New Mexico Copper Corporation

Copper Flat Groundwater Level Monitoring Plan

For

Probable Hydrologic Consequences

and

Predictive Geochemical Modeling
Of Pit Lake Water Quality
Reports

May 2018

New Mexico Copper Corporation
Copper Flat Groundwater Level Monitoring Plan

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1.0 Introduction

New Mexico Copper Corporation (NMCC) has prepared this Groundwater Level Monitoring Plan to monitor groundwater levels at its proposed Copper Flat Mine. Groundwater level monitoring will be conducted before, during and after mine operation to compare against ground water model projections. The monitoring network has been established by NMCC to gather data on the three identified groundwater systems that may be affected by pumping the Production Wells that will supply production water for the mine operation. These ground water systems include the Santa Fe Group aquifer, shallow alluvial aquifers along area streams, and the Bedrock Crystalline (JSAI, 2014). Potential effects on these groundwater systems are presented in the report prepared by John Shomaker & Associates (JSAI) on behalf of NMCC and submitted to the Mining & Minerals Division, titled *Probable Hydrologic Consequences of the Copper Flat Project Sierra County New Mexico*, December 2017. The proposed monitoring network is adequately distributed to track potential drawdown effects from proposed Copper Flat pit dewatering and proposed pumping from supply wells PW-1 through PW-4. As designed, the monitoring plan will provide the necessary data to track water-level changes in the crystalline bedrock, shallow alluvial, and Santa Fe Group aquifer units. In addition, the water level data set can be used to verify model predictions and to identify potential hydrologic impacts before becoming significant.

Although some of the wells identified in the monitoring well network presented below will be used for other data collection purposes, this Groundwater Level Monitoring Plan is proposed as a separate adjunct to the Copper Flat Groundwater Quality Monitoring Plan described in Appendix E of the NMCC Discharge Permit Application (and incorporated into NMCC's Mine Operation and Reclamation Plan). Each of these plans will contribute to the collection of data regarding ground water and surface water at Copper Flat and in the surrounding area. For example, water level measurements will be taken at all of the wells identified in the various monitoring networks, providing a comprehensive view of ground water conditions at the site. In addition, while water quality monitoring is not the purpose of this monitoring program, water quality results obtained from the rest of the monitoring network at the site will be utilized to provide a comprehensive view of groundwater conditions in the mine permit area and potential affected areas.

The proposed groundwater level monitoring network will facilitate the collection of groundwater levels prior to mine operation to help establish baseline conditions. Monitoring will continue throughout the time Production Wells are pumped and beyond to monitor the effects of pumping. NMCC anticipates some continued monitoring of groundwater levels after mine operation ceases for a number of years, the timeframe to be determined based on monitoring results, to confirm groundwater levels rebounding. This monitoring will create a body of data for long term use, allowing for analysis of potential impairment to wells or surface waters. This Groundwater Level Monitoring Plan provides a guideline and reference for planning and implementing groundwater level monitoring at the Copper Flat Permit Area and in potential affected area by the proposed operation of Copper Flat. This plan includes a description of the monitoring network as well as proposed data collection plans and protocols.

2.0 Monitoring Well Network

NMCC has identified 27 monitoring wells at the mine and in the potential affected area that will be utilized to assess projected effects on the Santa Fe Group aquifer (eight wells), the Quaternary-age alluvial aquifers along Las Animas Creek (four wells) and Percha Creek (three wells) and the crystalline bedrock (including the Andesite) of the Animas uplift (eight wells). The monitoring plan also includes the four production wells which will be monitored post-mining. Plate 1 presents the locations of these monitoring wells in relation to the mine permit area, potential affected area, and the Production Wells. Table 1 provides additional detailed information for each of these wells.

Some of these wells are also part of the Monitoring Plan in Appendix E of the Discharge Permit, and others are in addition to it. NMCC has obtained permission from private land owners where needed for access to monitor wells through mine operation and reclamation. Many of these wells have been in place for years and NMCC has background data on water levels and water quality. Some of the wells are newly identified monitoring locations. Three of the wells will be new wells drilled to replace wells that will be lost due to the planned pit expansion.

2.1 Santa Fe Group

As reported by JSAI's December 2017 Probable Hydrologic Consequences report, the pumping of Production wells completed in the Santa Fe Group Aquifer for Copper Flat Operation is projected to create water-level drawdown in this aquifer. A maximum drawdown of 70 ft. at the well field is projected to occur at the end of mining. Drawdown will decrease with distance from the Production wells and water levels are projected to recover over a period of approximately 20 to 30 years. Other projected effects from pumping the Production Wells in the Santa Fe group include minimal effects to shallow groundwater systems along Las Animas Creek and Percha Creek, decreases in flow rates of flowing wells along Las Animas and Percha Creeks, and depletion of water that would have flowed to the Rio Grande (JSAI, 2017). In addition to the four Production Wells, eight Santa Fe Group aquifer wells have been selected to monitor effects in the Santa Fe Group Aquifer (see Table 1). As shown on Plate 1, MW-5 is near the Production Wells, MW-9 and MW-10 north of the Production Wells along Las Animas Creek, MW-6 west of the wellfield, MW-8, MW-4 and MW-2 near the mine area to the west and southwest of the wellfield, and GWQ11-27 northeast of the wellfield in the flowing well area along Animas Creek. All of these wells have been monitored historically by NMCC and others and a significant database on historic groundwater levels in these wells already exists. These wells in the Santa Fe Group network have been selected to monitor the projected effects in these areas. The proposed monitoring network is adequately distributed to track potential drawdown effects from proposed Copper Flat pit dewatering and proposed pumping from supply wells PW-1 through PW-4. As designed, the monitoring plan will provide the necessary data to track water-level changes in the Santa Fe Group aquifer.

