

2011 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 20)

June 2012



The INL is a U.S. Department of Energy National Laboratory
operated by Battelle Energy Alliance

DISCLAIMER

This information was prepared as an account of work sponsored by an agency of the U.S. Government. Neither the U.S. Government nor any agency thereof, nor any of their employees, makes any warranty, expressed or implied, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness, of any information, apparatus, product, or process disclosed, or represents that its use would not infringe privately owned rights. References herein to any specific commercial product, process, or service by trade name, trade mark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favoring by the U.S. Government or any agency thereof. The views and opinions of authors expressed herein do not necessarily state or reflect those of the U.S. Government or any agency thereof.

2011 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 20)

June 2012

**Idaho National Laboratory
Idaho Falls, Idaho 83415**

<http://www.inl.gov>

**Prepared for the
U.S. Department of Energy
Office of Nuclear Energy
Under DOE Idaho Operations Office
Contract DE-AC07-05ID14517**

ABSTRACT

This *2011 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 20)* provides water use information (monthly annual average and total annual volume) for production and potable water wells at the Idaho National Laboratory for Calendar Year 2011. It also provides detailed information for new, modified, and abandoned (decommissioned) wells and holes. One new well was drilled and completed and one well was modified in Calendar Year 2011. A total of 14 wells and boreholes were reported as decommissioned. Detailed construction information for the new and modified wells is provided. Details are provided for the wells and boreholes that have been decommissioned, and if available, construction diagrams. Location maps are included, provided survey information was available.

This report is being submitted in accordance with the Water Rights Agreement between the State of Idaho and the United States, for the United States Department of Energy (dated 1990) and the subsequent Partial Decree for Water Right 34-10901 issued June 20, 2003.

CONTENTS

ABSTRACT.....	iii
ACRONYMS.....	vii
1. INTRODUCTION.....	1
2. 2011 WATER USE INFORMATION FOR THE IDAHO NATIONAL LABORATORY	2
2.1 Water Volume for Individual Idaho National Laboratory Production or Potable Water Wells.....	2
2.2 Combined Total Volume Diverted from All Production and Potable Water Wells.....	7
2.3 Water Use Summary	11
3. COMPREHENSIVE WELL INVENTORY, REVISION 20.....	12
3.1 Idaho National Laboratory New and Modified Wells in Calendar Year 2011	12
3.2 Idaho National Laboratory Wells Decommissioned in Calendar Year 2011	14
4. REFERENCES	17
Appendix A Maps and Construction Diagrams for New and Modified Wells	19
Appendix B Maps and Construction Diagrams for Decommissioned Wells.....	35

FIGURES

Figure 1. Well CPP33-2L and surrounding area being covered with asphalt as part of CERCLA remedial activities for the closure of CPP-601.....	14
Figure A-1. Map showing location of new well, USGS-136.....	21
Figure A-2. Construction diagram for USGS-136.....	22
Figure A-3. Map showing location of modified well, USGS-131.....	27
Figure A-4. Construction diagram for USGS-131.....	29
Figure B-1. Map showing location of decommissioned well CFA-SCI-V-009 northwest of Central Facility Area.	37
Figure B-2. Construction diagram of decommissioned well CFA-SCI-V-009.....	38
Figure B-3. Map showing location of decommissioned well CPP-33-2L at the Idaho Nuclear Technology and Engineering Center.	39
Figure B-4. Construction diagram of decommissioned of well CPP-33-2L.....	40
Figure B-5. Map showing location of well NORTH-COR-U-001 decommissioned by USGS.....	41

Figure B-6. Construction diagram of decommissioned of well NORTH-COR-U-001.	42
Figure B-7. Map showing location of decommissioned wells at and around Radioactive Waste Management Complex.....	43
Figure B-8. Construction diagram of decommissioned well 77-2.	45
Figure B-9. Construction diagram for decommissioned well RWMC-2005.	47
Figure B-10. Construction diagram for decommissioned well W-25.	48

TABLES

Table 1. Advanced Test Reactor Complex water volume for 2011.....	3
Table 2. Central Facilities Area water volume for 2011.....	3
Table 3. Critical Infrastructure Test Range Complex water volume for 2011.....	3
Table 4. Idaho Nuclear Technology and Engineering Center water volume for 2011.	4
Table 5. Materials and Fuels Complex water volume for 2011.....	4
Table 6. Naval Reactors Facility water volume for 2011.	5
Table 7. Radioactive Waste Management Complex water volume for 2011.....	5
Table 8. Test Area North water volume for 2011.....	5
Table 9. Idaho National Laboratory water volume totals for 2011.....	9
Table 10. Idaho National Laboratory new wells and modified wells in Calendar Year 2011.	13
Table 11. Idaho National Laboratory boreholes and wells decommissioned in Calendar Year 2011.	16

ACRONYMS

ATR Complex	Advanced Test Reactor Complex
bls	below land surface
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFA	Central Facilities Area
CITRC	Critical Infrastructure Test Range Complex
CWI	Comprehensive Well Inventory
CY	calendar year
IDWR	Idaho Department of Water Resources
INL	Idaho National Laboratory
INTEC	Idaho Nuclear Technology and Engineering Center
MFC	Materials and Fuels Complex
NRF	Naval Reactors Facility
RWMC	Radioactive Waste Management Complex
TAN	Test Area North
USGS	United States Geological Survey

2011 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory (Revision 20)

1. INTRODUCTION

This *2011 Idaho National Laboratory Water Use Report and Comprehensive Well Inventory, (Revision 20)* is being submitted in accordance with the *Water Rights Agreement between the State of Idaho and the United States, for the United States Department of Energy* (Department of Justice 1990) and the subsequent Partial Decree for Water Right 34-10901 (District Court 2003) issued June 20, 2003. As previously agreed (Street 2001), the annual Water Use Report and Comprehensive Well Inventory (CWI) are being combined and submitted as one report.

The INL Site water use reported is for Calendar Year (CY) 2011. Section 2 provides the annual volume of water diverted, maximum and average diversion rates and “available” pumping level (water depth) as required by Section 6.2.3 of the Water Rights Agreement for production and potable water wells at the Idaho National Laboratory (INL) Site. Section 2.1 provides monthly, monthly average, and total annual volumes diverted and water depths (as available) for each production or potable water well. Section 2.2 provides the total monthly volume of water diverted for each facility and the total annual volume for all INL Site production or potable water wells. Section 2.3 provides a summary of the annual water usage including the total volume of water diverted, maximum diversion rate and average monthly volume of water diverted for all production and potable wells.

Section 3 is the CWI for the INL Site as required by Section 6.2.2 of the Water Rights Agreement. Section 3.1 provides information for new and modified wells, and Section 3.2 provides information for abandoned (decommissioned) wells and boreholes. One new well was drilled and completed and one well was modified in CY 2011. Section 3.2 identifies 14 wells and boreholes reported as decommissioned.

Appendix A provides location maps and diagrams containing detailed construction information for the new and modified wells.

Appendix B contains location maps of decommissioned wells and boreholes and diagrams, if available, that provide detailed construction and decommissioning information.

2. 2011 WATER USE INFORMATION FOR THE IDAHO NATIONAL LABORATORY

2.1 Water Volume for Individual Idaho National Laboratory Production or Potable Water Wells

Eight major facilities are located at the INL Site:

- Advanced Test Reactor Complex (ATR Complex)
- Central Facilities Area (CFA)
- Critical Infrastructure Test Range Complex (CITRC)
- Idaho Nuclear Technology and Engineering Center (INTEC)
- Materials and Fuels Complex (MFC)
- Naval Reactors Facility (NRF)
- Radioactive Waste Management Complex (RWMC)
- Test Area North (TAN).

Each major facility is serviced by one or more production and/or potable water wells. Tables 1 through 8 show the water information for production or potable wells at these facilities.

Seven wells are grouped under the CFA facility. Wells CFA-1 and CFA-2 serve the actual CFA facility. The other five wells (Badging Facility Well, EBR-1, Fire Station Well, Rifle Range Well, and Site-04 [Dairy Farm]) serve smaller facilities or processes. The Fire Station Well has occasionally been used for filling water trucks for construction purposes. However, for 2011, the Fire Station Well was not used because the pump remains inoperable. The Dairy Farm Well is used for irrigating various research projects. The wells identified at other INL Site facilities provide water primarily for that specific facility.

Each table provides the monthly annual average and total annual volume of water diverted from each production or potable well during CY 2011. The tables provide water depth as available. Many of the wells were not designed with an access line to measure the water depth. Each well is identified by its official well name, the most common alias name, and the well identification number. Footnotes are provided where applicable.

Section 5.3 of the Water Rights Agreement states: “The use of water for fire suppression benefits the public. Water diverted for fire suppression may be taken randomly, without a definition of the specific elements of a recordable water right, and if so diverted for fire suppression, existing water rights shall not be diminished.” The volumes in the tables may include water used for fire suppression activities. However, there is no way to distinguish water used for fire suppression and water used for other activities.

Table 1. Advanced Test Reactor Complex water volume for 2011.

Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
TRA-01	NO. 1 DEEP WELL	356	1,271,000	0	0	0	18,222,000	35,558,000	18,714,000	24,159,000	111,000	17,236,000	8,511,000	7,857,000	131,639,000	10,969,917
TRA-03	NO. 3 DEEP WELL	358	16,100	300	45,800	0	10,124,000	29,000	13,000	647,000	518,000	21,000	384,000	8,000	11,806,200	983,850
TRA-04	NO. 4 DEEP WELL	359	26,721,000	23,869,000	29,803,000	35,956,000	20,120,000	10,510,000	48,209,000	28,956,000	39,725,000	22,942,000	27,199,000	22,209,000	336,219,000	28,018,250
TRA-1863		1863	3,297,100	3,022,900	3,678,300	3,267,800	3,638,500	3,767,600	4,474,700	4,714,400	3,796,500	3,457,200	3,390,700	3,149,200	43,654,900	3,637,908
Monthly total			31,305,200	26,892,200	33,527,100	39,223,800	52,104,500	49,864,600	71,410,700*	58,476,400	44,150,500	43,656,200	39,484,700	33,223,200		
Total annual volume for ATR Complex: 523,319,100																
a. High total volume for July is due to water being pumped into the ATR Complex sewage lagoons to protect the lagoon liners.																
Depth to water, static water level:																
Date TRA-1863																
October 20, 2011 469.84 feet below land surface (bls)																

Table 2. Central Facilities Area water volume for 2011.

Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
CFA-1	CFA-651	93	1,405,900	1,295,200	1,771,000	1,920,400	8,752,800	5,369,200	9,882,200	15,582,400	6,551,900	1,940,000	1,607,800	1,484,000	57,562,800	4,796,900
CFA-2	CFA-642	94	0	0	7,600*	14,900	179,100	359,200	93,600	0	1,986,000	22,700	0	0	2,663,100	221,925
Badging Facility Well	B27-605 Main Gate	88	30,150	28,870	40,490	10,960	17,910	10,120	3,290	4,650	4,010	1,950	3,510	3,770	159,680	13,307
EBR-1		149	923	977	3,625	2,729	2,815	9,229	14,777	9,071	1,230	709	0	1,046	47,131	3,928
Rifle Range Well	B21-607 Gun Range	267	1,420	1,190	2,180	2,150	3,490	1,730	1,090	3,140	3,690	3,230	1,370	1,330	26,010	2,168
Site-04	B16-604 Dairy Farm	273	0	0	0	29290	10,690	22,080	21,080	0	0	0	0	0	83,140	6,928
Fire Station Well ^b	Fire Station #2	158	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monthly total			1,438,393	1,326,237	1,824,895	1,980,429	8,966,805	5,771,559	10,016,037	15,599,261	8,546,830	1,968,589	1,612,680	1,490,146		
Total annual volume for CFA area: 60,541,861																
a. New pump and flow meter were put into service on March 29, 2011.																
b. Pump for the Fire Station Well is inoperable. Pump has not been repaired or replaced.																

Table 3. Critical Infrastructure Test Range Complex water volume for 2011.

Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
SPERT-1	PBF Deep Well No. 1	280	92,600	104,300	116,800	122,100	628,300	849,700	546,600	337,200	24,400	35,100	45,600	11,200	2,913,900	242,825
SPERT-2	PBF Deep Well No. 2	281	105,300	58,200	70,100	81,900	348,300	772,100	352,800	651,300	891,800	82,400	93,500	224,400	3,732,100	311,008
Monthly total			197,900	162,500	186,900	204,000	976,600	1,621,800	899,400	988,500	916,200	117,500	139,100	235,600		
Total annual volume for CITRC: 6,646,000																

Table 4. Idaho Nuclear Technology and Engineering Center water volume for 2011.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July	August	September	October	November	December	Total Annual Volume	Average Monthly Volume
CPP-01 ^a	F-UTI-670	98	0	11,824,000	69,000	15,424,000	519,000	17,750,000	11,000	14,147,000	5,917,000	16,804,000	19,126,000	19,972,000	121,563,000	10,130,250
CPP-02	F-UTI-671	99	13,978,000	1,331,000	16,061,000	0	15,664,000	0	16,500,000	0	9,629,000	52,500	0	60,000	73,275,500	6,106,292
CPP-04 ^b		101	201,992	177,508	234,877	245,602	235,747	223,757	211,278	237,695	227,548	265,119	190,789	187,039	2,638,948	219,912
ICPP-POT-A-012 ^b	F-UTI-699 or CPP-05	1186	201,992	177,508	234,877	245,602	235,747	223,757	211,278	237,695	227,548	265,119	190,789	187,039	2,638,948	219,912
Monthly total			14,381,983	13,510,015	16,599,754	15,915,203	16,654,493	18,197,513	16,933,556	14,622,390	16,001,096	17,386,737	19,507,578	20,406,078		
Total annual volume for INTEC: 200,116,396																
a. Due to data gap on F-UTI-670 Controlon logger at wellhead, F-UTI-670 data for November and December were obtained from Eurotherm data logger inside CPP-606.																
b. One flow meter was used for potable wells CPP-04 and ICPP-POT-A-012. Operations switched between the wells weekly, so the totals are estimated to be 50% for each well.																

Table 5. Materials and Fuels Complex water volume for 2011.

