorized agency or department) prior to the plugging of the well.”*

And,

*“A licensed well driller shall keep a record of each well plugged as the work progresses. The well driller shall file a complete plugging record with the state engineer and the permit holder no later than twenty (20) days after completion of the plugging. The plugging record shall be on a form prescribed by the state engineer . . .”*

To meet these regulatory requirements, the following tasks will be completed at SNL/NM:

- Decommission well MWL-BW1 because it no longer provides representative groundwater samples due to falling water levels and insufficient productivity.
- Submit this P&A Plan to the NMED/HWB and OSE for review and approval.
- Use a licensed well driller and approved materials to seal the well so that it cannot act as a conduit for the migration of potential contaminants from the ground surface to the saturated zone.
- Upon completion of the P&A activities, submit a plugging record to the OSE and submit a P&A Report describing the field activities to the NMED/HWB.

### **3 Existing Well Information**

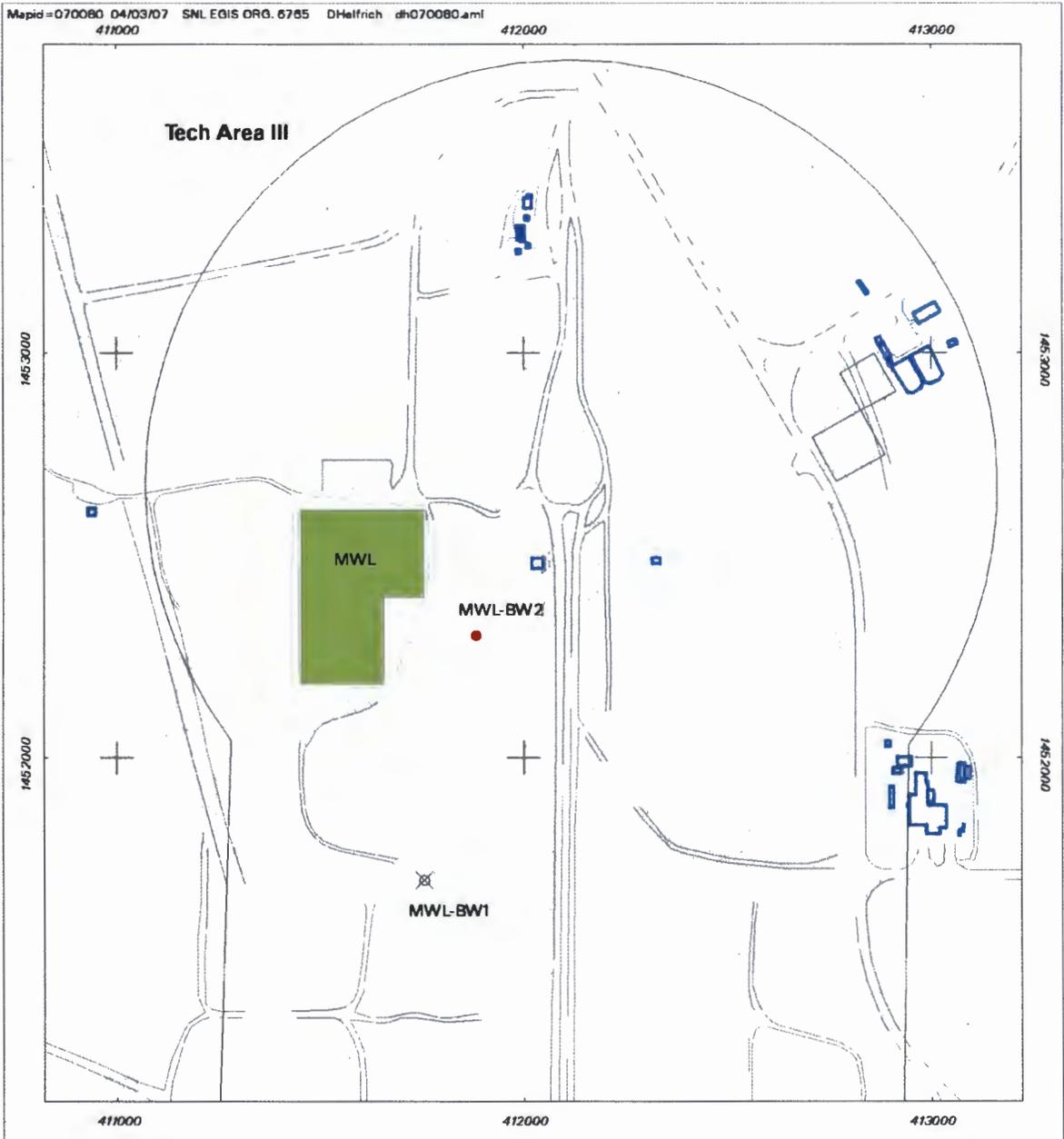
Groundwater monitoring well MWL-BW1 is proposed for decommissioning in this P&A Plan. The monitoring well completion diagram is presented in Attachment 1, and the pertinent well completion information is summarized below.