NMCC has right of way access from BLM (via NMNM 125870) to monitor MW-2, MW-5, MW-6 and MW-8. NMCC owns the land where MW-4 is located. NMCC also has permission from the rangeland allotment holders to monitor MW-6. NMCC owns MW-9 and MW-10 and has permission from the private landowners to access these wells.

Monitoring groundwater levels in the four Production Wells and in the eight identified additional wells completed in the Santa Fe Group aquifer will provide the data necessary to assess groundwater model projections, including effects to shallow groundwater systems along Las Animas Creek and Percha Creek and changes in pressure on flowing wells. Data collected will also be used to track depletions to the Rio Grande.

2.2 Shallow Alluvial Aquifer

Las Animas Creek runs from west to east to the north of the Copper Flat Production Wells and Percha Creek runs from west to east to the south (see Plate 1). Surface flow in these creeks result largely from precipitation and runoff from the Black Range to the west, and have perennial, intermittent and ephemeral reaches. NMCC has identified seven existing wells completed in the shallow alluvial aquifers beneath Las Animas and Percha Creeks to monitor effects of Production Well pumping (see Plate 1).

Four shallow alluvial wells will be monitored along Las Animas Creek. MW-11 has been monitored historically. The other three wells are existing wells that are new additions to the monitoring network. NMCC owns well MW-11 and has permission from the private landowners for access. Three existing shallow alluvial wells owned by private landowners along Animas Creek will be added along Las Animas Creek: one west of MW-11 and another east of MW-11, and a third east of GWQ11-27 near I-25. The private wells will be monitored via transducers that will not interfere with the use of the wells. NMCC has permission from the private landowners to access and monitor the wells.

The three existing wells identified on Plate 1 for monitoring the alluvium along Percha Creek were installed by the Bureau of Reclamation (BOR). BOR has granted NMCC ownership of these wells, which is noted in OSE well file records, and NMCC has permission from the private landowners for access and monitoring.

2.2.1 Surface Water Along Las Animas and Percha Creeks

The data collected from shallow alluvial wells along Las Animas and Percha Creeks will provide data regarding the groundwater model's prediction of no measurable effects in shallow alluvial groundwater on the western side of Las Animas Creek and Percha Creek and, therefore, no measurable effects on the surface water flows on these streams. While performing groundwater level data collection, NMCC will also check and document stream flows, if present, along Las Animas and Percha Creeks. This data will provide seasonal data regarding stream flows that can be tracked before, during and after mine operation.

2.3 Bedrock Crystalline

Groundwater in fractures in the bedrock crystalline around the Copper Flat pit will be drawn down as a result of pumping out water that gathers in the open pit to allow mining to take place. As discussed in the PHC and the Ground Water Model report (JSAI, 2014) the pit is currently a hydrologic sink. At the end of mining, groundwater drawdown in the bedrock around the open pit is projected to be about 800 ft. A permanent cone of depression will form around the pit which will reestablish the evaporative hydrologic sink in the future after mining ceases (JSAI, 2017).

Eight wells are proposed for monitoring the groundwater in the bedrock crystalline (see Table 1). Seven of these wells in the bedrock around the open pit have provided historic data: GWQ-5R, GWQ-6N, GWQ96-22, GWQ96-23, GWQ11-24, GWQ11-25, and GWQ11-26. Wells GWQ11-23 and GWQ11-25 will be lost by the expansion of the pit. Three new wells proposed in the New Mexico Copper Discharge Permit Appendix E Monitoring Plan, PGWQ-1, PGWQ-2, and PGWQ-3, will replace these existing wells. These new wells will be installed prior to operation of Copper Flat. Access to these wells is provided either through NMCC ownership of the well site and well or through an approved access permit with BLM.

2.4 Well Construction

Table 1 presents available well information for the identified monitoring well network. Appendix A presents well construction diagrams where available.

All selected monitoring wells are completed in the groundwater system they are designated to monitor. Some of these wells were completed specifically for monitoring. These wells are generally 2-4" in diameters and have screen lengths designed for groundwater quality monitoring. Other wells were completed for domestic use or exploration purposes and thus have larger diameter casings and/or long saturated screen lengths. When wells are being used for purposes other than monitoring, a transducer may be set it the well to collect well data and not interfere with its use.

3.0 Monitoring Plan

3.1 Monitoring Frequency & Measured Parameters

NMCC will monitor groundwater levels in the bedrock and Santa Fe Group groundwater monitoring network on a quarterly basis beginning 6 months to 12 months prior to initiation of pumping of Production Wells for construction or operation purposes. Collecting groundwater levels prior to pumping of Production wells will supplement previous baseline data collection. The baseline data will establish seasonal groundwater variation patterns not affected by pumping. Groundwater level data collection will occur quarterly and be conducted by NMCC staff or consultants.

Data collected at monitoring wells will include at a minimum depth-to-water measure to the nearest 0.01 foot. Pressure transducers will be installed in the Alluvial monitoring network wells, so continuous water level monitoring can be implemented. The transducers will be programed to measure water levels hourly. Data will be retrieved quarterly.

All data collection will be logged in field books or other appropriate data collection documentation and industry standard practices will be employed to ensure quality of data collection.

During collection of groundwater level data from shallow alluvial wells on Las Animas and Percha Creeks, field personnel will also document if surface water is flowing in the creeks near the monitoring wells. If flow is observed, NMCC staff or consultants will document stream flow rate to the extent practicable.

