

General



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Water Quality & Hydrology Group (RRES-WQH)
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Date: September 25, 2002
Refer to: RRES-WQH: 02-359

Ms. Maura Hanning
Program Manager
Ground Water Pollution Prevention Section
Ground Water Quality Bureau
New Mexico Environment Department
P.O. Box 26110
Santa Fe, New Mexico 87502

SUBJECT: NOTIFICATION OF MONITORING WELL ABANDONMENT, LOS ALAMOS NATIONAL LABORATORY

Dear Ms. Hanning:

In accordance with the New Mexico Environment Department's *Monitoring Well Construction and Abandonment Guidelines* (June 6, 2000), Los Alamos National Laboratory (Laboratory) is notifying your agency of the abandonment of three monitoring wells in Pueblo Canyon. On September 9-11, 2002, alluvial monitoring wells PO-3B, PO-4A, and PO-4B were permanently plugged and abandoned. The enclosed report, *Land Transfer Project, Plugging and Abandonment of Pueblo Canyon Alluvial Monitoring Wells*, contains a description of the wells and the methods used to abandon them.

Monitoring wells PO-3B, PO-4A, and PO-4B were installed in 1956, but had not been used by the Laboratory in over 20 years and did not meet current monitoring well construction standards. These wells were located on a tract of land scheduled for transfer to the County of Los Alamos by the Department of Energy (DOE). The County intends to construct a new wastewater treatment plant on this tract of land and construction activities would have most likely impacted these wells adversely.

Please contact me at (505) 667-7969 if you have any questions regarding the enclosed abandonment report.

Sincerely,

Bob Beers
Water Quality & Hydrology Group

BB/am



Enclosures: a/s

Cy: J. Young, NMED/HWB, Santa Fe, New Mexico, w/enc.
S. Yanicak, NMED DOE/OB, Santa Fe, New Mexico, w/enc.
J. Vozella, w/o enc., DOE/OLASO, MS A316
T. Taylor, DOE/OLASO, w/enc., MS A316
G. Turner, DOE/OLASO, w/enc., MS A316
M. Johansen, DOE/OLASO w/enc., MS A316
J. Holt, ADO, w/o enc., MS A104
B. Ramsey, RRES-DO, w/enc., MS J591
D. Stavert, RRES-EP, w/enc., MS J978
K. Rea, RRES-ECO, w/enc.. MS M887
K. Birdsall, RRES-R, w/enc., MS M992
C. Nylander, RRES-GP, w/enc. MS M992
S. Rae, RRES-WQH, w/enc., MS K497
D. Rogers, RRES-WQH, w/enc., MS K497
RRES-WQH File, w/enc., MS K497
IM-5, w/enc., MS A150



Project Completion Report

Land Transfer Project

Well Plugging and Abandonment

Pueblo Canyon (TA-74)

Alluvial Monitoring Wells: PO-3B, PO-4A, PO-4B

September 24, 2002

RRES-WQH
Eberline Services

Introduction

The purpose of this project was to abandon three wells designated as PO-3B, PO-4A, and PO4B, in Pueblo Canyon. The well closure was necessary to facilitate the transfer of the property on which the wells were placed, from Los Alamos National Laboratory to Los Alamos County. Further information about the history of the wells and abandonment requirements can be found in the "Draft Statement of Work (SOW), Land Transfer Project, Plugging and Abandonment Pueblo Canyon Wells," May 2002.

The abandonment project was performed on September 9-11, 2002. Copies of the field activity logs, which provide a chronological record of the activities performed, are provided in Attachment A. Photographs of the abandonment activities are provided in Attachment B. The well abandonment was performed by Enviro-Drill, Inc. of Albuquerque with oversight and documentation provided by JCNNM and Eberline Services. The following sections describe the wells and the method of plugging and abandonment.