Volume in Gallons																
Well	Alias	INL Well ID	January	February	March	April	May	June	July ^a	August ^b	September ^b	October ^b	November ^b	December	Total Annual Volume	Average Monthly Volume
EBR-II #1 ^c	EBR-I	150	772,000	687,000	809,500	1,007,500	947,000	929,000	1,753,000	2,025,500	2,165,000	1,343,500	1,388,000	931,500	14,758,500	1,229,875
EBR-II #2 ^c	EBR-II	151	772,000	687,000	809,500	1,007,500	947,000	929,000	1,753,000	2,025,500	2,165,000	1,343,500	1,388,000	931,500	14,758,500	1,229,875
Monthly total			1,544,000	1,374,000	1,619,000	2,015,000	1,894,000	1,858,000	3,506,000	4,051,000	4,330,000	2,687,000	2,776,000	1,863,000		
Total annual volume for MFC: 29,517,000																
a. Increased water volume for July was due to broken water distribution line.																
b. Additional water used for construction projects dust suppression.																
c. The two wells share one flow meter. Operations switch between the wells, so the totals are estimated to be 50% for each well.																
Depth to water, static water level:																
Date			EBR-II #1		EBR-II #2											
May 2011			659.0 feet bls		659.5 feet bls											
November 2011			659.0 feet bls		660.0 feet bls											

Table 6. Naval Reactors Facility water volume for 2011.

Well	Alias	INL Well ID	Volume in Gallons												Total Annual Volume	Average Monthly Volume
			January	February	March	April	May	June	July	August	September	October	November	December		
NRF-1	1	240	224,000	229,000	28,000	55,000	18,000	35,000	79,000	177,000	28,000	604,000	39,000	412,000	1,928,000	160,667
NRF-2 ^a	2	241	0	0	0	0	0	0	0	0	0	0	0	0	0	0
NRF-3 ^b	3	242	102,307	221,375	314,050	265,282	233,850	271,724	281,505	112,210	99,531	124,966	125,820	116,367	2,268,987	189,082
NRF-4 ^c	4	869	1,130,000	990,000	1,040,000	991,000	3,128,000	2,710,000	12,832,000	21,468,000	1,256,000	1,077,000	2,211,000	2,653,000	51,486,000	4,290,500
NRF-14 ^b		2204	448,670	318,452	335,868	301,308	303,210	380,364	303,637	436,360	322,538	401,874	382,935	321,427	4,256,643	354,720
Monthly total			1,904,977	1,758,827	1,717,918	1,612,590	3,683,060	3,397,088	13,496,142	22,193,570	1,706,069	2,207,840	2,758,755	3,502,794		

Total annual volume for NRF: **59,939,630**

a. NRF-2 was removed from service in 2006. Future use will be determined.

b. Wells NRF-3 and NRF-14 are used as potable water wells.

c. The high volumes for July and August were due to filling two new sewage lagoon cells for leak testing.

Depth to water, static water level:

Date NRF-3 NRF-14

May 2011 388.22 ft bls 387.71 ft bls

Table 7. Radioactive Waste Management Complex water volume for 2011.

Well	Alias	INL Well ID	Volume in Gallons												Total Annual Volume	Average Monthly Volume
			January	February	March	April	May	June	July	August	September	October	November	December		
RWMC Production		268	891,100	831,900	745,900	394,700	583,600	799,100	1,544,800	1,432,200	1,156,800	608,300	492,100	343,700	9,824,200	818,683
PIT 9 Production Well		2155	0	0	0	0	0	0	0	424,100	169,700	0	138,500	0	732,300	61,025
Monthly total			891,100	831,900	745,900	394,700	583,600	799,100	1,544,800	1,856,300	1,326,500	608,300	630,600	343,700		
Total annual volume for RWMC:			10,556,500													

Table 8. Test Area North water volume for 2011.

Table 67. Estimated North Water Volume for 2011.																	
Well	Alias	INL Well ID	Volume in Gallons												Total Annual Volume	Average Monthly Volume	
			January	February	March	April	May	June	July	August	September	October	November	December			
ANP-01 ^a	TAN-612	69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
ANP-02	TAN-613	70	108,700	79,600	90,200	79,200	101,600	277,900	186,500	218,800	187,700	143,500	157,000	42,600	1,673,300	139,442	
FET-1	TAN-632	154	53,200	102,700	159,500	53,900	486,600	186,100	0	0	0	0	0	0	1,042,000	86,833	
FET-2	TAN-639	155	329,700	225,600	282,900	333,500	419,200	594,300	686,400	1,076,800	669,200	445,800	385,400	384,800	5,833,600	486,133	
Monthly total			491,600	407,900	532,600	466,600	1,007,400	1,058,300	872,900	1,295,600	856,900	589,300	542,400	427,400			
Total annual volume for TAN:			8,548,900														
Well is maintained as a backup well for ANP-02.																	

2.2 Combined Total Volume Diverted from All Production and Potable Water Wells

Table 9 provides the combined total volume from all production and potable water wells at the INL Site during CY 2011. Table 9 includes:

- Total monthly volume of water diverted for each major INL Site facility
- The combined total monthly volume diverted from all the major INL Site facilities
- Monthly average volume diverted for all wells combined
- Monthly maximum volume diverted for all wells combined.
- Total annual volume diverted at the INL Site.

Table 9. Idaho National Laboratory water volume totals for 2011.

Facility	Volume in Gallons											
	January	February	March	April	May	June	July	August	September	October	November	December
Advanced Test Reactor Complex	31,305,200	26,892,200	33,527,100	39,223,800	52,104,500	49,864,600	71,410,700 ^a	58,476,400	44,150,500	43,656,200	39,484,700	33,223,200
Central Facilities Area	1,438,393	1,326,237	1,824,895	1,980,429	8,966,805	5,771,559	10,016,037	15,599,261	8,546,830	1,968,589	1,612,680	1,490,146
Critical Infrastructure Test Range Complex	197,900	162,500	186,900	204,000	976,600	1,621,800	899,400	988,500	916,200	117,500	139,100	235,600
Idaho Nuclear Technology and Engineering Center	14,381,983	13,510,015	16,599,754	15,915,203	16,654,493	18,197,513	16,933,556	14,622,390	16,001,096	17,386,737	19,507,578	20,406,078
Materials and Fuels Complex	1,544,000	1,374,000	1,619,000	2,015,000	1,894,000	1,858,000	3,506,000	4,051,000	4,330,000	2,687,000	2,776,000	1,863,000
Naval Reactors Facility	1,904,977	1,758,827	1,717,918	1,612,590	3,683,060	3,397,088	13,496,142	22,193,570	1,706,069	2,207,840	2,758,755	3,502,794
Radioactive Waste Management Complex	891,100	831,900	745,900	394,700	583,600	799,100	1,544,800	1,856,300	1,326,500	608,300	630,600	343,700
Test Area North	491,600	407,900	532,600	466,600	1,007,400	1,058,300	872,900	1,295,600	856,900	589,300	542,400	427,400
Monthly Totals	52,155,153	46,263,579	56,754,067	61,812,322	85,870,458	82,567,960	118,679,535	119,083,021	77,834,095	69,221,466	67,451,813	61,491,918
Maximum monthly diversion total	119,083,021 for August 2011											
Total average monthly volume	74,932,116											
Annual total for 2011	899,185,387											

2.3 Water Use Summary

The INL Site's Federal Reserved Water Right is 35,000 acre-ft per year (1.14×10^{10} gal/ yr) and will not exceed a maximum diversion rate of 80 ft³/s (35,904 gpm). The total volume of water diverted at the INL Site for CY 2011 was approximately 8.99×10^8 gal (see Table 9) or approximately 7.9% of the annual water right. The maximum diversion rate occurred during August at a rate of 5.9 ft³/s (2,668 gpm). The average monthly volume of water diverted for all INL Site production and potable wells was approximately 7.49×10^7 gal. The INL Site's water use remained well within the established water right.

3. COMPREHENSIVE WELL INVENTORY, REVISION 20

3.1 Idaho National Laboratory New and Modified Wells in Calendar Year 2011

One new well, USGS-136 was constructed at the INL Site in CY 2011. One well, USGS-131, was deepened and modified. These additions and modifications are listed in Table 10.

Well USGS-136 is a monitoring well located southwest of ATR Complex (Figure A-1). Before coring, 10 inch carbon steel casing was driven through 48 feet of surficial sediment with a casing driver. The well was PQ- and HQ-size cored down to 1,048 feet bls, creating a 5.0 inch corehole from 48 to 563 feet BLS and a 3.9 inch corehole from 563 to 1,048 feet bls. After collection of geophysical data and groundwater thief samples, the borehole was filled with cement and drill cuttings from about 560 to 1,048 feet bls before removing the drill rods for final construction of the well.

Well USGS 136 was reamed out to a 7.9 inch diameter borehole to 486 feet bls; 6 inch carbon steel casing was set from -2.03 to 486 feet bls. A five percent bentonite cement grout slurry was tremied down the annulus, filling the annular space from about 486 feet bls to land surface. A 6 inch diameter borehole was reamed from 486 to 551 feet bls, then a 5 inch screen was placed. The final monitoring well configuration includes: (1) 6-in. figure k-packer with rubber wipers by 5-in. pipe size (PS) from 439 to 440 feet bls, (2) 5-in. PS 304 stainless steel (SS) casing blank extending from 440 to 500 feet bls, (3) 5-in. PS 304 SS wire wrap well screen (20-slot) equipped with a bottom plug extending from 500 to 551 feet bls (fig. 6). Below 551 feet bls, drill cuttings prevent the screen from moving deeper. A 5-hp pump was set at 525 feet bls, with the inlet at 528 feet bls (Figure A-2).

Well USGS-131 is located south of U.S. Highway 20/26 (Figure A-3). Well USGS-131 (Figure A-4) was originally drilled to 808 feet bls in 2003. In the latter part of 2010, USGS-131 was cored from 808 feet bls to 1,239 feet bls creating a 3.87 inch corehole. The cores will be used to examine the lithology and establish zones of interest. Information was not complete until CY 2011 and therefore is being included in this report.

Table 10. Idaho National Laboratory new wells and modified wells in Calendar Year 2011.

Well Name	Type	Borehole Depth (ft bls)	Casing Diameter (in.)	Construction Material	Status	Location	Driller/ License #	Comments
USGS-136	Monitoring	1048	10 from -1 to 48 ft bls 6 from -2.03 to 486 ft bls 5 from 440 to 550 ft bls (500 to 550 screen)	Carbon Steel Stainless Steel	Active	T3N, R29E, Sec 23, NW ¼ NE ¼, NW ¼	USGS	Non-CERCLA
USGS-131	Monitoring	1239	6 from -1 to 537 ft bls	Carbon Steel	Active	T2N, R29E, Sec. 20, NE 1/4, SW ¼, SW ¼	USGS	Originally drilled to 808 ft bls in 2003. Deepened to 1239 ft bls in 2011. Non-CERCLA
CERCLA USGS	Comprehensive Environmental Response, Compensation, and Liability Act U.S. Geological Survey							

3.2 Idaho National Laboratory Wells Decommissioned in Calendar Year 2011

Table 11 identifies 14 wells and instrumented boreholes that were abandoned (decommissioned). An application for decommissioning of 9 of these wells/boreholes was submitted to the Idaho Department of Water Resources (IDWR) on August 18, 2010 for review (Hutchison 2010). Well 77-2 decommissioning application was submitted to IDWR on July 12, 2011 for review (Hutchison 2011). Four wells/boreholes (CPP-33-2L, RWMC-NEU-S-105, W-25 and NORTH-COR-U-001) were not included in previous applications to decommission.

Decommissioning of thirteen of the 14 wells/boreholes were overseen by an Idaho Cleanup Project professional engineer, as agreed to by the IDWR, to certify that all substantive requirements of State of Idaho Well Construction Standards Rules (IDAPA 37.03.09) were met. The other well, NORTH-COR-U-001, was decommissioned by USGS.

Well CPP-33-2L, was a lysimeter well that had not been used in many years and was not included in any required monitoring programs. The instruments had been grouted in during construction of the well to 0.5 ft bls. During a paving project for Operable Unit (OU) 3-14 Remedial Actions Project to divert storm water runoff away from the Tank Farm Facility, the well was exhumed. The 1 foot long, 6 inch diameter casing was removed and the lysimeter lines were cut. The well was then covered with $\frac{3}{4}$ inch crushed road base, compacted, and covered with asphalt (Figure 1).



Figure 1. Well CPP33-2L and surrounding area being covered with asphalt as part of CERCLA remedial activities for the closure of CPP-601.

The two instrumented boreholes, RWMC-NEU-S-105 and W-25, that were not previously included in an application to decommission, are included in this report as a record of their being decommissioned. The boreholes were located in the Subsurface Disposal Area. No future use was intended. Construction activities at the Accelerated Retrieval Project required the immediate decommissioning of these boreholes. RWMC-NEU-S-105, which was 18.25 ft bls, was decommissioned on 10/20/2010 but

paperwork had not been turned into the Hydrogeologic Data Repository until January, 2011, therefore it is included in this CY 2011 report. Borehole W-25 was only 15.5 ft bls and did not meet the IDAPA 37.03.09 definition of a well. However, it was included in a previous Comprehensive Well Inventory update; Revision 1. Details and dates of decommissioning activities are shown in Table 11.

The USGS had notes suggesting that Well NORTH-COR-U-001 had been decommissioned; however, on a site visit on April 5, 2011, after cutting off the well cap that was on the 4 inch casing, it was revealed that the well was only partially filled to the surface. Therefore, the well was filled with bentonite, and then topped with cement grout to the top of the casing. After the materials were emplaced, the cap was welded back in place (Twinning 2011).

Appendix B contains maps showing the location of each well and borehole that was decommissioned in CY 2011. Also included in Appendix B, are diagrams, if available, that provide detailed construction and decommissioning information for the wells and holes.

The CWI database maintains detailed well information that can be provided electronically to the state upon request.

Table 11. Idaho National Laboratory boreholes and wells decommissioned in Calendar Year 2011.