3.1.1 Access

NMCC will contact private landowners in advance of visiting wells for data collection. If access to monitoring wells requires passing through closed or open gates, staff will leave the gate in the position it was encountered. NMCC staff or consultants will conduct themselves in a professional and courteous manner and will not damage personal property or well heads during data collection. Care will be taken to avoid accessing wells during or directly after heavy rainfall events to prevent rutting dirt roads.

3.1.2 Resources

Monitoring of water levels, data collection and reporting will be conducted at NMCC expense. NMCC will maintain industry standard equipment for data collection.

4.0 Reporting

NMCC will prepare annual reports on groundwater levels collected. Reports will include groundwater levels and an area groundwater level map generated by at least one quarter of the data collected. NMCC reports will be maintained internally and provided to appropriate agencies for review as may be required.

5.0 References

JSAI, 2014, Conceptual Model of Groundwater Flow in the Animas Uplift and Palomas Basin, Copper Flat Project, Sierra County, New Mexico. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. August 2014.

JSAI, 2017, Probable Hydrologic Consequences of the Copper Flat Project Sierra County New Mexico. Prepared for New Mexico Copper Corporation, Albuquerque, New Mexico. December 2017.

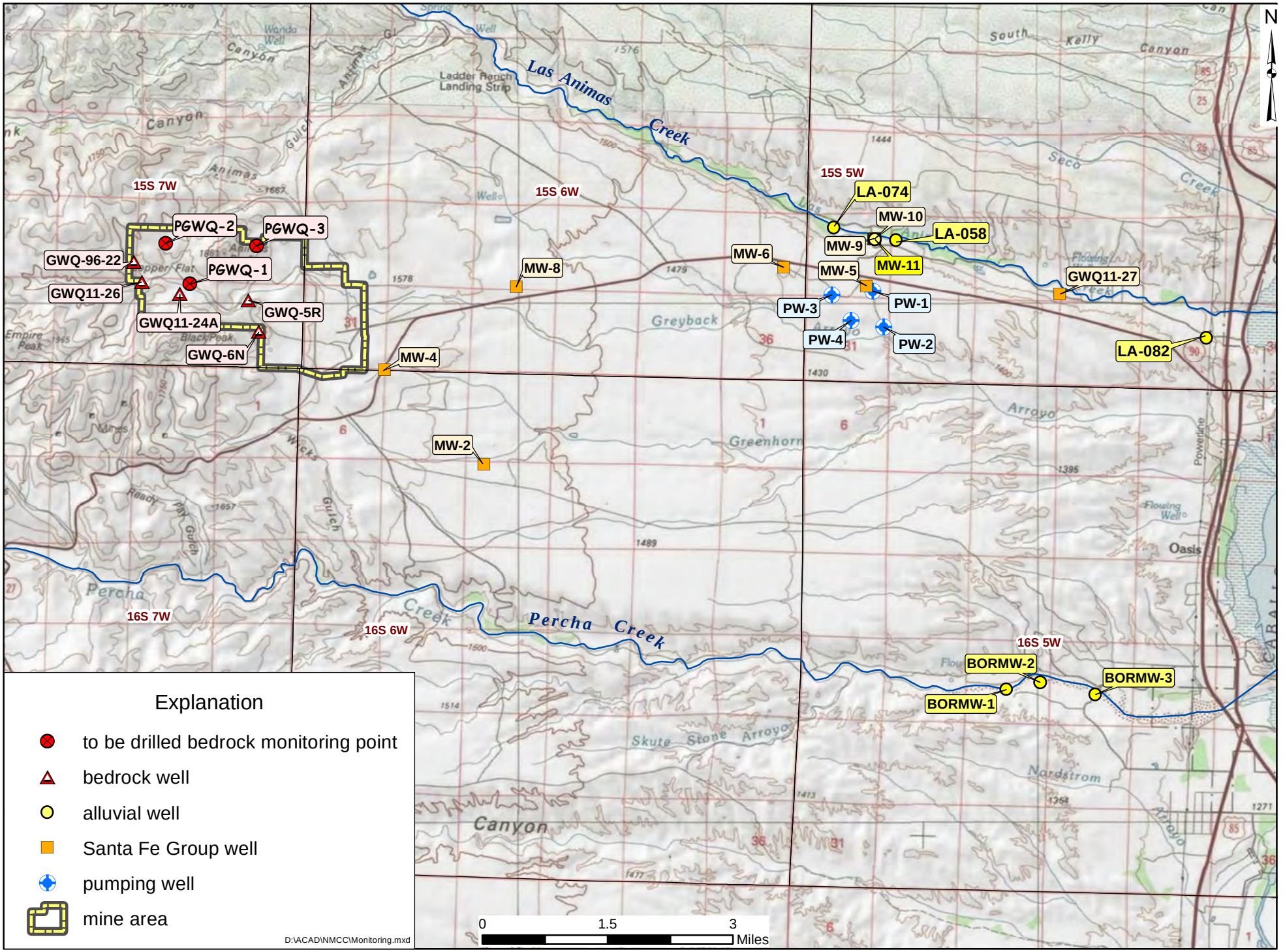

Plate 1. Copper Flat Ground Water Monitoring Network

JOHN SHOMAKER & ASSOCIATES, INC.