PO-3B

Well PO-3B was installed in 1956 using a 5-inch diameter auger. The well consisted of 59 feet of 2-inch diameter plastic pipe including 10- feet of perforated well screen. The wellhead consisted of a concrete and rock block fitted with a lockable metal cap. The wellhead was removed in one piece (Photograph PO-3B-3). The well was overdrilled using an 8-inch auger bit. At a depth of approximately 25 feet, the auger penetrated and ripped the well casing. The overdrilling continued to a depth of 60 feet. Shards of the plastic well casing were visible in the drill cuttings (Photograph PO-3B-4) to a depth of 60 feet, confirming that the overdrilling stayed on top of the well throughout the entire depth. The well remained open after the overdrilling was complete. This was confirmed using the auger and, after the auger was removed from the hole, using a tape measure to confirm the depth of the hole. The hole was grouted (Photographs PO-3B-7 and 8) using a Portland cement and bentonite mixture as follows.

No. Of Batches	Batch Size	90# Bags Portland per Batch	# Bags of Bentonite Powder per Batch
4	50-55 gal	3	0.5
1	40-45 gal	2	0.3

When grouting and cleanup was complete, the site was raked down and re-covered with existing duff (Photograph PO-3B-10). The casing was cut into sections using a hacksaw and removed from the site for recycling or disposal. The wellhead concrete was removed from the site for disposal.

PO-4A

Well PO-4A was installed in 1956 using a 5-inch diameter auger. The well consisted of 21 feet of 3-inch diameter galvanized pipe with vertical slots cut into the lower 9 feet of pipe (Photograph PO-4A-9). The wellhead consisted of a concrete and rock block fitted with a lockable metal cap. The wellhead was broken up with a sledgehammer and removed. Removal of the wellhead revealed three pipes protruding from the ground (Photographs PO-4A-2 and 3). Upon investigation, two of the pipes were pieces of sheet metal stovepipe, approximately 2-feet in length. The stovepipe was removed (Photograph PO-4A-5) to provide access to accomplish overdrilling of the well. An attempt was made to overdrill the well using an 8-inch auger bit. The bit encountered a coupling on the casing at a depth of about five feet that was larger than the inner diameter of the auger bit. The torque applied to the coupling caused the well casing to twist and rip at approximately 14 feet in depth (Photograph PO-4A-8). The auger was removed from the hole and the casing pulled using a pulley on the rig. It was decided that the hole would be overdrilled to a depth of 14 feet and the final seven feet of casing would be plugged in place. Upon overdrilling to 14 feet, it was determined that the casing remaining in the hole had entered the auger bit so the overdrilling was advanced to 25 feet, Upon removal of the auger, it was determined that the final seven feet of casing had lodged in one of the auger flights (Photograph PO-4A-7). The well remained open after the overdrilling was complete. This was confirmed using a tape measure to confirm the depth of the hole. The hole was grouted (Photographs PO-4A-10 and 11) using a Portland cement and bentonite mixture as follows.

No. Of Batches	Batch Size	90# Bags Portland per Batch	# Bags of Bentonite Powder per Batch
2	50-55 gal	3	0.5

When grouting and cleanup was complete, the site was raked down and re-covered with existing duff (Photograph PO-4A-12). The casing was cut into sections using a gas-powered cut-off saw and removed from the site for recycling or disposal. The wellhead concrete was removed from the site for disposal.

PO-4B

Well PO-4B was installed in 1956 using a 5-inch diameter auger. The well consisted of 36 feet of 1.5-inch diameter galvanized pipe with a well point. The wellhead consisted of a concrete and rock block fitted with a lockable metal cap. An attempt was made to remove the well head in one piece but the well casing began to come out of the ground with the well head so it was broken apart using a sledge hammer (Photograph PO-4B-3). The well was overdrilled (Photograph PO-4B-4) using an 8-inch auger bit to a depth of 35 feet and the casing was removed (Photograph PO-4B-2). The well remained open after the overdrilling was complete. This was confirmed using the auger and, after the auger was removed from the hole, using a tape measure to confirm the depth of the hole. The hole was grouted (Photograph PO-4B-6) using a Portland cement and bentonite mixture as follows.

No. Of Batches	Batch Size	90# Bags Portland per Batch	# Bags of Bentonite Powder per Batch
2	50-55 gal	3	0.5

When grouting and cleanup was complete, the site was raked down and re-covered with duff (Photographs PO-4B-7 and 8). The casing was cut into 8-foot sections with a gas powered cut-off saw and removed from the site for recycling or disposal. The wellhead concrete was removed from the site for disposal.