Well Name	Well ID	Type	Status	Method and Date Decommissioned
CFA-SCI-V-009	1139	Scientific Instrumentation	Decommissioned	Cut 3-in. casing 6 in. bls and filled with bentonite and hydrated to create a casing seal on 8/10/2011.
CPP-33-2L	754	Scientific Instrumentation	Decommissioned	Lysimeter lines were cut in 2009 (Shanklin 2009), and casing was filled with bentonite. Covered with asphalt during CERCLA remedial activities on 7/19/2011.
NORTH-COR-U-001	1096	Unknown	Decommissioned	Filled 4-in. casing with bentonite from approximately 46 to 178 ft. bls, then added cement grout to top of casing on 4/6/2011. Cap welded back onto casing.
77-2	11	Monitoring	Decommissioned	Removed tensiometers, cut 3 ft of casings, and filled instrument and well casings with bentonite and hydrated to create a casing seal on 7/12/2011.
RWMC-2005	2005	Scientific Instrumentation	Decommissioned	Cut and capped lysimeter lines, cut casing 6 in. bls, and filled with bentonite and hydrated to create a casing seal on 8/25/2011.
RWMC-COR-V-033	927	Monitoring	Decommissioned	Cut 4-in. casing 6 in. bls; filled with bentonite and hydrated to create a casing seal on 8/10/2011.
RWMC-NEU-S-105	1199	Monitoring	Decommissioned	Cut 1.9-in. casing to ground level; filled with bentonite and hydrated to create a casing seal on 10/20/2010.
RWMC-NEU-V-023	916	Monitoring	Decommissioned	Cut 4-in. casing 6 in. bls and filled with bentonite and hydrated to create a casing seal on 8/9/2011.
RWMC-NEU-V-036	930	Monitoring	Decommissioned	Cut 4-in. casing 6 in. bls and filled with bentonite and hydrated to create a casing seal on 8/9/2011.
RWMC-NEU-V-051	945	Monitoring	Decommissioned	Cut 3-in. casing 6 in. bls and filled with bentonite and hydrated to create a casing seal on 8/9/2011.
RWMC-NEU-V-051A	946	Monitoring	Decommissioned	Cut 4-in. casing 6 in. bls and filled with bentonite and hydrated to create a casing seal on 8/9/2011.
RWMC-NEU-V-063A	961	Monitoring	Decommissioned	Cut 4-in. casing 6 in. bls and filled with bentonite and hydrated to create a casing seal on 8/9/2011.
SOUTH-SCI-V-014	1330	Scientific Instrumentation	Decommissioned	Cut and capped lysimeter lines, cut 10-in. casing 6 in. bls, and filled with bentonite and hydrated to create a casing seal on 8/9/2011.
W-25	594	Scientific Instrumentation	Decommissioned	Cut and capped lysimeter lines, cut 8-in. casing 6 in. bls, and filled with bentonite and hydrated to create a casing seal on 7/14/2011.

4. REFERENCES

- Department of Justice, Environment and Natural Resources Division, 1990, “Water Rights Agreement between the State of Idaho and the United States, for the United States Department of Energy”, CCN 23795.
- District Court-SRBA, Twin Falls Co., Idaho, 2003, Order of Partial Decree for Water Right 34-10901 (United States Department of Energy, Idaho National Engineering and Environmental Laboratory), Case No. 39576, June 20, 2003, CCN 23795.
- Hodges, M.K.V., Orr, S. M., Potter, K.E., and LeMaitre, Tynan, 2012, “Construction Diagrams, Geophysical Logs, and Lithologic Descriptions for Boreholes USGS-103, 105, 108, 131, 135, NRF-15, and NRF-16, Idaho National Laboratory, Idaho”: *U. S. Geological Survey Data Series 660*, 34 p
- Hutchison, D. P., Director, Environmental and Regulatory Services, ICP, to D. Dunn, IDWR, August 18, 2010, “Decommissioning Notification for Fifty-Two Wells at the Idaho National Laboratory Site,” CCN 310639.
- Hutchison, D. P., Director, Environmental and Regulatory Services, ICP, to D. Dunn, IDWR, July 12, 2011, “Decommissioning Notification for Well 77-2 at the Idaho National Laboratory Site,” CCN 312130.
- IDAPA 37.03.09, 2009, “Well Construction Standards Rules”, Idaho Administrative Procedures Act.
- Street, L. V., INEEL, to D. Dunn, IDWR, September 4, 2001, “INEEL Comprehensive Well Surveys and Annual Water Use Reports,” CCN 25370.
- Twining, Brian V., (btwining@usgs.gov), email to Dennis Dunn (Dennis.Dunn@idwr.idaho.gov) and Renee Y. Bowser (renee.bowser@icp.doe.gov), April 11, 2011, “Abandonment of NORTH-COR-U-001,” CCN 312952.

Appendix A

Maps and Construction Diagrams for New and Modified Wells

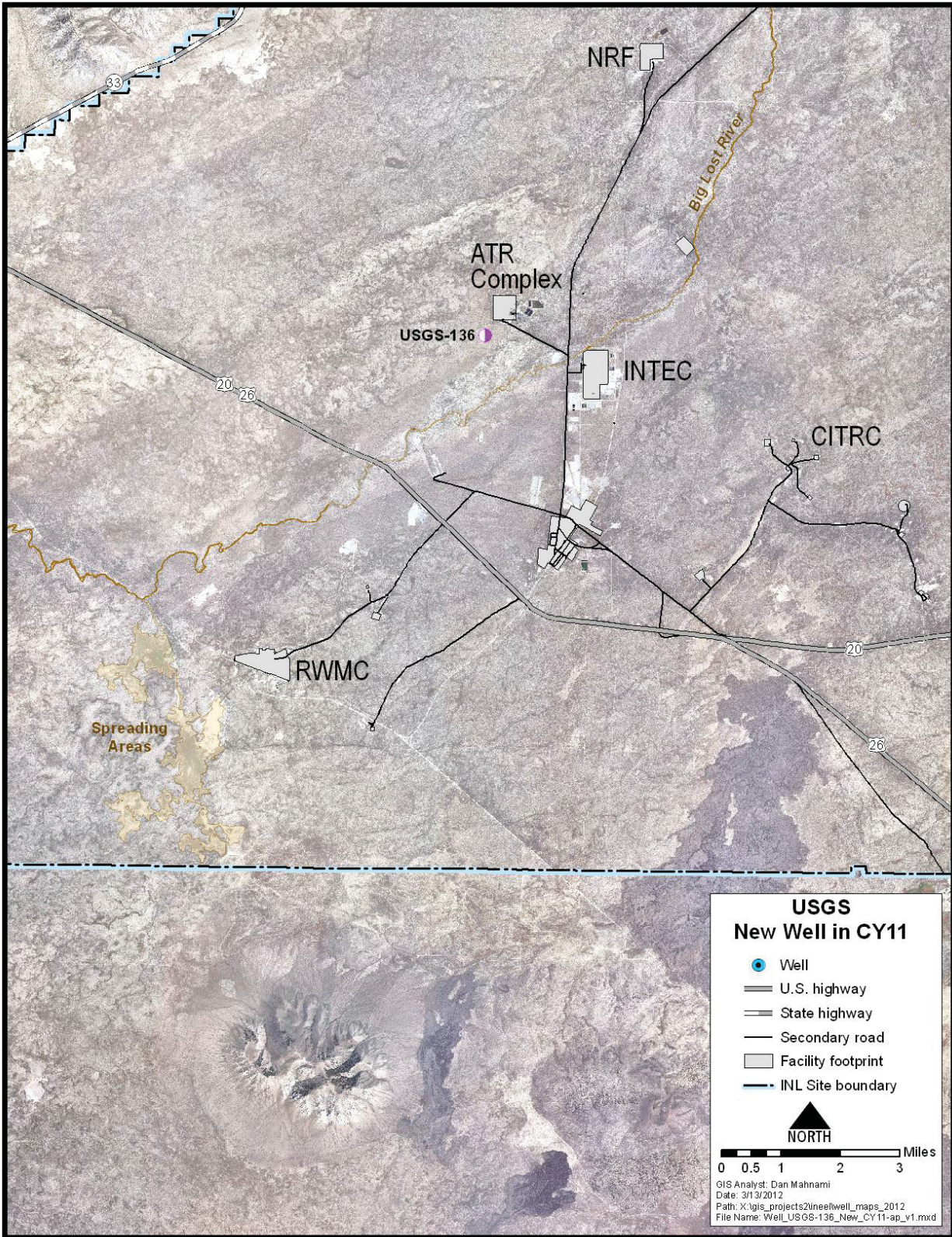


Figure A-1. Map showing location of new well, USGS-136.

WELL NAME: **USGS-136**
 WELL ID: **2203**
 Facility: **RTC**
 Well Type: **Monitoring/Corehole**
 Well Status: **Active**
 Year Drilled: **2011**
 Total Depth: **1048'**
 Drilling Start Date 10/27/2010 Drilling End Date 9/22/2011
 Completion Depth: **551'**

Driller: USGS Date Drawn: 2/09/2012
 Geologist: M Hodges Water Level: 488.17 ft bls
 Drill Method: Air/Mist Rotary/core Water Level/ Date: 8/31/2011
 Drill Fluid: Air/Water
 Land Surface: 4937.03 (29) M.P.
4935.00 (29) B.C.
4940.54 (88) M.P. Water Level Access: Hole
4938.51 (88) B.C.

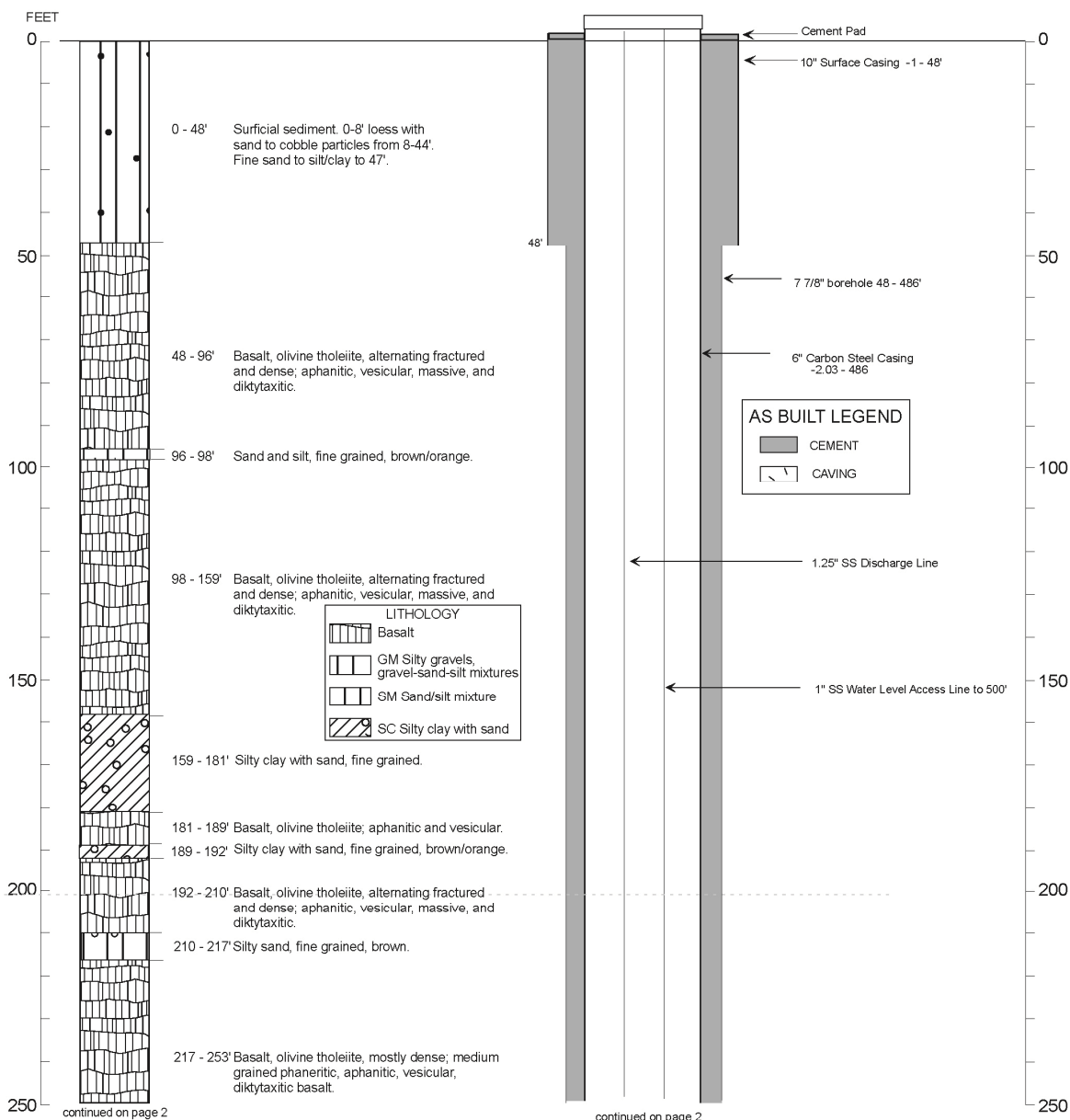


Figure A-2. Construction diagram for USGS-136.

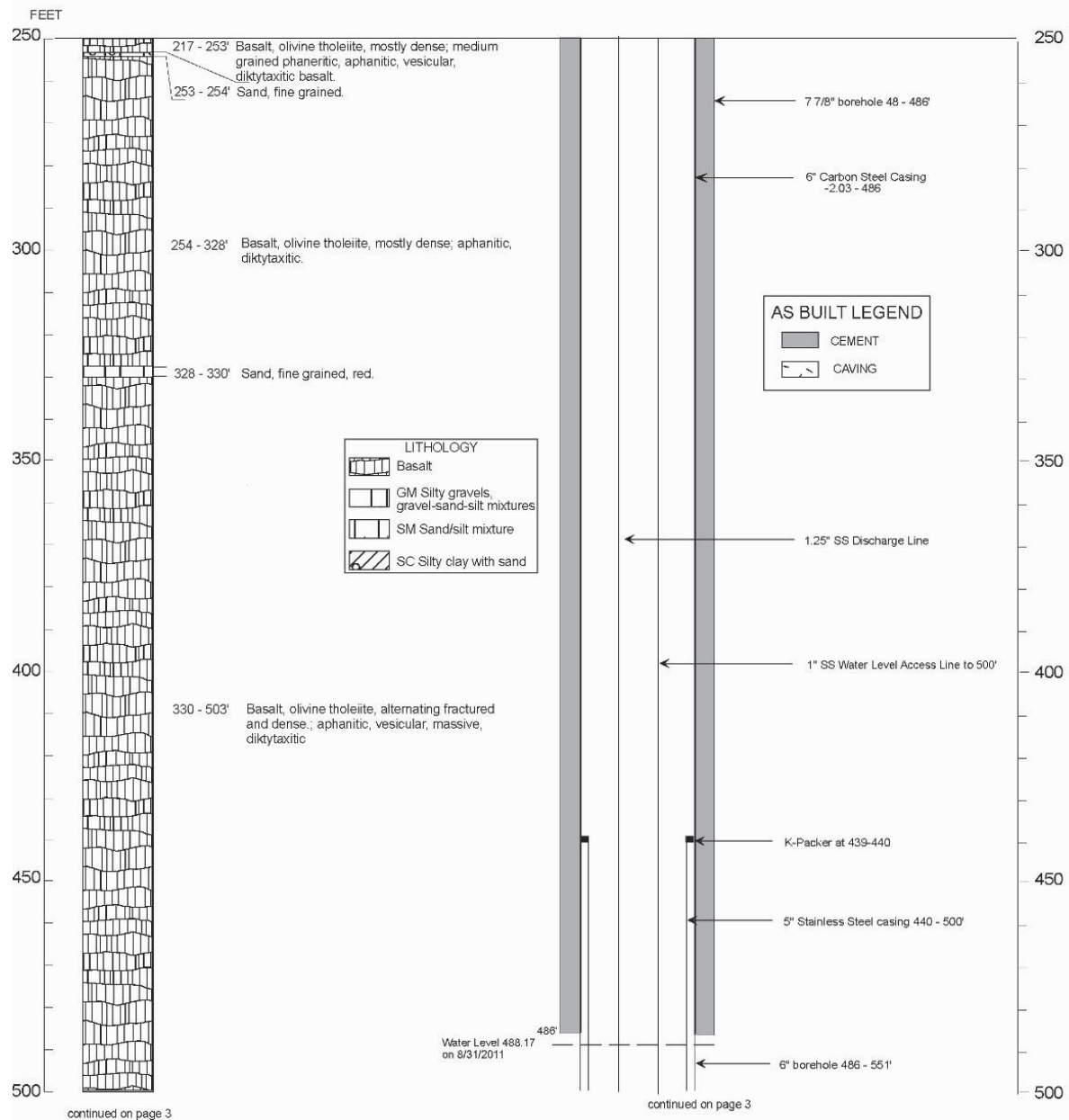
WELL NAME: USGS-136

Figure A-2 continued.