MWL-BW1 is a background groundwater monitoring well located at the Mixed Waste Landfill (Figure 1). This well was installed in July 1989 and is completed in the regional aquifer with the following well completion details:

- Total depth of the well -- 477 feet (ft) below ground surface (bgs).
- Screened interval -- 452 to 472 ft bgs.
- Construction materials -- Polyvinyl chloride (PVC) riser pipe, stainless steel screen, carbon steel protective surface casing and guard posts, and a concrete well pad.
- Current water level -- ~472 ft bgs.
- Water-bearing strata -- Groundwater occurs in unconsolidated silts and sands (alluvial fan facies) of the upper Santa Fe Group that have relatively low hydraulic conductivities.
- Reason for decommissioning -- The regional water table has dropped to the lowest portion of the screened interval and the well requires excessive time to recover between purging and sampling. There is no evidence that suggests the annular seal is compromised.

### **4 Plugging and Abandonment**

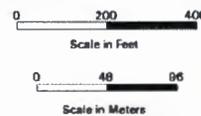
Based on the requirements established by the NMED/HWB and OSE, the groundwater monitoring well MWL-BW1 will be decommissioned. Applicable Field Operating Procedures (FOPs) and Administrative Operating Procedures (AOPs) are listed in Table 1; however, this site-specific P&A Plan should be used as the primary guidance in the field.



**Legend**

-  Existing Groundwater Monitoring Well Proposed for Plug and Abandonment
-  Replacement Groundwater Monitoring Well (location shown schematically)
-  Building / Structure
-  Paved and unpaved Road
-  SWMU 240 / (Long Sled Track) boundary
-  SWMU 76 (MWL)

**Figure 1**  
**Location of MWL-BW1 and Proposed well MWL-BW2**



Sandia National Laboratories, New Mexico  
 Environmental Geographic Information System

**Table 1. Applicable Operating Procedures**

Number of Procedure	Title of Procedure
FOP 94-01	Safety Meetings, Inspections, and Pre-Entry Briefings Rev. 1, 12/16/96
FOP 94-05	Borehole Lithologic Logging, Rev. 0, 2/10/94
FOP 94-25	Documentation of Field Activities, Rev. 0, 11/4/94
FOP 94-26	General Equipment Decontamination, Rev. 1, 2/20/97
FOP 94-28	Health and Safety Monitoring of Organic Vapors (FID and PID), Rev. 2, 4/27/97
FOP 94-38	Drilling Methods and Drill Site Management, Rev. 0, 4/14/94
FOP 94-41	Well Development, Rev. 0, 11/21/94
FOP 94-42	Integration of the design, Installation, Rehabilitation, and Decommissioning of Environmental Restoration Wells, Rev. 1, 5/31/94
FOP 94-43	Decommissioning Of Wells, Rev 0, 5/31/94
FOP 94-45	Designing and Installing Groundwater Monitoring Wells, Rev. 0, 5/31/94
FOP 94-57	Decontaminating Drilling and Other Field Equipment, Rev. 0, 5/31/94
FOP 94-68	Field Change Control, Rev. 2 (in revision)
FOP 94-69	Personnel Decontamination (Level D, C, and B Protection), Rev. 1, 1/23/98
AOP 94-24	System and Performance Audits, Rev. 0, 1/12/95
AOP 94-25	Deficiency Reporting, Rev. 0, 1/12/95
AOP 95-16	Administrative Operating Procedure for Sample Management and Custody, Rev. 1, 4/18/96

**4.1 Goal**

The goal for decommissioning monitoring well MWL-BW1 is to eliminate the potential of this well to act as a conduit for the migration of potential contamination to groundwater. The well materials and annular seals are not believed to pose a threat to groundwater, and therefore will be backfilled in place with proper sealing materials.

**4.2 Objective**

The objective is to seal this monitoring well in such a manner that there is reasonable certainty that the abandonment has adequately eliminated the potential for cross-communication between the land surface and the aquifer, and the potential for downward migration of potential contaminants through the borehole annulus to the aquifer. All grouting techniques and grout mixtures used during decommissioning will minimize grout intrusion into the native formation.

**4.3 Implementation**

General activities for the implementation of the P&A include:

- 1) Remove all monitoring well surface completion features,
- 2) Backfill the casing with well-plugging materials, and
- 3) Construct a new surface pad/monument.