Table 1
Copper Flat Monitor Well Network

Aquifer	Well ID	OSE Record Number	Well Access	Well log	Year drilled	Casing diameter (inches)	Total Depth (ft bgl)	DTW (ft bgl)	Screen interval (ft bgl)	Note
Santa Fe	MW-2	LRG-4652-S-12	ROW 125870	yes	1975		1500		133-1500	
Santa Fe	MW-4	LRG-4652-S-13	NMCC Property	yes	1975		2000		123-1500	
Santa Fe	MW-5	LRG-4652-S-14	ROW 125870	yes	1975		1380		306-1000	
Santa Fe	MW-6	LRG-4652-S-15	ROW 125870	yes	1975		1112		310-1000	
Santa Fe	MW-8	LRG-4652-S-16	ROW 125870	yes	1975		1004		366-1000	
Santa Fe	MW-9	LA-00165-EXPL	Signed Agreement 25-Oct-17	yes	1994		250		200-250	Along Animas Creek
Santa Fe	MW-10	LA-00165-EXPL-2	Signed Agreement 25-Oct-17	yes	1994		125		80-120	Along Animas Creek
Santa Fe	GWQ 11-27	LA-228	Signed Agreement 14-Jun-17	yes	2012	10.75	320	Artesian		Along Animas Creek
Santa Fe	PW-1	LRG-4652	ROW 125293/Future ROD	yes	1975		960		368-951	
Santa Fe	PW-2	LRG-4652-S-1	ROW 125293/Future ROD	yes	1976		1005		376-995	
Santa Fe	PW-3	LRG-4652-S-2	ROW 125293/Future ROD	yes	1976		970		380-965	
Santa Fe	PW-4	LRG-4652-S-3	ROW 125293/Future ROD	yes	1980		957		354-954	
Alluvial	MW-11**	LA-00165-EXPL-3	Signed Agreement 25-Oct-17	yes	1994		65		12- 32	Along Animas Creek
Alluvial	LA-074**	LA-074	Signed Agreement 14-Jun-17	no	1974	16	48	10	22-25, 30-47	Along Animas Creek
Alluvial	LA-058**	LA-058	Signed Agreement 14-Jun-17	no	1955	hand dug	15			Along Animas Creek
Alluvial	LA-082**	LA-082	Signed Agreement 14-Jun-17	no	1976	4	77	17	57-77	Along Animas Creek
Alluvial	BORMW-1***	LRG-14545-POD1	Signed Agreement 23-Oct-17	yes	2009	2	32	25	22-32	Along Percha Creek
Alluvial	BORMW-2***	LRG-14545-POD2	Signed Agreement 23-Oct-17	yes	2009	2	29	21	19-29	Along Percha Creek
Alluvial	BORMW-3***	LRG-14545-POD3	Signed Agreement 23-Oct-17	yes	2009	2	24	23	14-24	Along Percha Creek
Bedrock	GWQ-96-22	*none found on OSE database*	ROW 125870	yes	1996	2	244		174-244	
Bedrock	GWQ-11-26	LRG-15080-POD4	NMCC Property	yes	2011	4	43		23-43	
Bedrock	GWQ-11-24A	LRG-15080-POD1	NMCC Property	yes	2011	2	90		60-90	
Bedrock	GWQ-6N	LRG-4648-1	NMCC Property	no	~1900	8	85	na	na	
Bedrock	GWQ-5R	LRG-15080-POD3	NMCC Property	yes	2011	4	120	118	80-120	
Bedrock	PGWQ-1*	Future	NMCC Property	TBD	TBD	TBD	250	40	150-250	New Well
Bedrock	PGWQ-2*	Future	Future ROD	TBD	TBD	TBD	375	115	275-375	New Well
Bedrock	PGWQ-3*	Future	Future ROD	TBD	TBD	TBD	150	130	130-150	New Well