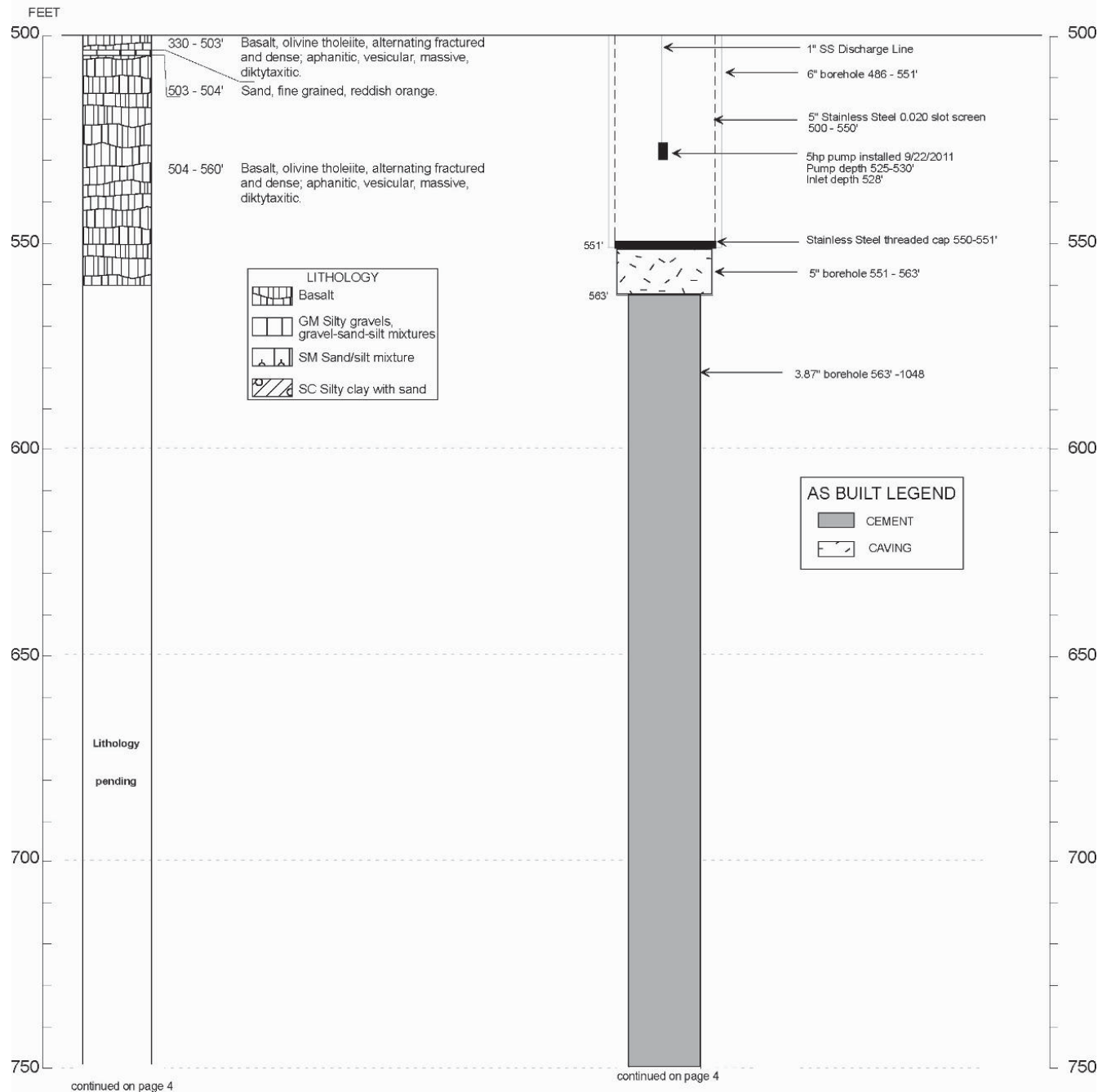
WELL NAME: USGS-136

Figure A-2 continued.

WELL NAME: USGS-136

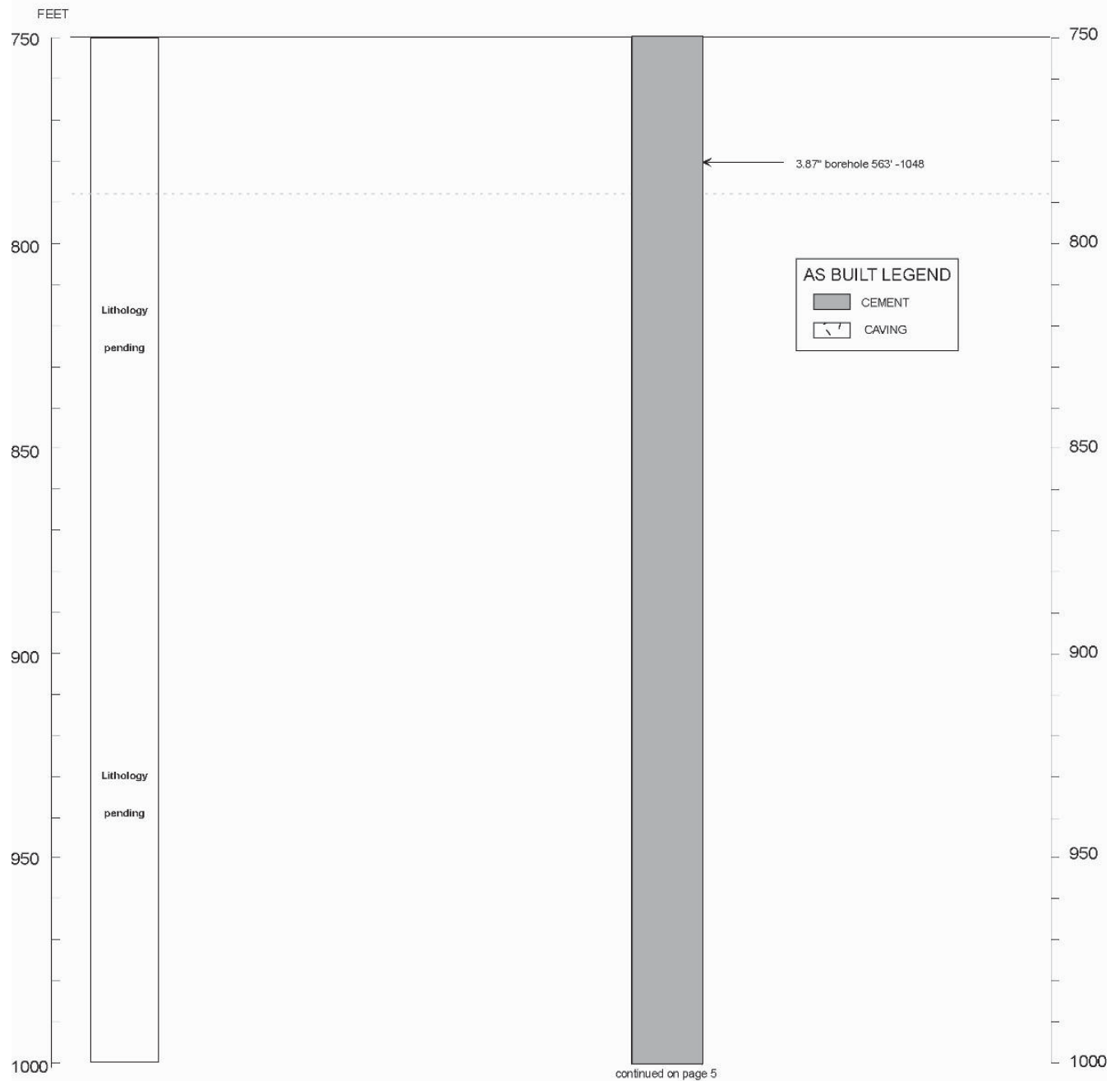


Figure A-2 continued.

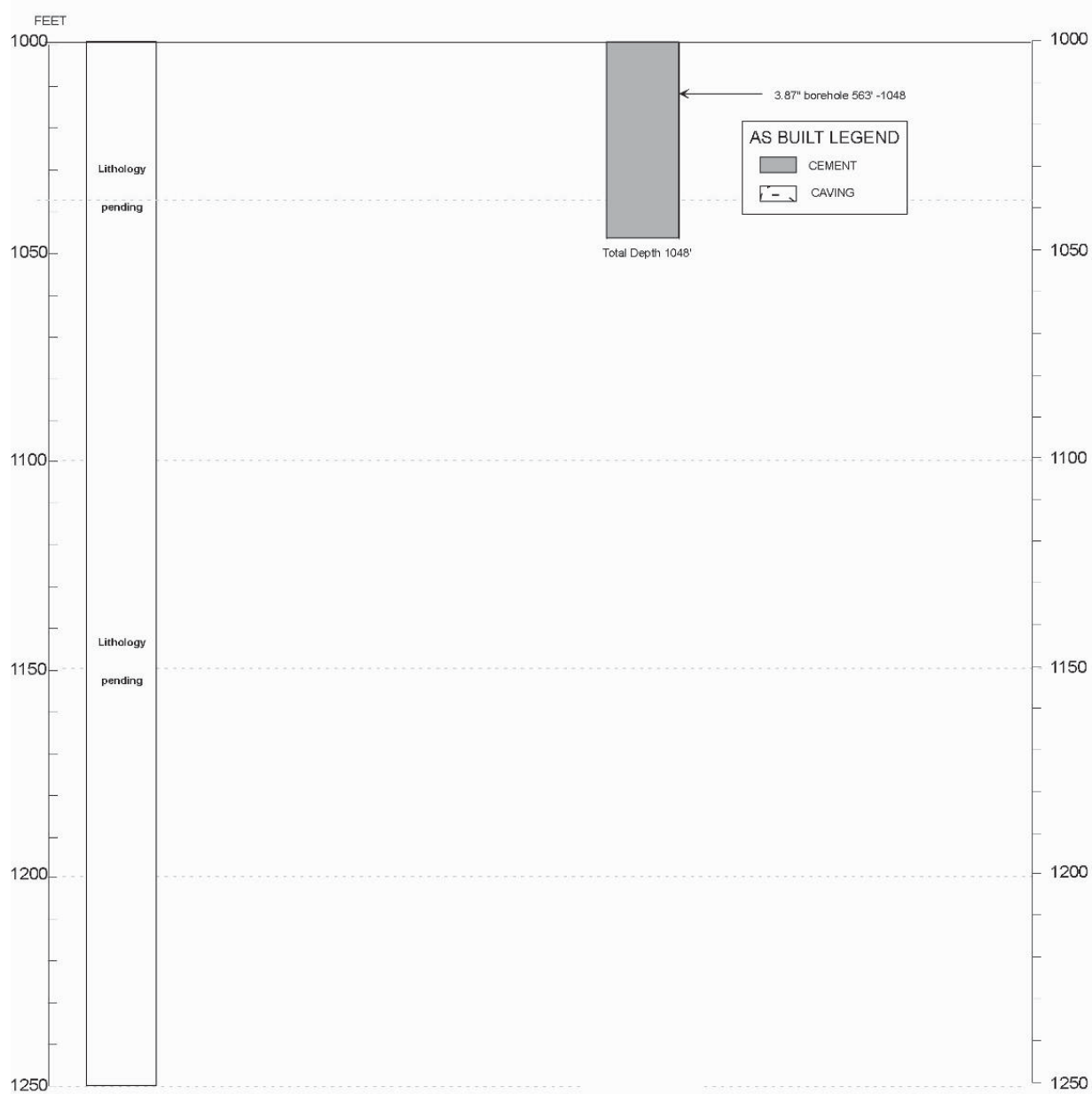
WELL NAME: USGS-136

Figure A-2 continued.

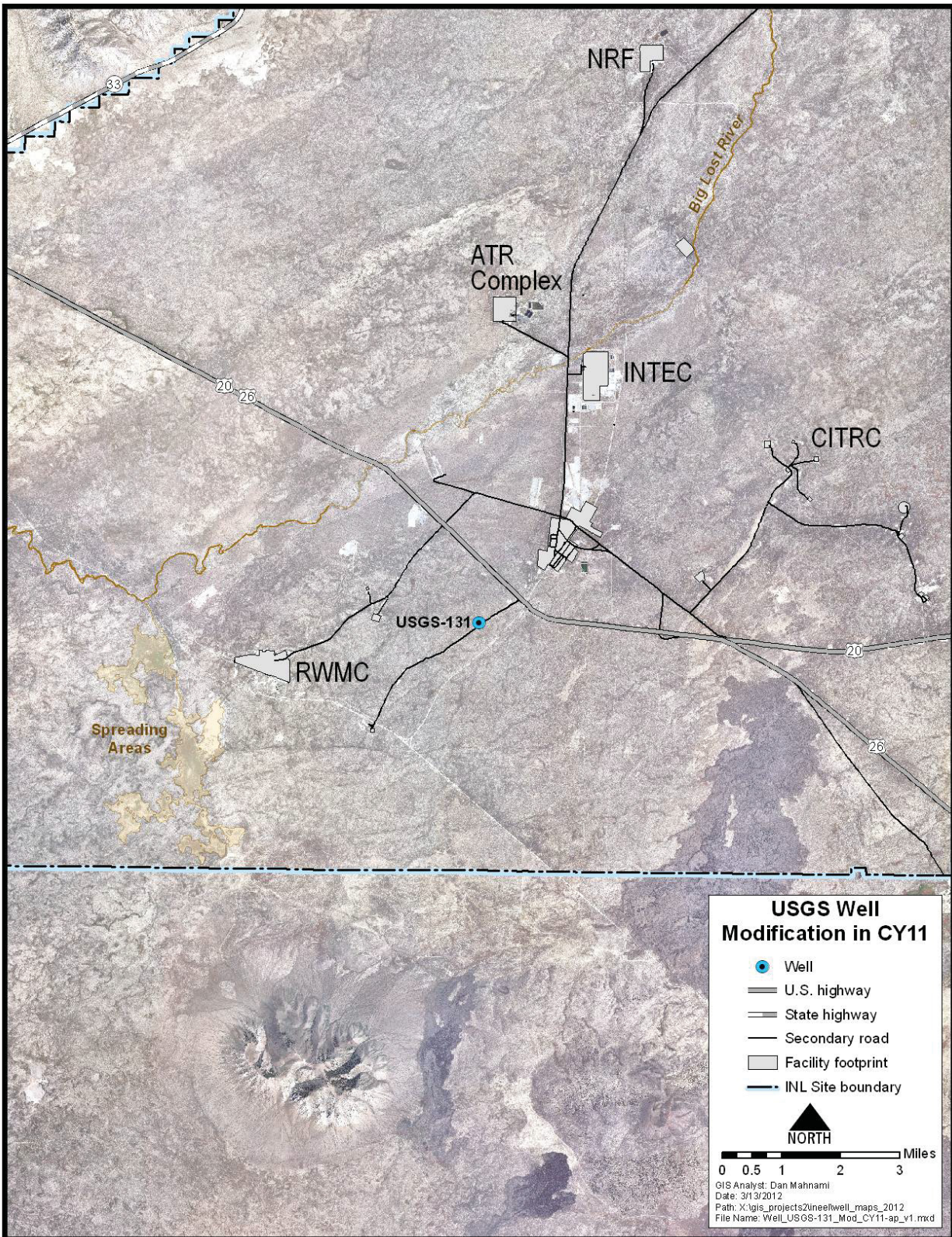


Figure A-3. Map showing location of modified well, USGS-131.