**Attachment A
Activity Logs**

9/9/02

- 0700 Bengtson leaves ABQ enroute to Las Alamos
- 0850 Bengtson at Pueblo School, wait for drillers to start safety briefing. Clint Dugan on site.
- 1030 Drillers on site have safety meeting.
- 1100 finished safety meeting, watch fire extinguisher video
- 1120 finished w/ video, pack gear. Call J. Valterovich for cutting permits. Will meet in Pueblo shortly
- 1225 Leave for site
- 1245 At RD 3B look at layout, go to check other sites
- 1350 Punch at site RD 3B, set up rig. Photo 2 (Dek)
- 1420 Pull covered back casing Photo 3 (D1)
- 1440 Cut through pipe at ~25'. Pipe pieces in the cuttings
- 1502 Pipe casing cuttings still coming out of hole Photo 4 (D1)
- 1515 Finished drilling to 60', pieces of casing coming up in cuttings begin to back anger out of hole. Start to run
- 1530 Hear shudder, shut down rig, let it pass
- 1555 Caser pulls anger out of hole. Pull 15' piece of casing out of hole
- 1605 Begin mixing grout. Grout will be cement/mud mixture throughout hole length. Took depth of hole 55' to be grout. Took # 2 photos 1+2 re of pipe removed. Photo 3 is grout mixing
Portland III/III/III/III/II Gel (Bentonite) 1/2/1/2/1/2/1/3
- 1645 Finished grout (photo 4) 4 batches of 3 bags portland and 1/2 bag bentonite also 1 partial of 2 bags portland at 43 ft. R. t. o. d.

Page 1 Field Notes

9/2/02 continued

- 1700 Cleared up site, put ~~it~~ down, described
to next site BOYA OZ Photo 5
- 1710 At BOYA set up rig, set truck advantage on OZ Photo
- 1755 Leave area to gate.
- 1800 At gate, E.D. off site, Bangerton to Pueblo school.
- 1812 Bangerton at Pueblo school drop off truck
- 1825 Bangerton en route to ABO
- 1950 Bangerton in ABO stop.

End of Day

9/10/02

0600 Baggage leaves AOR, enroute to Pueblo school

0810 Arrive at Pueblo school, rain and fog. Pick up truck and radio

0820 Enroute to Pueblo canyon gate.

0832 At gate meet w/ FDI, enroute to site. At drill site POYA set up rig pull well cap cable back pine needles.

0910 Attempt to pull casing. Going to have to drill. 2 other 2" galvanized pipes, appear to be short also next to well, will have to remove before drilling. 02 photos 7-10

0920 Encountered cement grout at ~ 3' also diameter of well is about 3 1/2 OD. photo 13

0925 Shovel off casing at ~ 14'. Called Tim Z. he is on highway. Start to exceed drill to top of casing pipe.

0930 Overdrilled and reached top of pipe pipe is in anger, will try to go to TD of 30'. 02 photos 11

1032 At 30' bring auger out, remaining 7' of casing is stuck in auger 02 photos 12 and 14

1035 Tim Z. and Bobo arrive on site

1040 Mix grout and grout hole; only 2 batches of 3 bags Portland and 1/2 bag bentonite needed to plug hole 02 photos 15 and 16

1050 Begin site cleanup and cut pipe.

1100 Begin fire watch. Finish packing up gear.

1130 Fire watch complete leave for next site P04B

1150 At P04B put rig + support truck down the hill photo 17

09/10/02 Contd

- 1215 Pulled out cap and well casing came with it. ^{D3 photo 28}
 Drilled to 35' and went. Used 3 batches ^{photos 4, 5, 6}
 of 3x portland and 1/2 bentonite per batch
- 1330 Begin cleanup of site + cutting casing. ^{D3 photo 7 + 8}
- 1400 Finished cleanup, packing. Picking trench out
 Drills rig stuck on way out try to get it up hill
- 1445 Called for tow truck
- 1505 To gate to escort tow truck to site
- 1514 At gate, meet tow truck
- 1525 At site w/ tow truck, can't get rig out need
 bigger tow truck or equipment.
- 1535 Escort tow truck + crew to gate. Crew
 to line out equipt., Benqueton to Pueblo school
 to await word on plan.
- 1650 Benqueton at Pueblo school wait for word from EDI
- 1605 EDI has wrecker coming in from Espanola, will call
 upon notification from wrecker service.
- 1625 Get notification, meet at Pueblo Canyon gate.
- 1635 At Pueblo Canyon Gate escort tow truck to site.
- 1710 Finished pulling rig out of canyon Escort + tow truck
 to gate EDI to get trailer
- 1720 Meet EDI and escort to gate. EDI off site
- 1729 Benqueton at Pueblo school thru route to ABQ
- 1920 Benqueton in ABQ stop.