SNL/NM personnel and the selected drilling contractor will remove all surface completion features, such as guard posts, concrete well pads, and surface protective casing. Care will be taken to prevent materials from falling down the well casing and possibly causing a downhole obstruction. The well will be abandoned with casing left in place, and the well casing will be cut off at approximately 5 ft bgs.

The well screen and blank well casing will be sealed by lowering a tremie pipe to the base of the well casing (below the base of the screen) and injecting the plug material (bentonite grout) using a diaphragm or equivalent pump system. The plug material will be filled to within 5 ft of the ground surface and allowed to set overnight. If the level of the plug material in the well casing drops overnight, additional bentonite grout will be added to again reach within 5 ft of ground level.

Once the well has been properly plugged, the decommissioning process will be completed by placing concrete in the upper 5 ft of the well/borehole and installing a concrete slab on the surface. The concrete pad will be 4 inches thick with a 2 ft by 2 ft area, constructed in the ground so that the surface of the finished concrete slab will be 1 to 2 inches above the natural ground surface. A brass marker containing the well name and date of decommissioning will be set in the concrete pad.

## **5 Monitoring Well Installation**

A replacement monitoring well (TAV-MW10) will be installed after MWL-BW1 has been decommissioned.

### **5.1 Objective**

Install a 5-inch (inside diameter) PVC casing replacement monitoring well to provide representative groundwater samples. The replacement monitoring well borehole will be drilled using Air-Rotary Casing-Hammer (ARCH) drilling methods at a location a minimum of 25 ft away from existing well location (if possible). Based on discussions with NMED/HWB personnel, the replacement well for MWL-BW1 was determined to be better suited at a location approximately 700 ft northeast of the original location (Figure 1). The proposed replacement well location on Figure 1 is shown schematically; the actual location will be selected with concurrence with NMED/HWB personnel and may vary due to utility clearance and land use issues.

### **5.2 Implementation**

Applicable FOPs and AOPs are listed in Table 1; however, this site-specific plan should be used as the primary guidance in the field.

#### **5.2.1 Borehole Drilling**

The ARCH drilling method will use environmentally-friendly lubricants and will be able to penetrate highly variable lithologies such as cobbles, boulders, gravel, sand, clay, and caliche while maintaining an open, competent borehole. The total depth of the borehole will be determined by the SNL/NM field geologist, but the depths are anticipated to be 30 to 35 ft deeper than the original well. After reaching total depth, the cased borehole will be logged using natural gamma and neutron wire-line geophysical methods.

Minimal water (but no other foams/liquids) in the form of "mist" may be introduced into the borehole to aid in the removal of cuttings. Waste generation will be kept to a minimum. Borehole cuttings will be contained within an area adjacent to the well. Water produced from the well during drilling or development will be contained in 55-gallon drums and placed on spill control pallets.

Monitoring well MWL-BW2 is anticipated to be drilled to approximately 507 ft bgs. The well screen completion interval is expected to be approximately 472 to 502 ft bgs with a 5-foot sump placed below the screen.