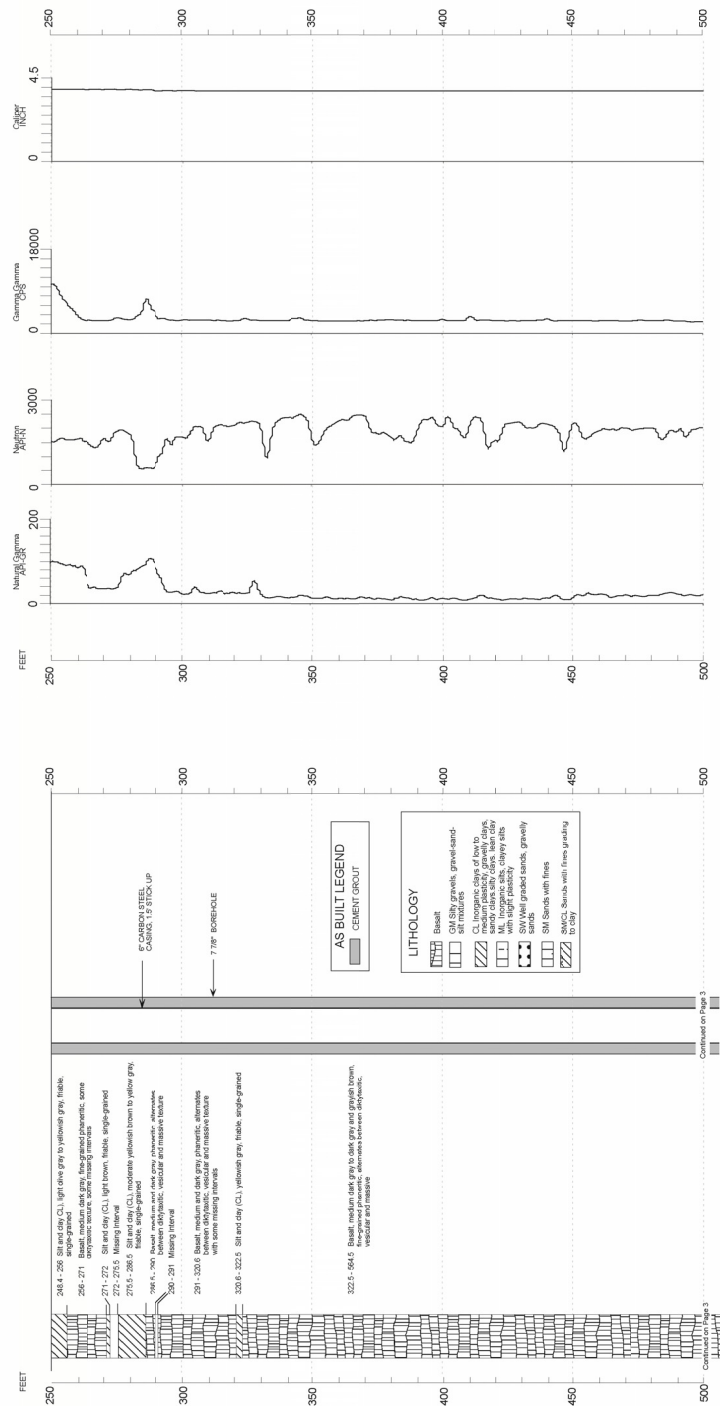
WELL NAME: USGS-131

Figure A-4 continued

WELL NAME: USGS-131

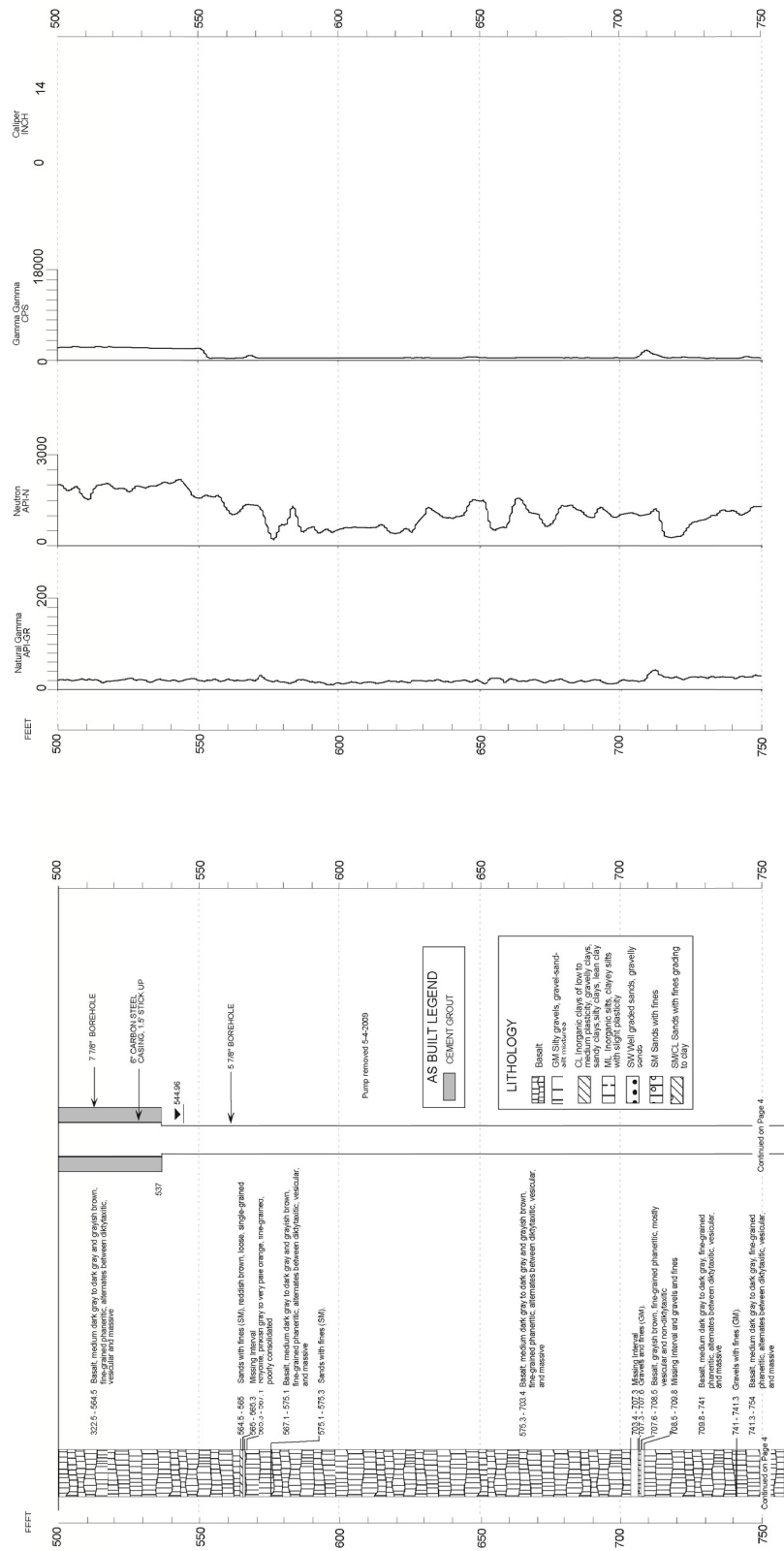
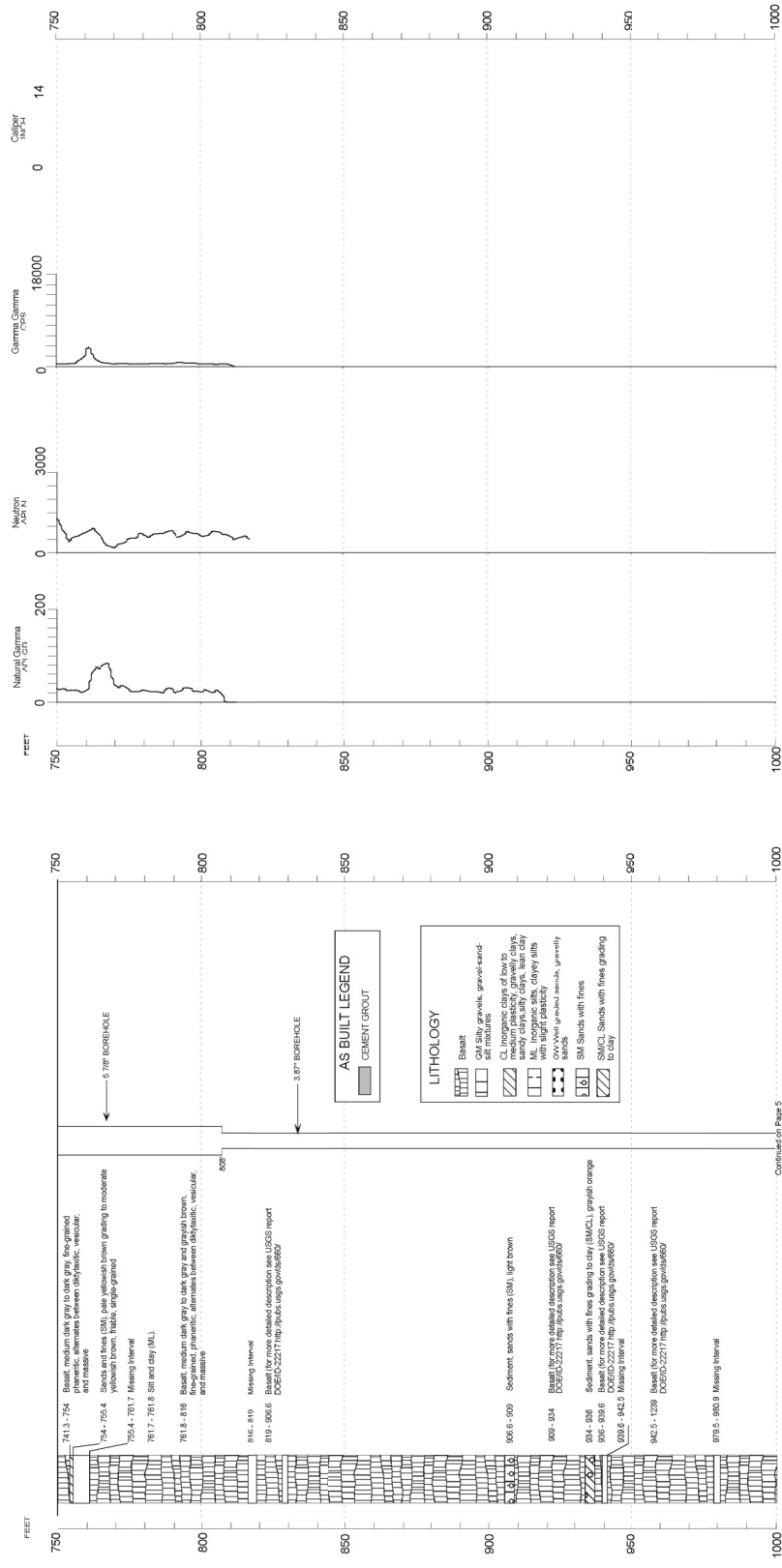


Figure A-4 continued.