* New well to be drilled

** Alluvial well along Las Animas Creek

***Alluvial well along Percha Creek

Appendices

Appendix A - Well Construction Diagrams

Santa Fe Group Aquifer Wells

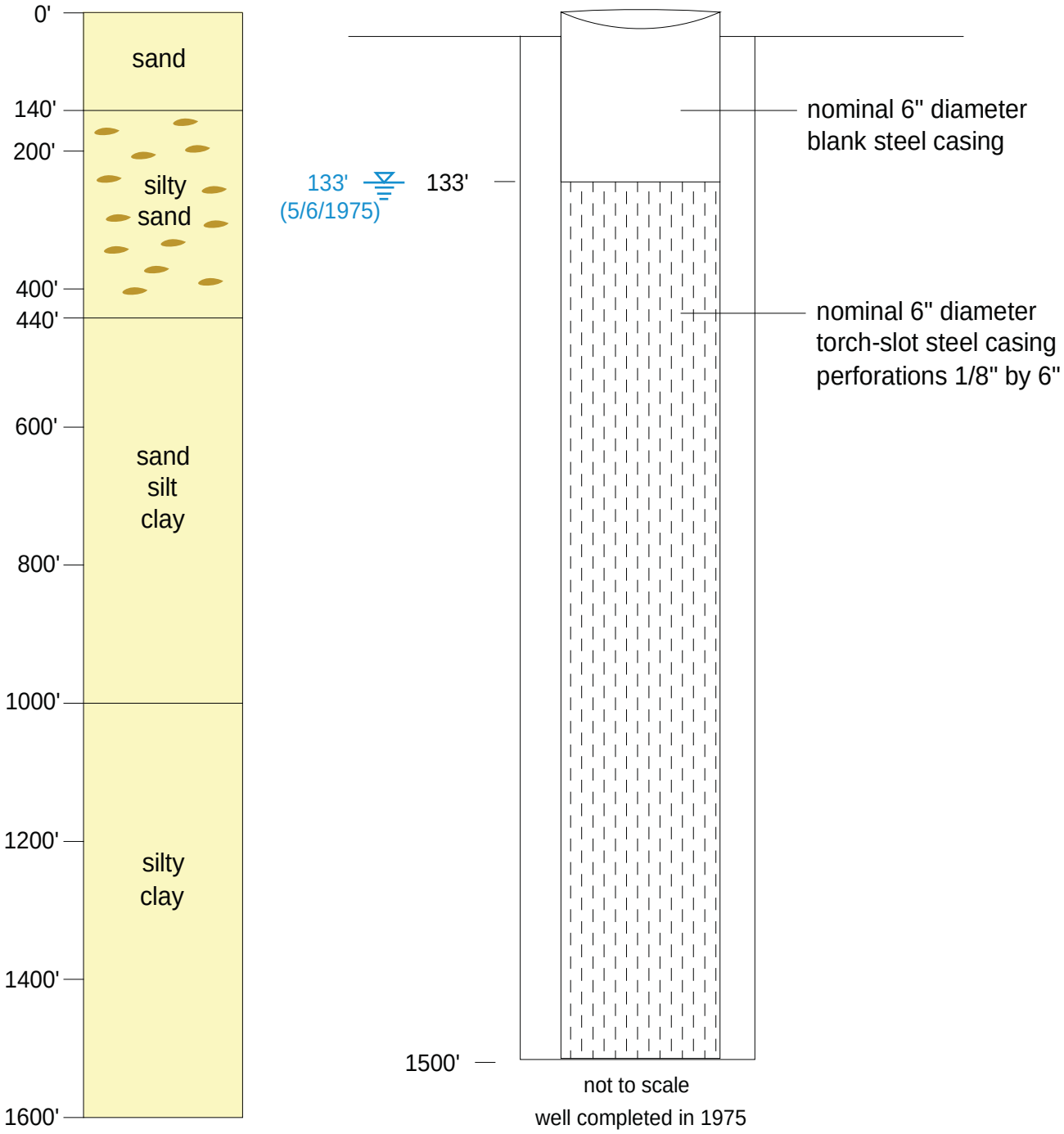

Figure B13. Well completion diagram for LRG-4652-S-12 (MW-2), Copper Flat Mine, Sierra County, New Mexico.

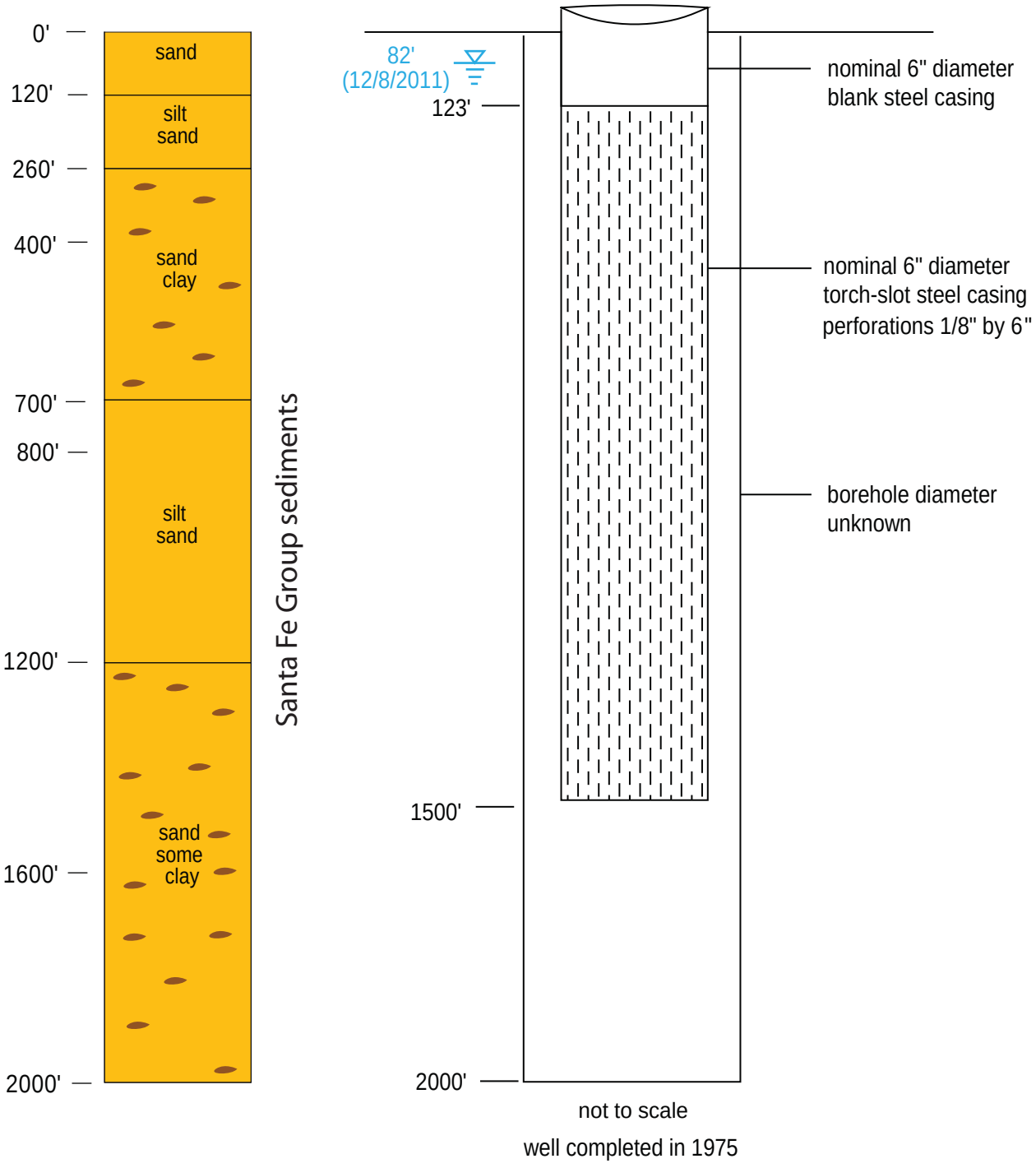

Figure B14. Well completion diagram for LRG-4652-S-13 (MW-4), Copper Flat Mine, Sierra County, New Mexico.