09/11/02

0700 Begin the leaves ABQ Enroute to Pueblo school
Heavy rain

0850 At Pueblo school pick up truck. Enroute to S. 715

0910 At PO 4A rake site and cover with brush cleared
for fire watch. 03 photo 9

0925 Move to PO 3B, rake site and cover with
brush from surrounding area. 03 photo 10

0935 At sewer line road side where rig was struck.

Rake out dirt tracks and holes made by rig ^{03 photo 11, 12}

1040 Inspected Ruckby site, call Camille B. about logs and
off pgs, need to fill out request and wait for reply.

1050 Enroute to FM80 to return keys.

1110 Return keys, enroute to Pueblo school

1115 At Pueblo school unload equipment from truck. Leave
sprayer and well tools in Tim Z's office for
Bob Beers to pick up.

1200 Leave Pueblo school for ABQ

1335 At ABQ stop.

**Attachment B
Photographs**



Photograph PO-3B-1
Setup at Well PO-3B



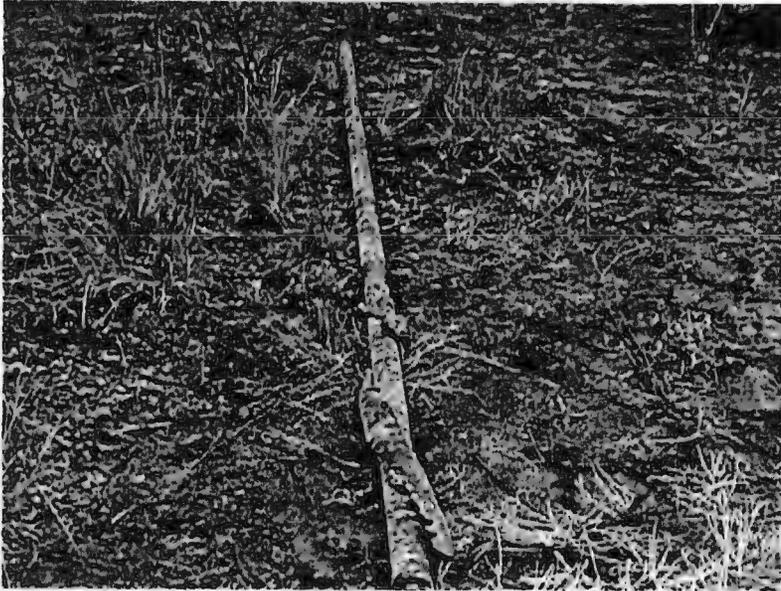
Photograph PO-3B-2
Setup at Well PO-3B



Photograph PO-3B-3
Wellhead removed with part of casing



Photograph PO-3B-4
Shards of well casing in drill cuttings



Photograph PO-3B-5
Well casing removed



Photograph PO-3B-6
Well casing with portion ripped by auger bit



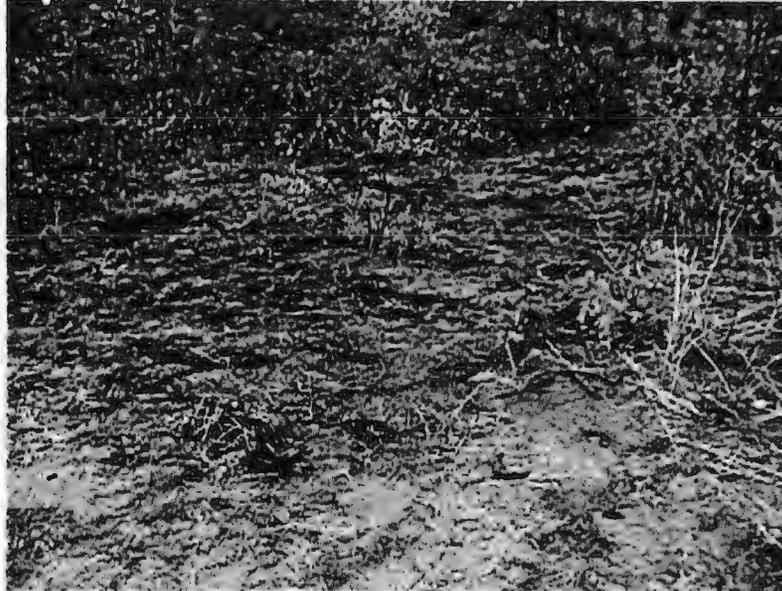
Photograph PO-3B-7
Mixing of grout batch with the rig



Photograph PO-3B-8