Modification Date: 2010

WELL NAME: USGS-131



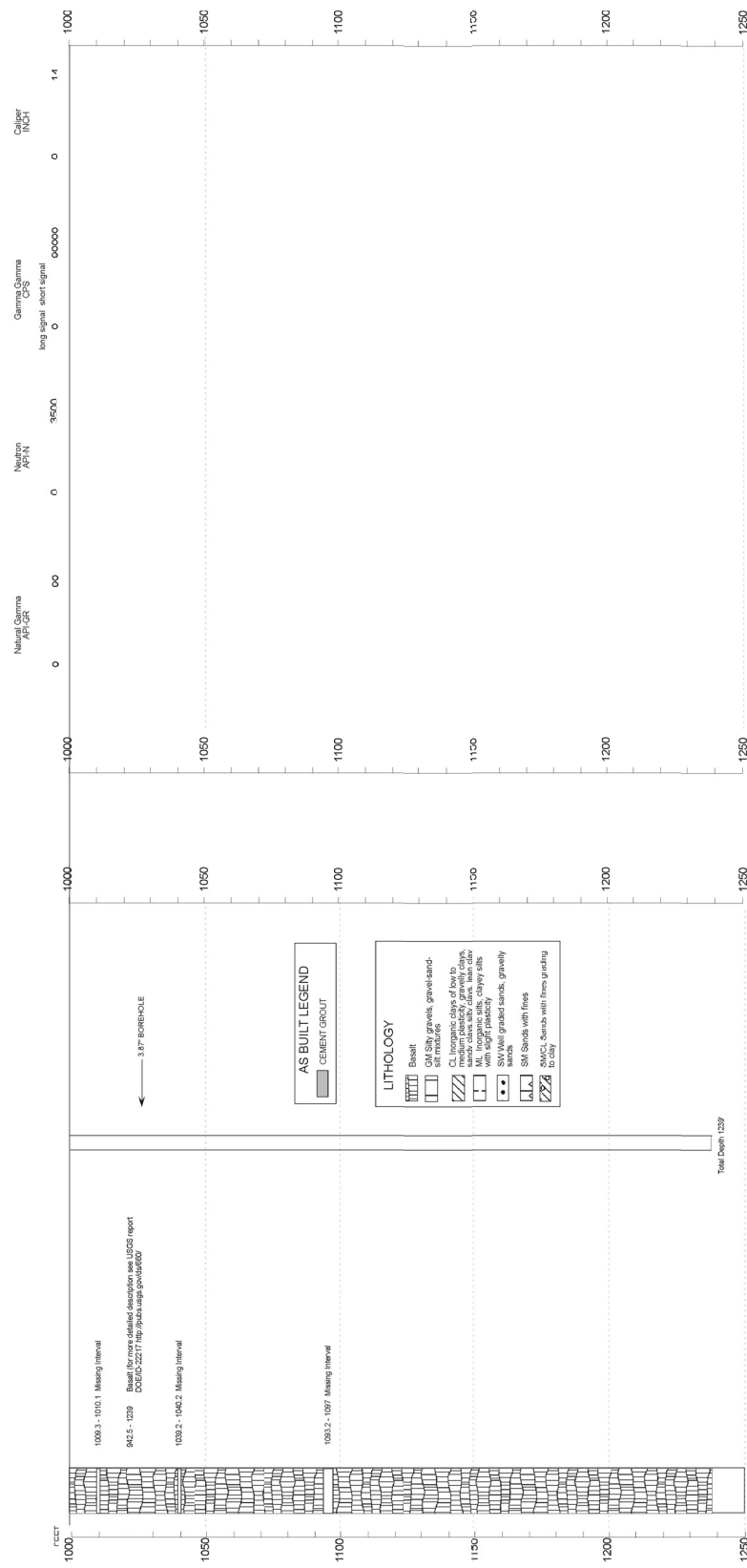


Figure A-4 continued.

Appendix B

Maps and Construction Diagrams for Decommissioned Wells

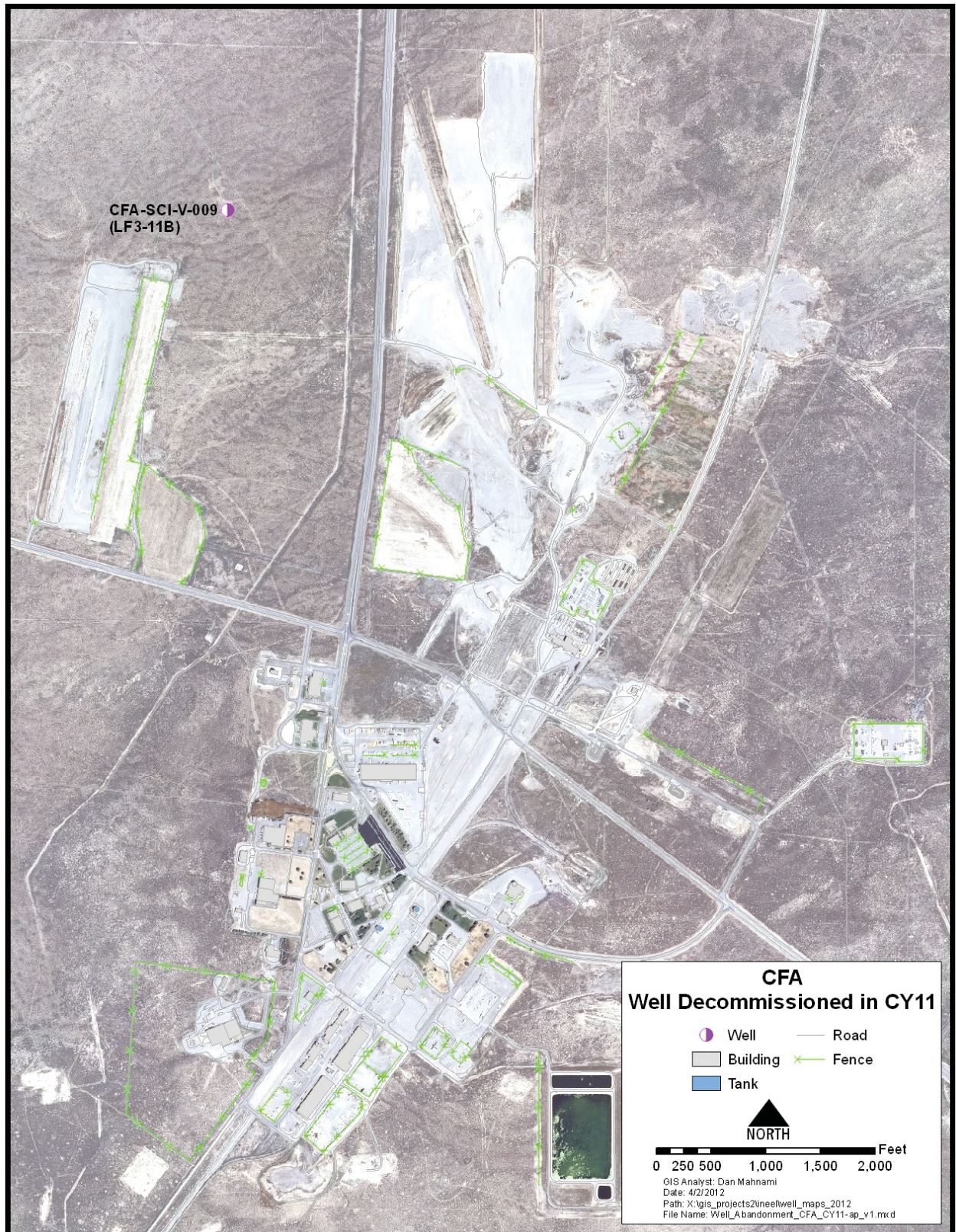


Figure B-1. Map showing location of decommissioned well CFA-SCI-V-009 northwest of Central Facility Area.

Modification Date:
8/10/2011

WELL NAME: CFA-SCI-V-009 (LF3-11B)
Facility: CFA
Well Type: Instrumentation
Well Status: Abandoned
Year Drilled: 1997
Total Depth: 0

Completion Depth: 96

Driller: Roger Danielson Date: 6/10/97
Geologist: ISU Water Level: N/A
Drill Method: Auger Water Level Date: N/A
Drill Fluid: Air Land Surface: _____ Water Level Access: N/A

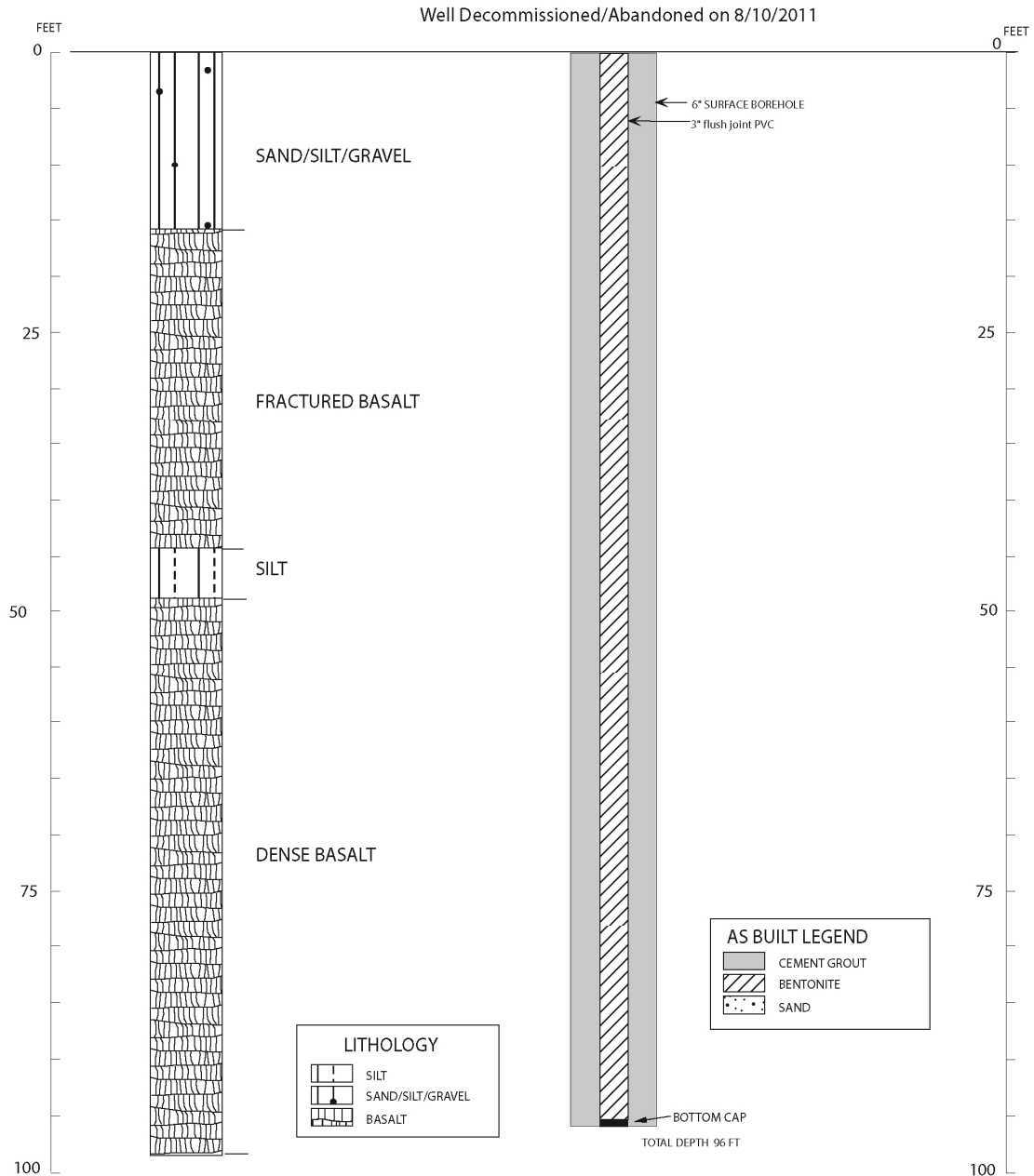


Figure B-2. Construction diagram of decommissioned well CFA-SCI-V-009.

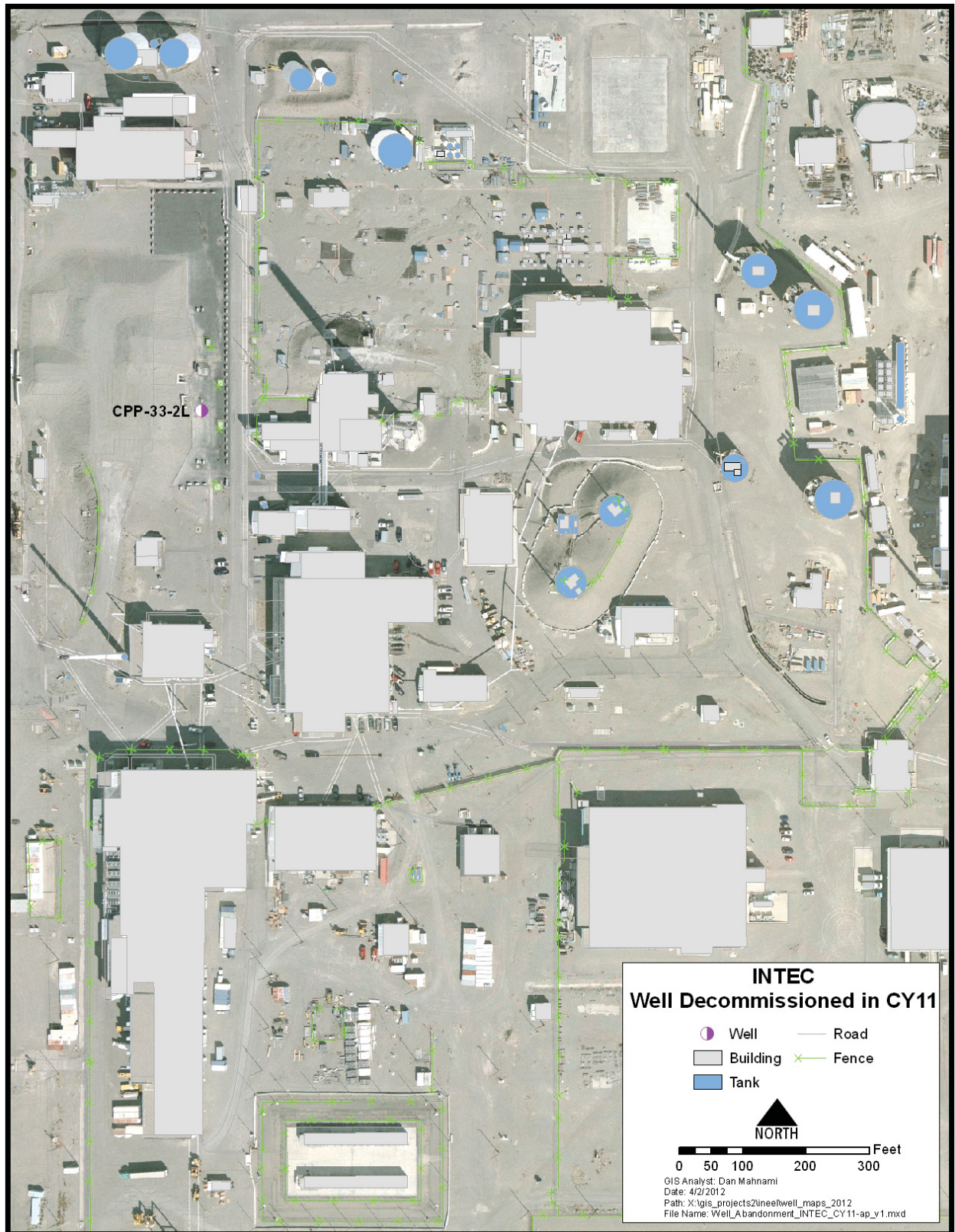


Figure B-3. Map showing location of decommissioned well CPP-33-2L at the Idaho Nuclear Technology and Engineering Center.