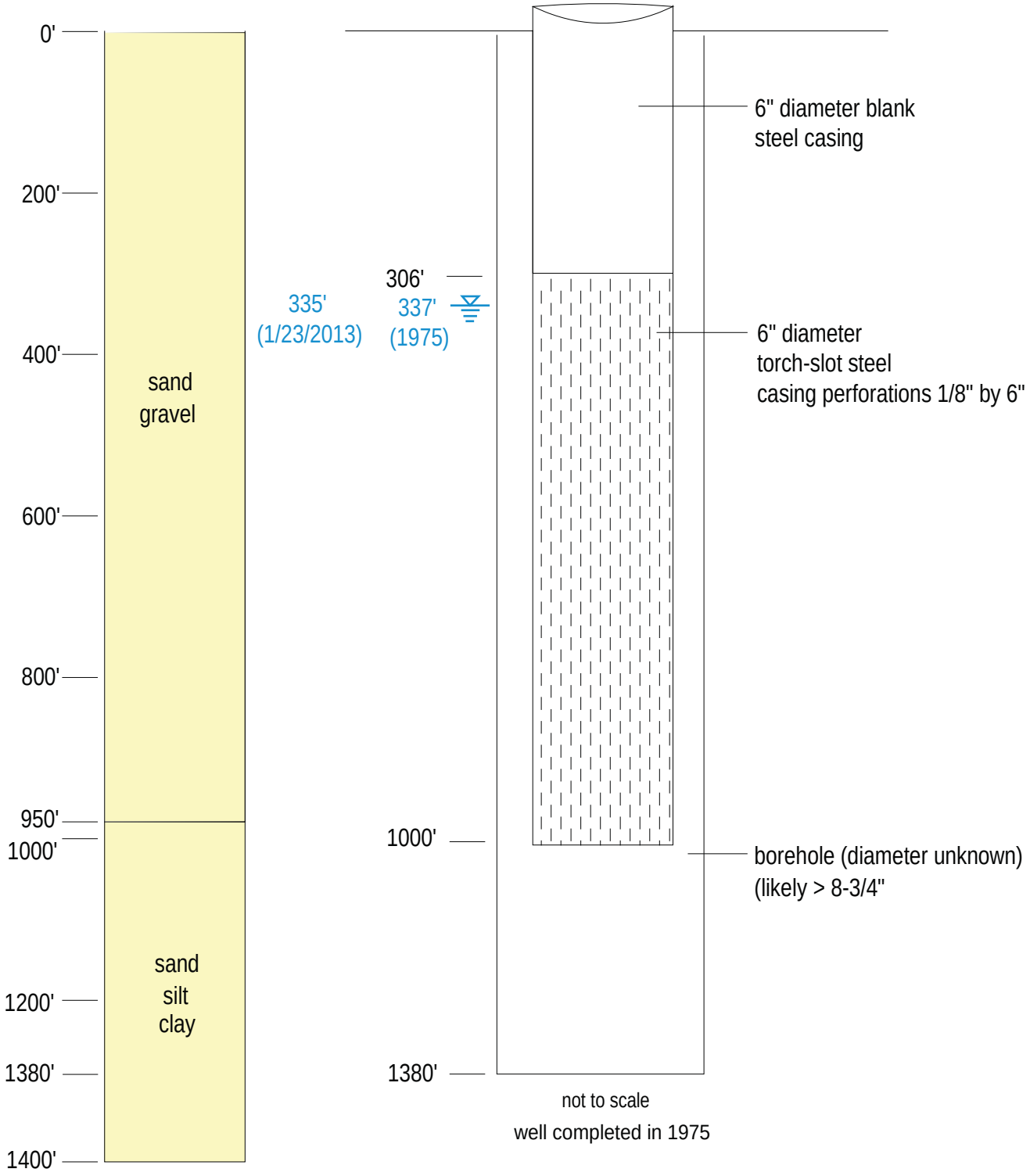

Figure B15. Well completion diagram for LRG-4652-S-14 (MW-5), Copper Flat Mine, Sierra County, New Mexico.