### **5.2.2 Well Construction**

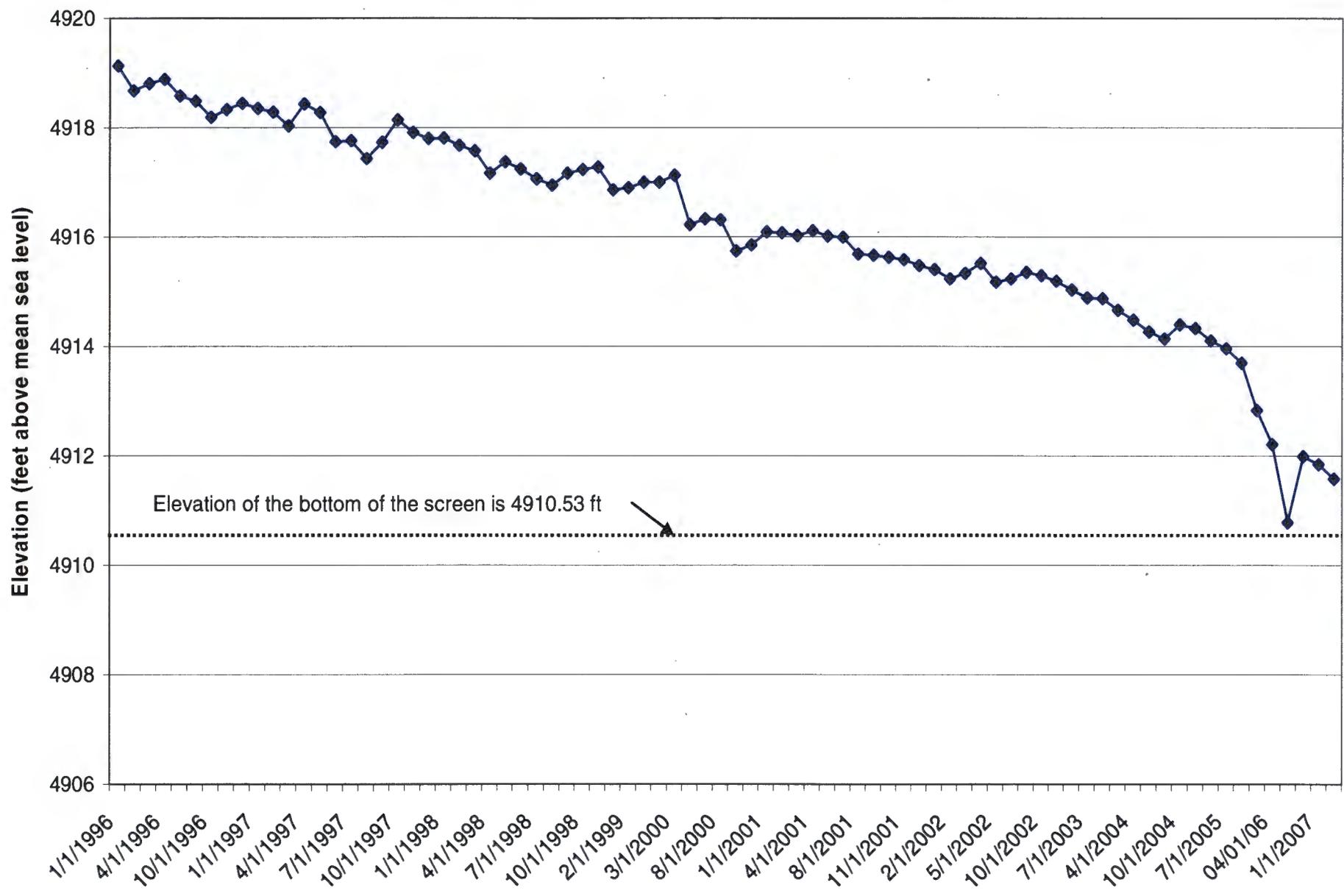
The monitoring well will be completed as specified in this plan. The water-table monitoring well will be installed through the temporary steel drive casing (nominal 10-inch diameter), and completed using 5-inch inner diameter, flush threaded, PVC Schedule-80 water well casing. No solvents, cleaners, or lubricants will be used for construction of the monitoring well. The casing will be delivered pre-cleaned and bagged, or steam-cleaned on site prior to installation. To preserve the integrity of the well materials, the well screen and riser pipe will be suspended in the borehole until the primary filter pack, bentonite pellet seal and annular seal are installed.

The regional aquifer in the study area is being over-pumped and the water table at MWL-BW1 is rapidly declining with a decline rate of 1.14 feet/year over the last several years (Figure 2). To accommodate the rapidly declining water table, a 30-ft length of screen with a 0.020-inch slot size will be used for the replacement well. A 5-ft sump will be placed at the base of the screen and sealed with a threaded end cap. PVC centralizers will be placed at the base and top of the well screen. The screen for this water-table well will be placed so that the top of the screen is approximately 5 feet above the static water level.

The annulus surrounding the well screen will be filled with a primary filter pack of clean 10-20 silica sand. The primary filter pack will extend from the bottom of the sump to at least 5 ft above the top of the screen. A 5-ft thick layer of clean 40-60 sand will be placed above the primary filter pack. Both sand packs will be tagged using a tag line to verify their depth. Preliminary well development using a surge block will be performed at this time to help settle the filter pack.

A 30-foot thick layer of ¼-inch bentonite pellets or 3/8-inch bentonite chips will be placed above the filter pack prior to emplacement of the bentonite-grout annular seal. Each 5 ft thickness of bentonite pellets/chips added will be hydrated before adding the next 5-ft thickness of bentonite pellets/chips. The final lift of bentonite pellets/chips will be allowed to set for a time adequate for hydration (at least 1 hour). The remaining annular space to ground surface will then be filled with bentonite grout. To prevent overloading, the bentonite grout will be installed in at least 2 lifts (each lift filling approximately one-half of the borehole annulus above the bentonite pellets/chips). Each lift of bentonite grout will be allowed to set overnight. The bentonite grout will be topped off to within 6-inches to 1-ft bgs.