Modification Date:
7/19/2011

Land Surface: 4912.98(29)BC
4916.46(88)BC
(29)MP
(88)MP

WellName: CPP-33-2L

Facility: ICPP
Well Type: Scientific Instrumentation
Well Status: Abandoned
Year Drilled: 1990
Total Depth: 44
Completion Depth: 0

Driller: Hawley Bros.
Geologist: P. Innes
Drilling Method: Hollow stem auger
Drilling Fluid: NF
Water Level: NF
Water Level Date: NF
Water Level Access: NF

08/19/1993

Well Decommissioned/Abandoned 7/19/2011

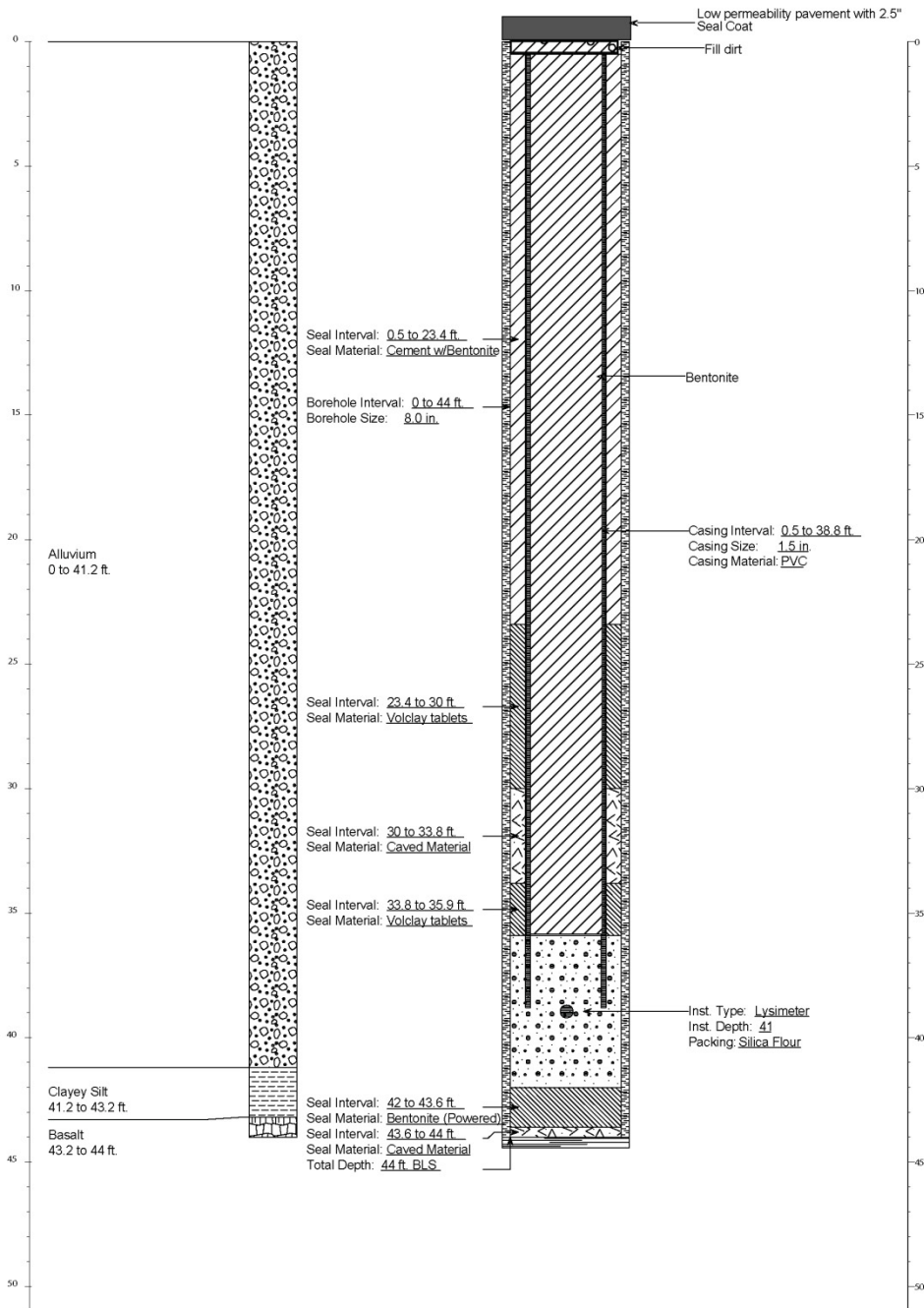


Figure B-4. Construction diagram of decommissioned of well CPP-33-2L.

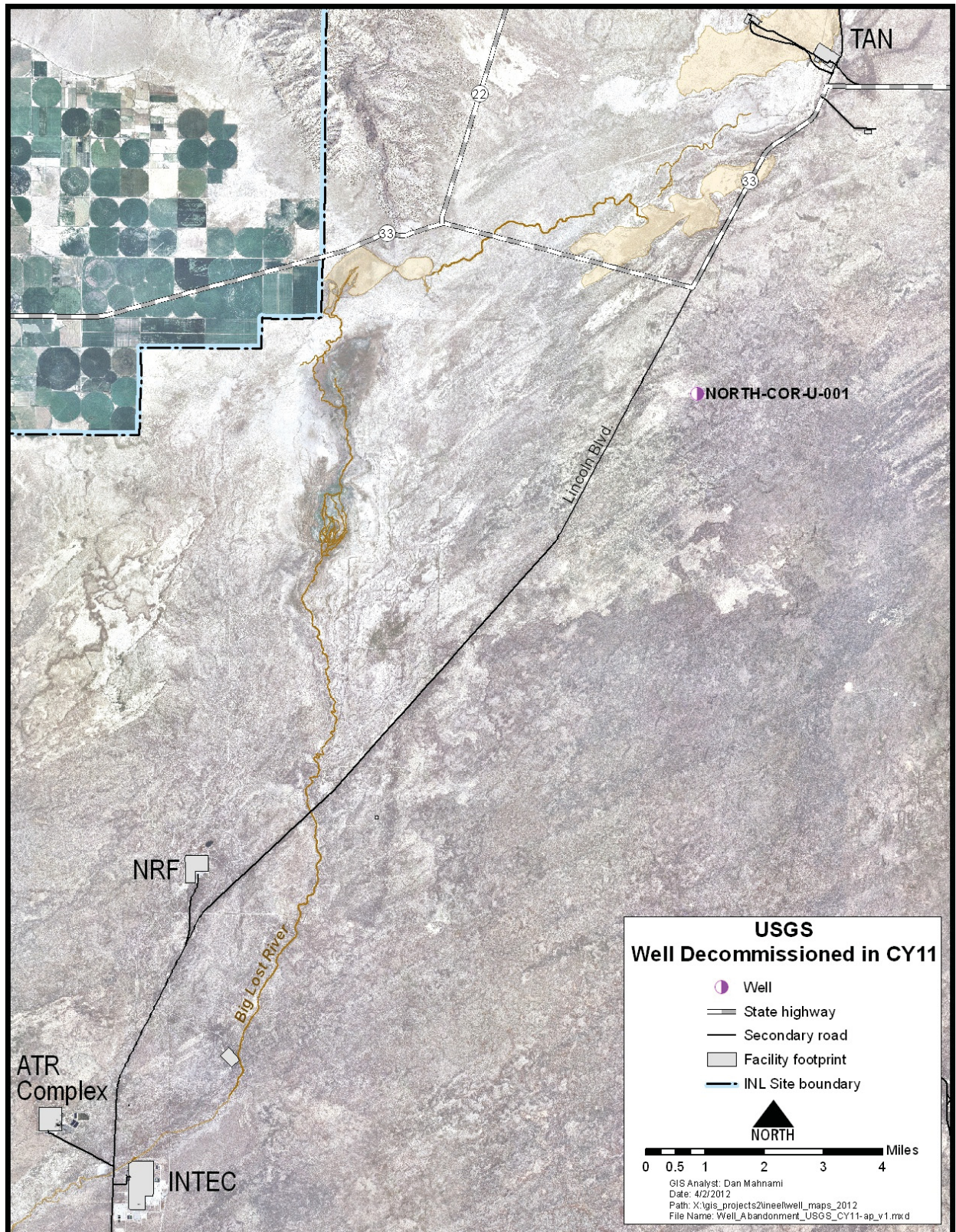


Figure B-5. Map showing location of well NORTH-COR-U-001 decommissioned by USGS.

Modification Date:
4/06/2011

WELL NAME: NORTH-COR-U-001
Facility: _____
Well Type: _____
Well Status Abandoned
Year Drilled: _____
Total Depth _____
Completion Depth: 0

Driller: _____ Date: 6/20/97
Geologist: _____ Water Level: _____
Drill Method: _____ Water Level Date: _____
Drill Fluid: _____
ELEVATION: 4786.79(29)BC
4790.30(88)BC Water Level Access: _____

Well Decommissioned/Abandoned on 4/06/2011

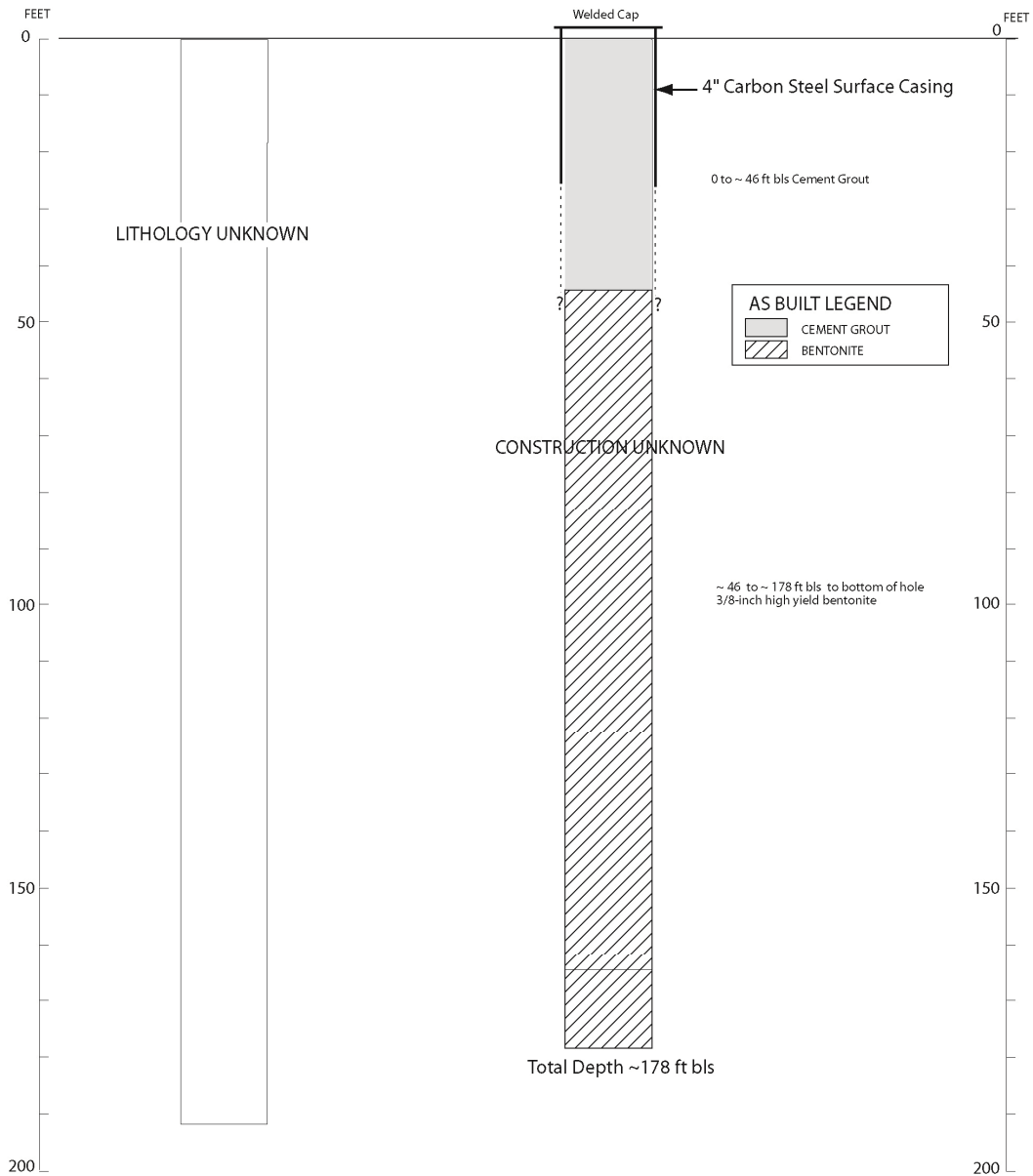


Figure B-6. Construction diagram of decommissioned of well NORTH-COR-U-001.

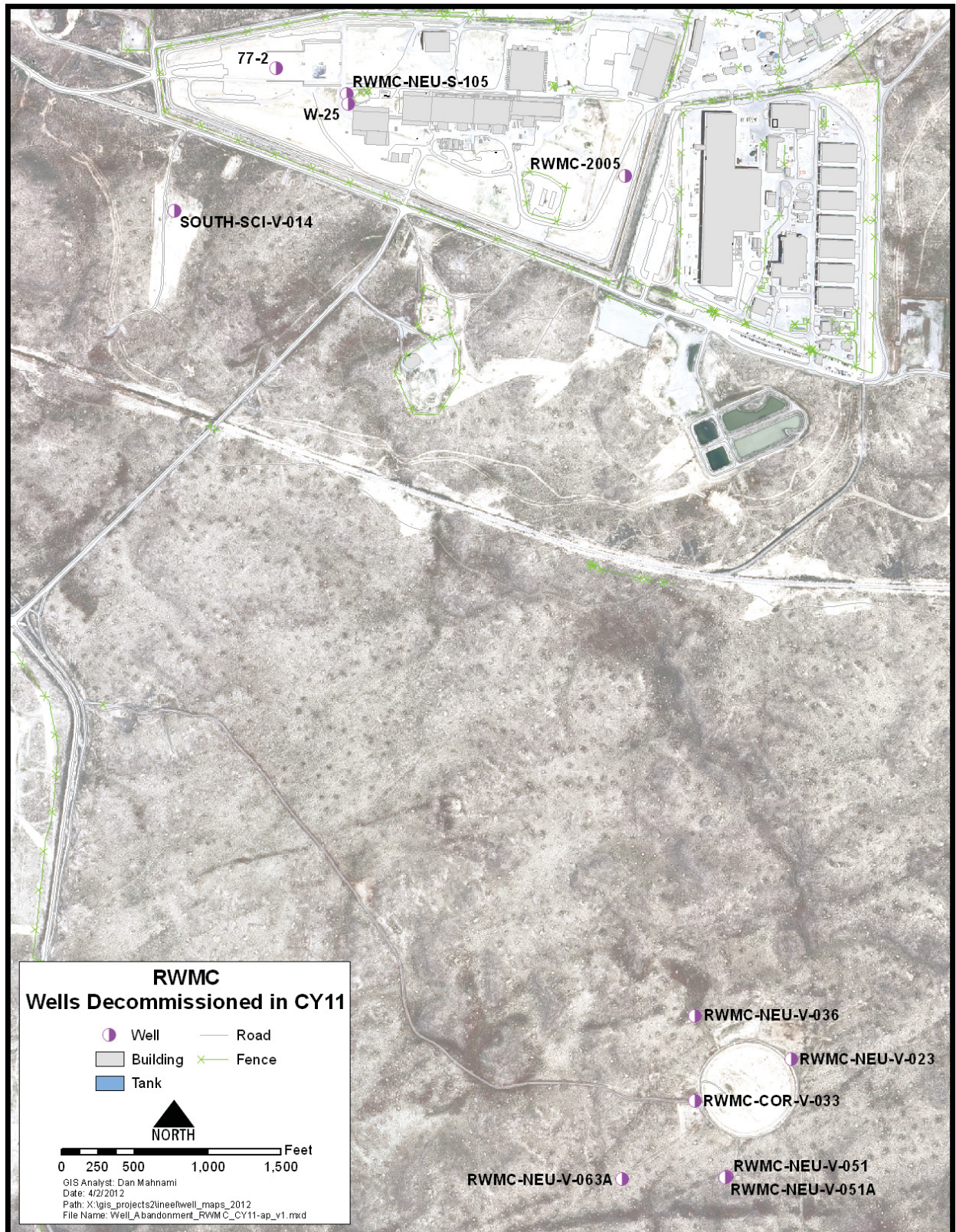


Figure B-7. Map showing location of decommissioned wells at and around Radioactive Waste Management Complex.