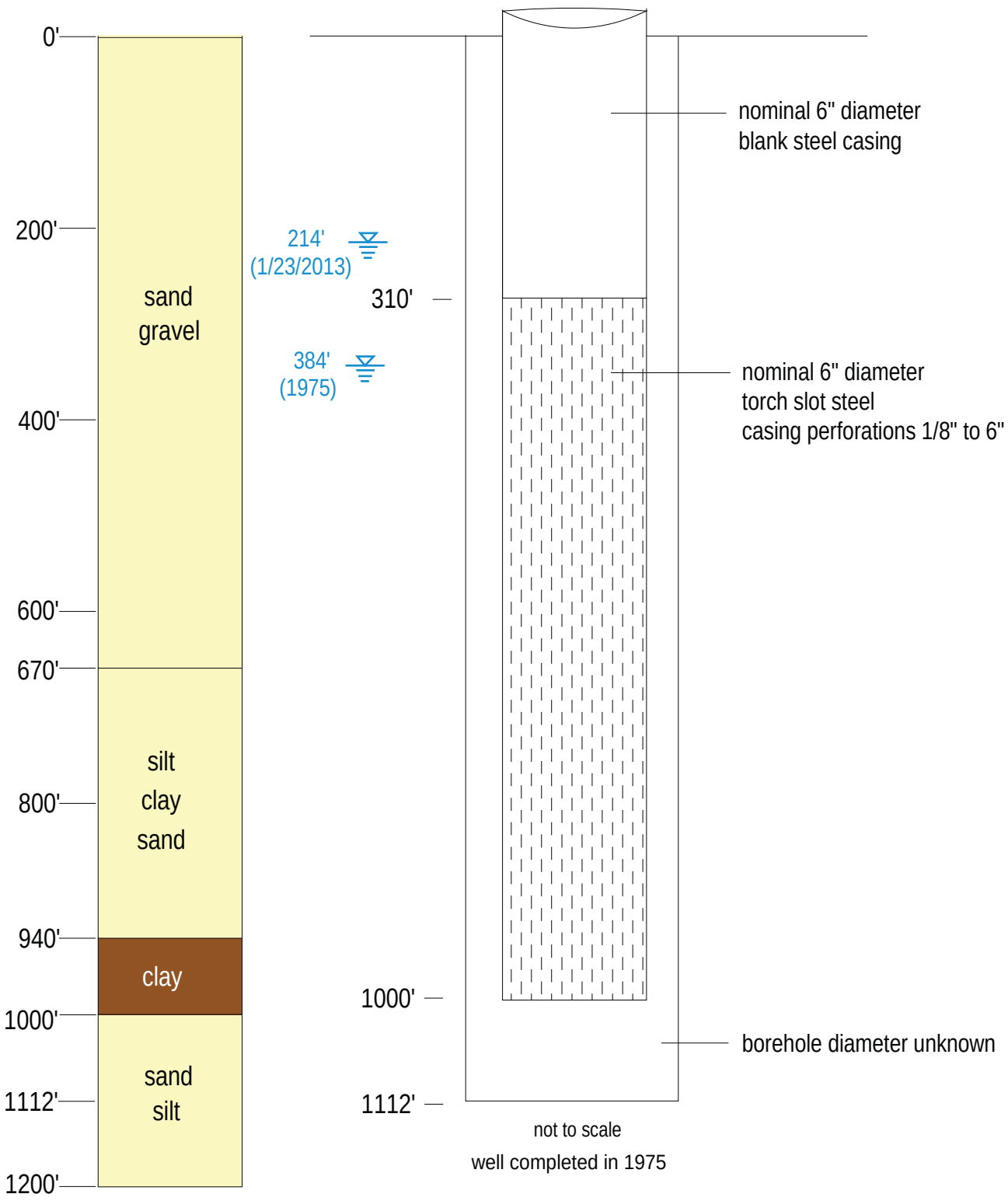

Figure B16. Well completion diagram for LRG-4652-S-15 (MW-6), Copper Flat Mine, Sierra County, New Mexico.