Figure 2 MWL-BW1 Groundwater Elevations Over Time



The well casing will extend approximately 30 inches above ground surface with a water-tight cap. The monitoring well will be completed with protective steel casing with a hinged locking cap. The protective casing will be primed and painted yellow. A 3-ft by 3-ft, sloped concrete pad will be constructed around the casing. The pad will contain a 3-in brass cap stamped with the well identification. Three, 4-inch diameter concrete-filled, steel guard posts (also primed and painted yellow) will be placed around the pad, equidistant from the well.

### **5.2.3 Well Development**

Well development will be completed at least 48 hours after grouting. The well will be developed for approximately 10 hours, and will consist of pumping, surge-block, swabbing, and/or bailing techniques. During development, the groundwater field parameters will be continuously monitored, and development will continue until parameters have stabilized. All development water will be contained in drums and will not be allowed to discharge to the ground surface.

## **6 Equipment Decontamination**

The drilling rig and related equipment will be decontaminated at the decontamination pad in Technical Area III prior to the beginning of drilling operations. Decontamination of equipment will also be required after completing the well. Decontamination waste will be kept to a minimum and containerized in drums placed on spill control pallets at the decontamination pad.

## **7 Health and Safety**

Level D personal protective equipment is required for all drilling operations. Health and Safety records associated with drilling and development personnel will be maintained on site and will be available at the commencement of drilling activities. All field personnel will operate under an SNL/NM Health and Safety Plan (HASP) and will have SNL/NM-required training including 40-Hr OSHA HAZWOPER and subsequent yearly refresher courses. An SNL/NM Subject Matter Expert will perform a safety inspection of the drill rig before drilling commences.

## **8 Pre-field activities**

Pre-field activities that must be completed prior to drilling include:

- Preparation of the Statement of Work for drilling and monitoring well installation;
- SNL/NM digging permit request and approval;
- HASP preparation, review, and signatures;
- National Environmental Policy Act (NEPA) review and signatures;
- Sample bottle order for waste samples through Sample Management Office;
- Waste Management Plan preparation;
- Field checklist completion, review, and approval; and
- Readiness review meeting.

## **9 Mobilization and Site Setup**

SNL/NM personnel will ensure that containers for cuttings have been obtained and are ready for drilling operations. Roll-off bins supplied by SNL/NM will be used to collect drill cuttings for waste management purposes.

## **10 Reporting**

Based on the requirements established by the NMED/HWB, OSE and SNL/NM FOPs, the field activities associated with decommissioning and installation of the monitoring wells will be documented.

### **10.1 Decommissioning Records**

All decommissioning field activities will be documented in a field log book per guidance in FOP 94-25. Upon completion of decommissioning of a well, the P&A Report will document all site activities and provide final as-built well decommissioning diagram (Attachment 2). Attachment 3 will be used to assure that all records are completed, approved, and submitted for proper records management. The following list of documents and records that are generated as part of the decommissioning process will be provided to the SNL/NM Well File Coordinator who, in turn, will submit them to the SNL/NM Customer-Funded Records Center:

- Monitoring Well Plugging and Abandonment Request
- Well Plugging and Abandonment Form
- Site-Specific Well Plugging and Abandonment Work Plan
- Site-Specific Well Plugging and Abandonment Report
- Plugging and Abandonment Documentation and Approval Checklist
- Waste Management Plan
- Field Log Book
- Detailed as-built diagram (Attachment 2)

All decommissioning activities performed at SNL/NM will be accurately and concisely documented in a final P&A Report to be submitted to the NMED/HWB and the OSE. The P&A Report will contain a brief narrative describing actual work performed at the site and any variances to the site-specific P&A Plan. Information to be contained in the P&A Report include: (1) daily field activity notes, (2) all materials used, (3) a final "as-built" plugging and abandonment diagram, and (4) documentation of notification of SNL/NM GIS group and the appropriate regulatory agencies. The Well Plugging and Abandonment Form (Attachment 2) will be completed and included as part of the P&A Report.

Further P&A reporting elements are required by the OSE (OSE August 2005). SNL/NM personnel and the licensed well driller (contractor) will submit a plugging record with the state engineer no later than twenty (20) days after completion of the plugging. The record will include the following elements:

- Name and address of the well owner
- Well driller's name and license number
- Name of each drill rig supervisor that supervised the well plugging
- State engineer file number for the well (if available)
- Location of the well (reported in latitude and longitude)
- Dates when plugging began/concluded
- Plugging material(s) used
- Depth of the well
- Size and type of casing
- Location of perforations

- Location of the sanitary seal
- Completed well log with depth and thickness of all strata plugged, including whether each stratum was water bearing