Modification Date 7/12/2011

WELL NAME: 77-2	Driller: T. HUMPHREY	Date: 12/19/95
Facility: RWMC	Geologist: _____	Water Level: _____
Well Type: PERCHED WATER	Drill Method: CORE/PO	Water Level Date: _____
Well Status: Abandoned	Drill Fluid: AIR	Water Level Access: _____
Year Drilled: 1977	Completion Depth: 90	Land Surface: _____
Total Depth: 0		

77-2

Well Decommissioned/Abandoned 7/12/2011

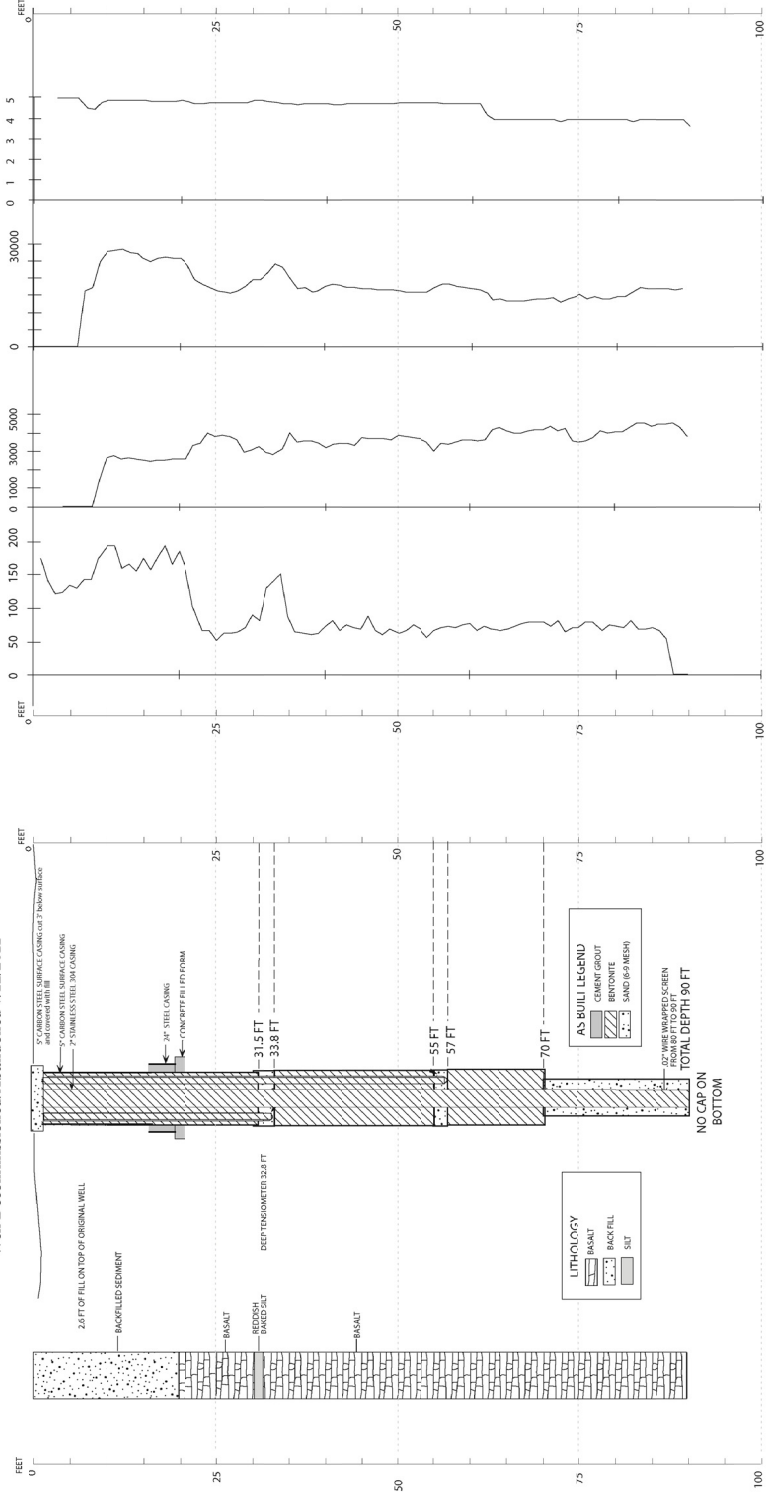


Figure B-8. Construction diagram of decommissioned well 77-2.

WELL NAME: **RWMC-2005**
 Facility: **RWMC (SDA)**
 Well Type: **Scientific instrumentation/Monitor**
 Well Status: **Abandoned**
 Year Drilled: **2004**
 Total Depth: **14'**
 Start Date: **4/6/04**
 End Date: **4/6/04**
 Completion Depth: **0**

Driller: **Dynatec/Lambert**
 Geologist: **G. Oberhansley**
 Drill Method: **Dual Air Rotary**
 Drill Fluid: **Air**
 Elevation: **5011.46(29 BC)
 5013.70(29 MP)
 5014.94(88 BC)
 5017.18(88 MP)**

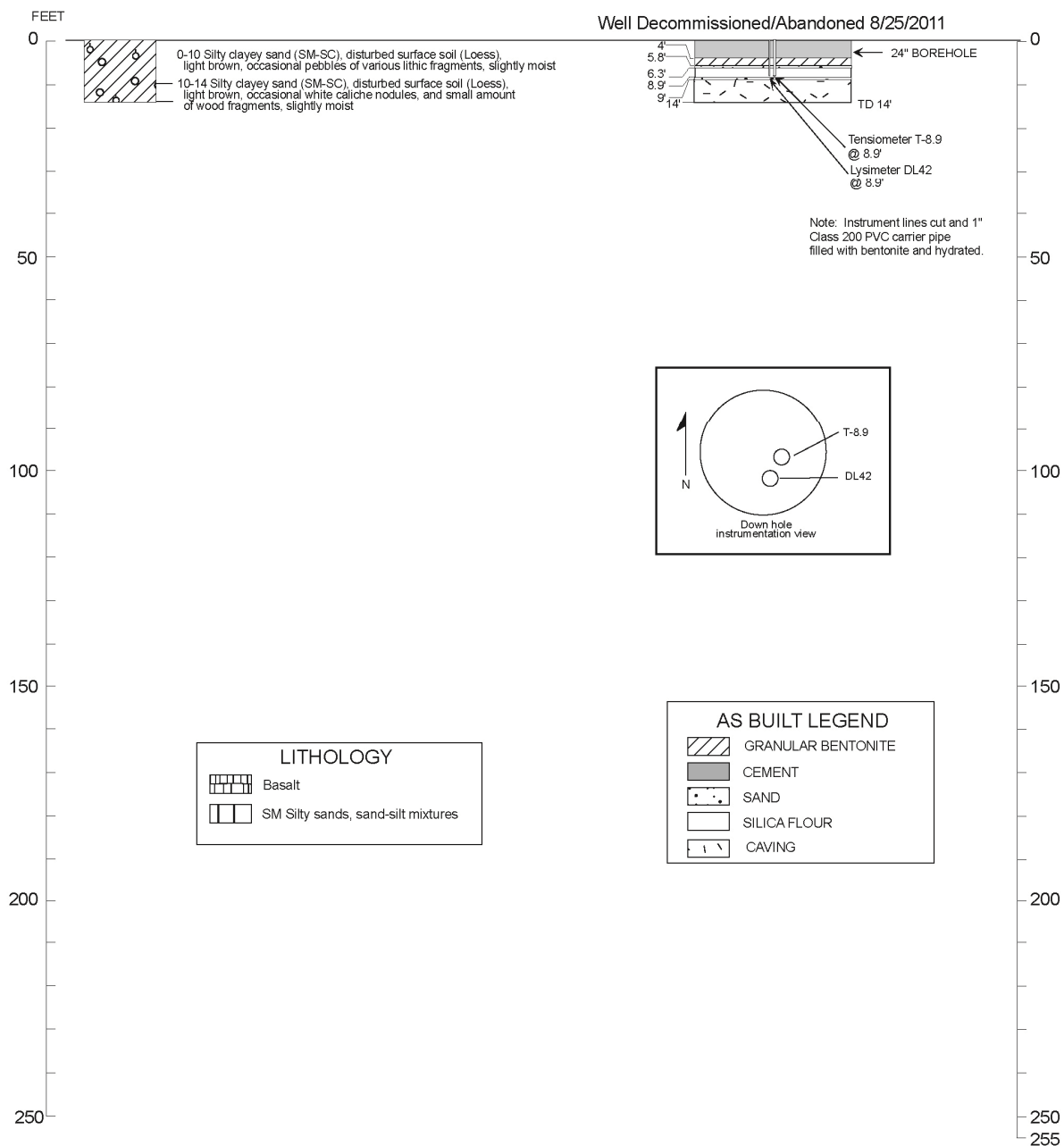
Modification Date: **8/25/2011**Date Drawn: **7/20/04**Water Level: **N/A**Water Level Date: **None**Water Level Access: **None**

Figure B-9. Construction diagram for decommissioned well RWMC-2005.

Modification Date 7/14/2011

Land Surface: 5009 94(29)BC
5013.43(88)BC
(29)MP
(88)MP

WellName: W-25

Facility: RWMC
Well Type: Scientific Instrumentation
Well Status: Abandoned
Year Drilled: 1986
Total Depth: 15.5
Completion Depth: 0

Driller: Hawley
Geologist: Joel Hubbell
Drilling Method: NF
Drilling Fluid: NF

03/02/1994
Water Level: NA
Water Level Date: NA
Water Level Access: NA

Well Decommissioned/Abandoned 7/14/2011

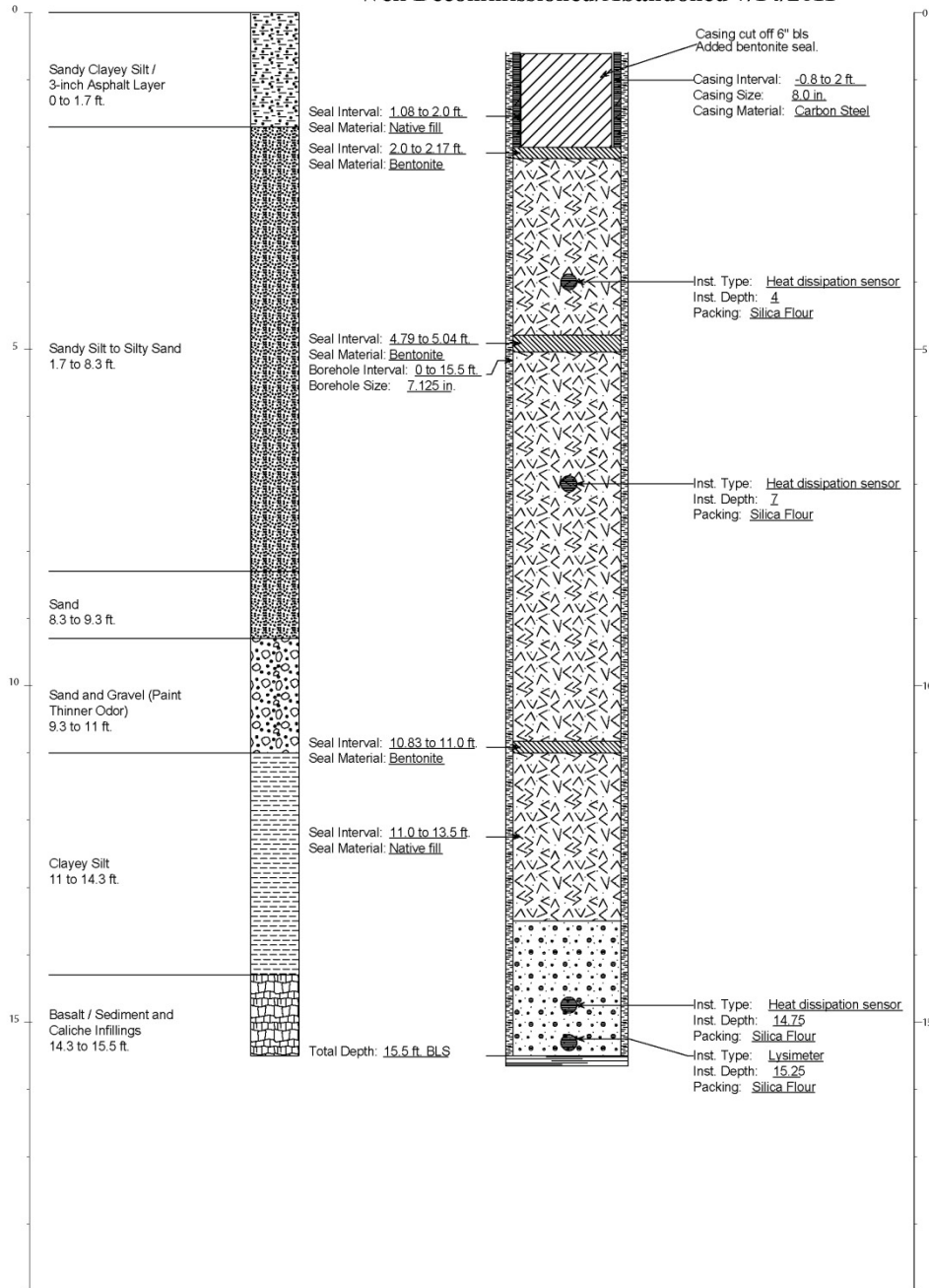


Figure B-10. Construction diagram for decommissioned well W-25.