PO-3B filled with grout



Photograph PO-3B-9
PO-3B site after grouting and cleanup



Photograph PO-3B-10
PO-3B site after raking and covered with duff



Photograph PO-4A-1
Setup at PO-4A



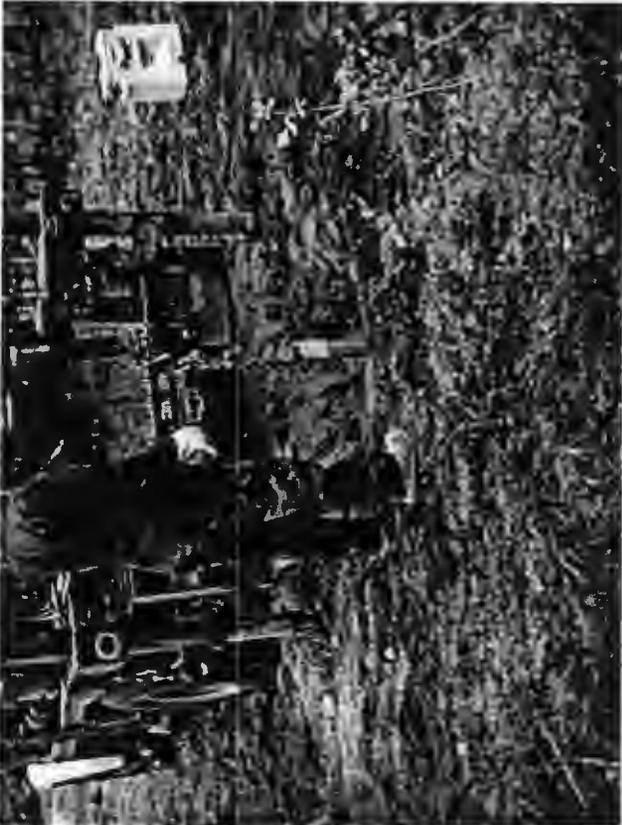
Photograph PO-4A-2
Well casing and two pieces of stove pipe after wellhead removal



Photograph PO-4A-3
Setup at PO-4A after wellhead removal



Photograph PO-4A-4
Setup at PO-4A



Photograph PO-4A-5
Removal of stove pipes prior to overdrilling



Photograph PO-4A-6
Overdrilling of PO-4A



Photograph PO-4A-7
Bottom seven feet of well casing stuck inside of auger flight



Photograph PO-4A-8
Top 14 feet of casing ripped due to auger torque



Photograph PO-4A-9
Vertical slots in well casing



Photograph PO-4A-10
PO-4A Filled with grout



Photograph PO-4A-11
PO-4A Filled with grout



Photograph PO-4A-12
PO-4A site raked and recovered with duff after plugging



Photograph PO-4B-1
Setup at PO-4B' after wellhead removal



Photograph PO-4B-2
Removal of casing



Photograph PO-4B-3
Casing removed and broken up wellhead



Photograph PO-4B-4
Overdrilled well



Photograph PO-4B-5
Setup for grouting at PO-4B



Photograph PO-4B-6
PO-4B after raking and covered with duff



Photograph PO-4B-7
PO-4B after raking and covered with duff