## **10.2 Well Installation Records**

All well installation field activities will be documented in a field log book per guidance in FOP 94-45. Upon completion of the well installation, the Field Report will document all site activities and provide final as-built well completion diagrams (Attachment 4). The Field Report will contain a brief narrative describing actual work performed at the site and any variances to the site-specific Well Installation Plan. Information to be contained in the Field Report include: (1) daily field activity notes, (2) all materials used, (3) a final "as-built" well completion diagram, and (4) documentation of notification of SNL/NM GIS group and the appropriate regulatory agencies. The documentation will also include the 37 information elements required in Section VIII.D of the Order (NMED April 2004). The following list of documents and records that are generated as part of the well installation process will be provided to the SNL/NM Well File Coordinator who, in turn, will submit them to the SNL/NM Customer-Funded Records Center:

- Well permit agreement
- Well file contents checklist
- Well data summary sheet
- Statement of work for drilling the well
- Drilling permit
- Lithologic (boring) log
- Well construction diagram and completion parameters
- Well development data and groundwater parameters
- Copies of field logbook (geologist, driller)
- Surveyed elevations and location in State Plane coordinates
- Location map
- Water level measurements
- Aquifer test data
- Analytical data
- Waste management documentation
- Photographs

## **11 References**

NMED April 2004, "Compliance Order on Consent Pursuant to the New Mexico Hazardous Waste Act 74-4-10: Sandia National Laboratories Consent Order," New Mexico Environment Department, April 24, 2004.

OSE August 2005, "Rules and Regulations Governing Well Driller Licensing; Construction, Repair and Plugging of Wells" New Mexico Office of the State Engineer, August 2005.

# Attachment 1

## Monitoring Well Completion Diagram for MWL-BW1 WELL DATABASE SUMMARY SHEET

Project Name:	MIXED WASTE LANDFILL	Geo Location:	TA III
ER ADS #:	1289	Well Completion Date:	01-JUL-1989
Well Name:	MWL-BW1	Completion Zone:	SAND AND GRAVEL
Owner Name:	SNL/NM	Formation of Completion:	SANTA FE
Date Drilling Started:	24-JUN-1989	Well Comment:	WATER LEVEL MEASURED ON 5/14/90
Drilling Contractor:	STEWART BROTHERS		
Drilling Method:	MUD ROTARY		
Borehole Depth:	519		
Casing Depth:	477.17		

### Survey Data

Survey Date: 12-APR-1990  
 Surveyed By: SANTIAGO ROMERO AND ASSOCIATES

### State Plane Coordinates

(X) Easting: 411756.001  
 (Y) Northing: 1451698.73

### Surveyed Elevations (FAMSL)

Protective Casing: 5385.05  
 Top of Inner Well Casing: 5384.51  
 Concrete Pad: 5383.35  
 Ground Surface: 5382.7



### Calculated Depths and Elevations

Initial Water Elevation: 4923.3 (FAMSL)  
 Initial Depth To Water: 461.21 (FBGS)

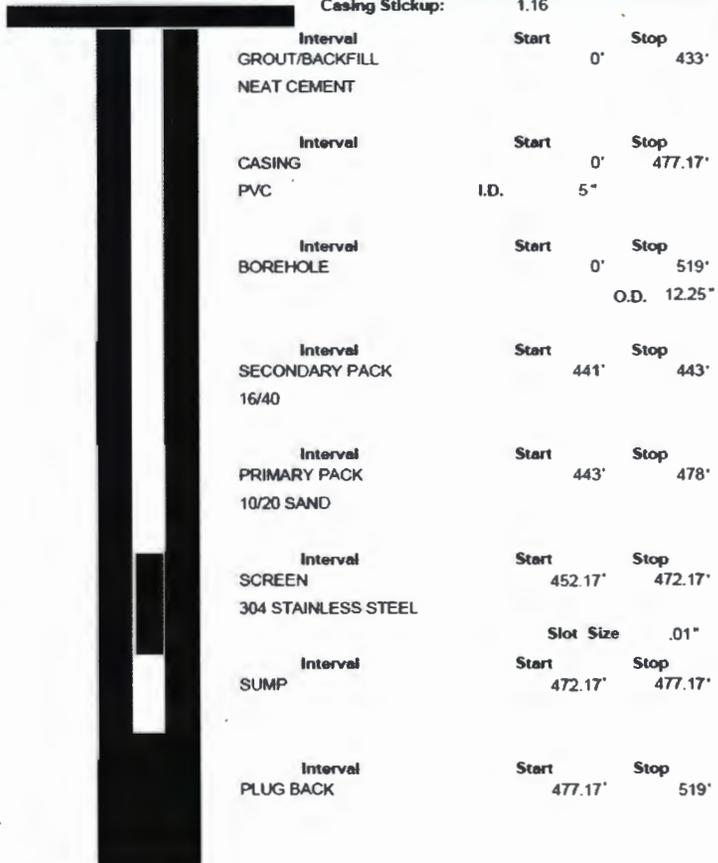
Last measured water level was measured on 17-OCT-2006

FASL

Date Updated: 14-MAR-00

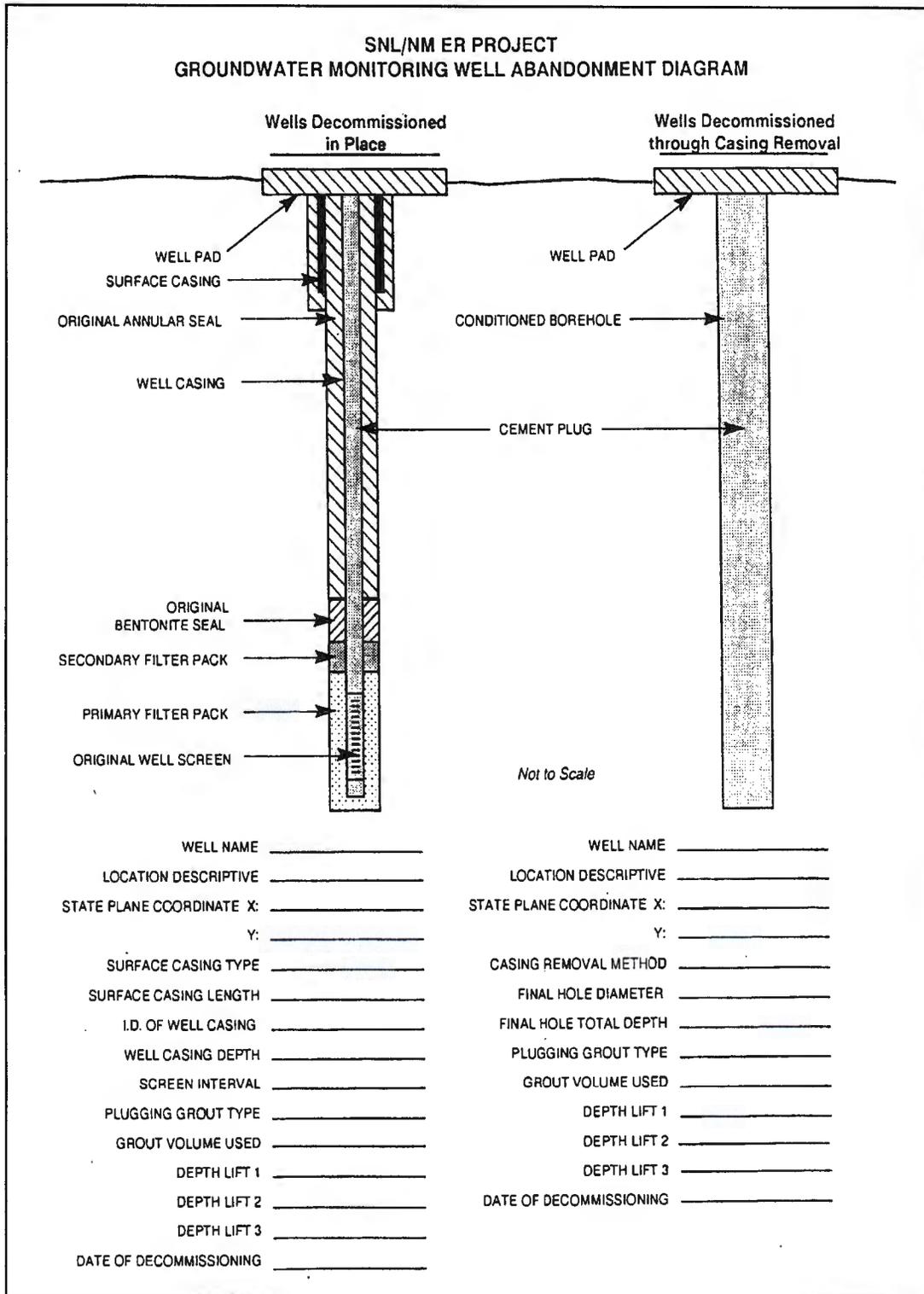
Date Printed: 12-MAR-2007

### Completion Data Measured Depths (FBGS)



## Attachment 2

### Groundwater Well Abandonment Diagram



Attachment 3

Well Plug and Abandonment Form

SNL/NM ER PROJECT  
WELL PLUGGING AND ABANDONMENT FORM

Page 1 of 1

- 1. Preabandonment Well Specifics:
  - a. Well Identification \_\_\_\_\_
  - b. Location (geographic description and state plane coordinates) \_\_\_\_\_
  - c. Reported Well Depth (feet) \_\_\_\_\_
  - d. Field Well Depth (feet) \_\_\_\_\_
  - e. Screened Intervals(s) (feet) \_\_\_\_\_
  - f. Screen Diameter(s) (inches) \_\_\_\_\_
  - g. Screen Type(s) (SS or PVC, etc.) \_\_\_\_\_
  - h. Casing Diameter(s) (inches) \_\_\_\_\_
  - i. Casing Type (PVC, steel, etc.) \_\_\_\_\_
  - j. Artesian or Nonartesian Aquifer \_\_\_\_\_

- 2. Reason for Abandonment: \_\_\_\_\_  
\_\_\_\_\_

- 3. Abandonment Specifics:
  - a. Date Abandonment Started \_\_\_\_\_
  - b. Date Abandonment Completed \_\_\_\_\_
  - c. ID Number of Field Log Book Used \_\_\_\_\_
  - d. Site Personnel \_\_\_\_\_
  - e. Drilling Method Used \_\_\_\_\_
  - f. Grout Used \_\_\_\_\_
  - g. Casing Removed (Y or N) \_\_\_\_\_
  - h. Concrete Pad Inscription \_\_\_\_\_

- j. Briefly Describe Abandonment Method: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- k. Disposition of Materials Removed From Well: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

- 4. Comments or Problems Encountered: \_\_\_\_\_  
\_\_\_\_\_

Completed by: \_\_\_\_\_  
Printed Name Signature Date

Subcontractor: \_\_\_\_\_

Drilling Contractor: \_\_\_\_\_ License No.: \_\_\_\_\_

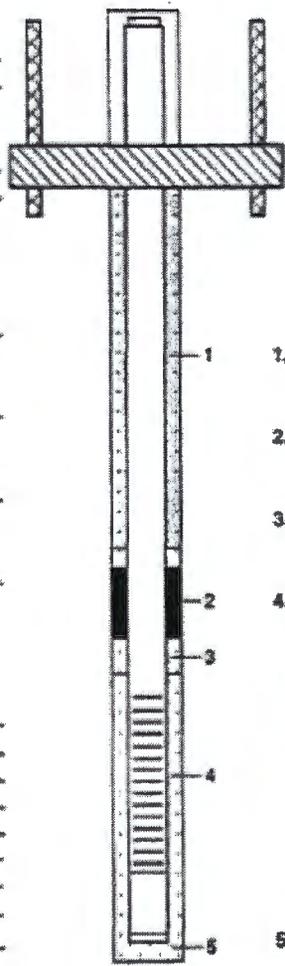
# Attachment 4

## Groundwater Monitoring Well Data Sheet

SNL/NM Groundwater Monitoring Well Data Sheet	
PROJECT NAME: _____	GEOGRAPHIC LOCATION: _____
ER ADS #: _____	WELL COMPLETION DATE: _____
WELL NAME: _____	COMPLETION ZONE: _____
OWNER: _____	FORMATION OF COMPLETION: _____
DATE DRILLING BEGAN: _____	REMARKS: _____
DRILLING CONTRACTOR: _____	_____
DRILLING METHOD: _____	_____
BOREHOLE DEPTH: _____	_____
BOREHOLE DIAMETERS: _____	_____



Survey Data		Completion Data
Survey Date: _____		<b>Measured Depths</b> (feet below ground surface)
Surveyed by: _____		Initial Water Level: _____
State Plane Coordinates (X) Easting = _____ (Y) Northing = _____		Casing Stickup: (above ground level) _____
<b>Surveyed Elevations</b> (feet above sea level)		Casing OD (in.): _____ Casing ID (in.): _____
Protective Casing: _____ (Elev. D - FOP 94-71)		1. Grout/Backfill Interval: _____ Material: _____
Top of Inner Well Casing: _____ (Elev. C - FOP 94-71)		2. Seal Interval: _____ Material: _____
Concrete Pad: _____ (Elev. B - FOP 94-71)		3. Secondary Pack Interval: _____ Secondary Pack Size: _____
Ground Surface: _____ (Elev. A - FOP 94-71)		4. Primary Pack Interval: _____ Primary Pack Size: _____
<b>Calculated Elevations</b> (feet above sea level)		Screen Interval: _____ Slot Size: _____ Material: _____
Initial Water Level: _____		Sump Length: _____
Other: _____	Casing Depth: _____ Material: _____	
Comments: _____	5. Plug Back Interval (if used): _____ (Casing TD-Hole TD) _____ Plug Material (if used): _____	
Form Completed by: _____		
Verified by: _____		

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