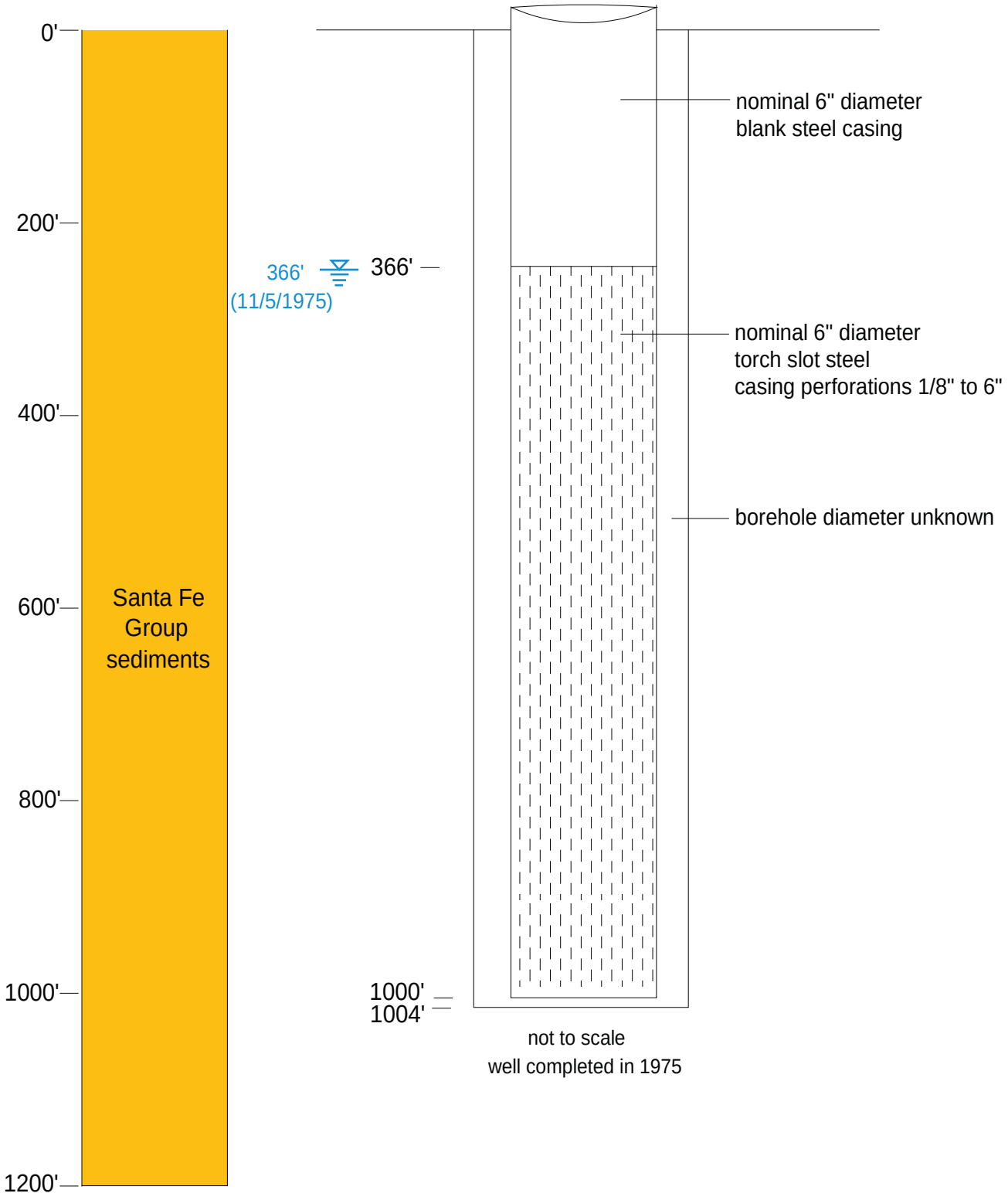

Figure B17. Well completion diagram for LRG-4652-S-16 (MW-8), Copper Flat Mine, Sierra County, New Mexico.

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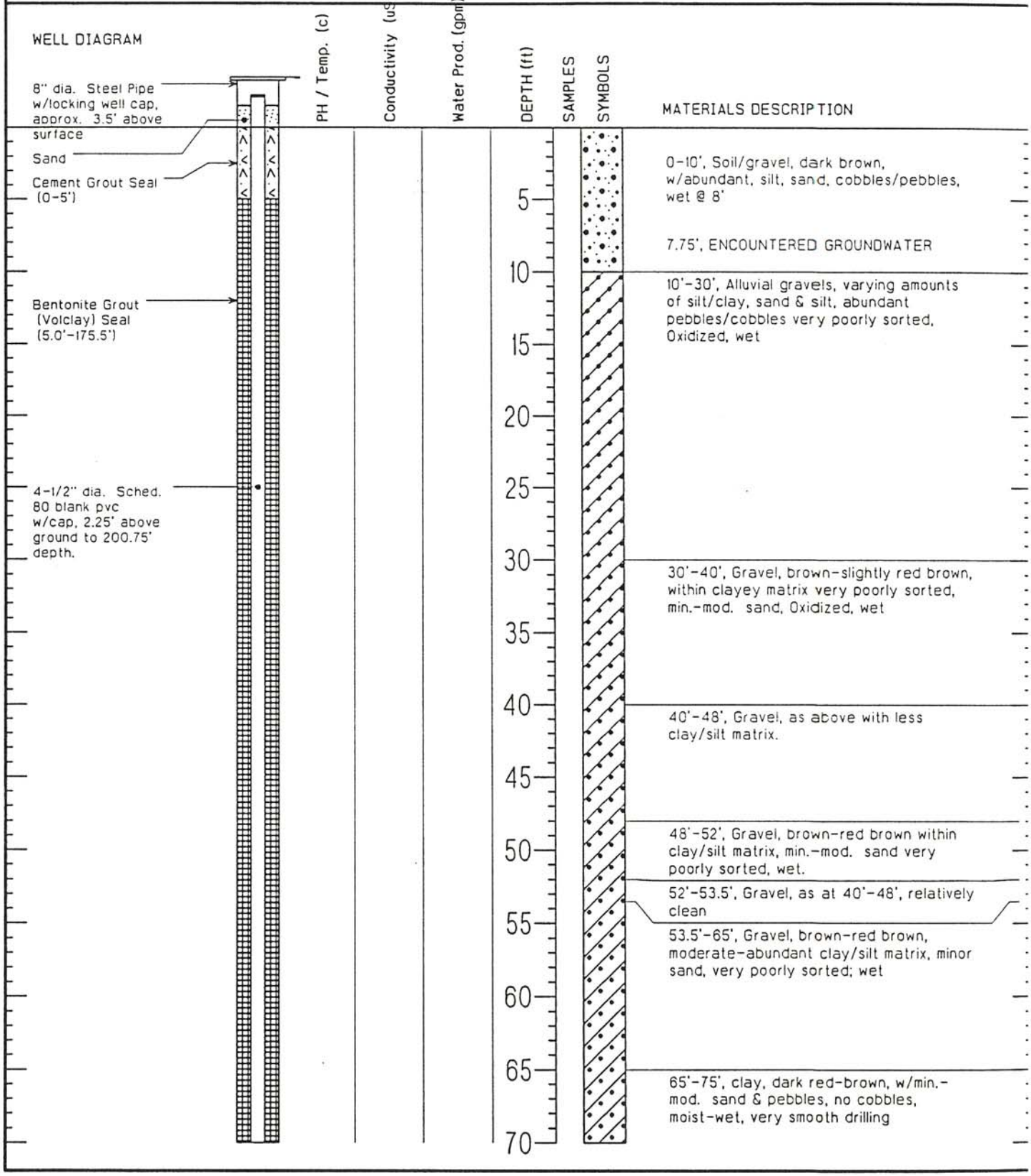
LOG OF MONITORING WELL MW-9



PROJECT Copper Flat - Hillsboro, N.M.	DRILLING COMPANY Beylik Drilling
LOCATION N713191.10, E603249.22 N.M. S.P.C.	DATE DRILLED 09/20/94 - 09/26/94
JOB NUMBER 68607 (ref: 68607M9)	SURFACE ELEVATION 4440.14
GEOLOGIST C.W.	TOTAL DEPTH OF HOLE 252.50 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 71.05 Feet

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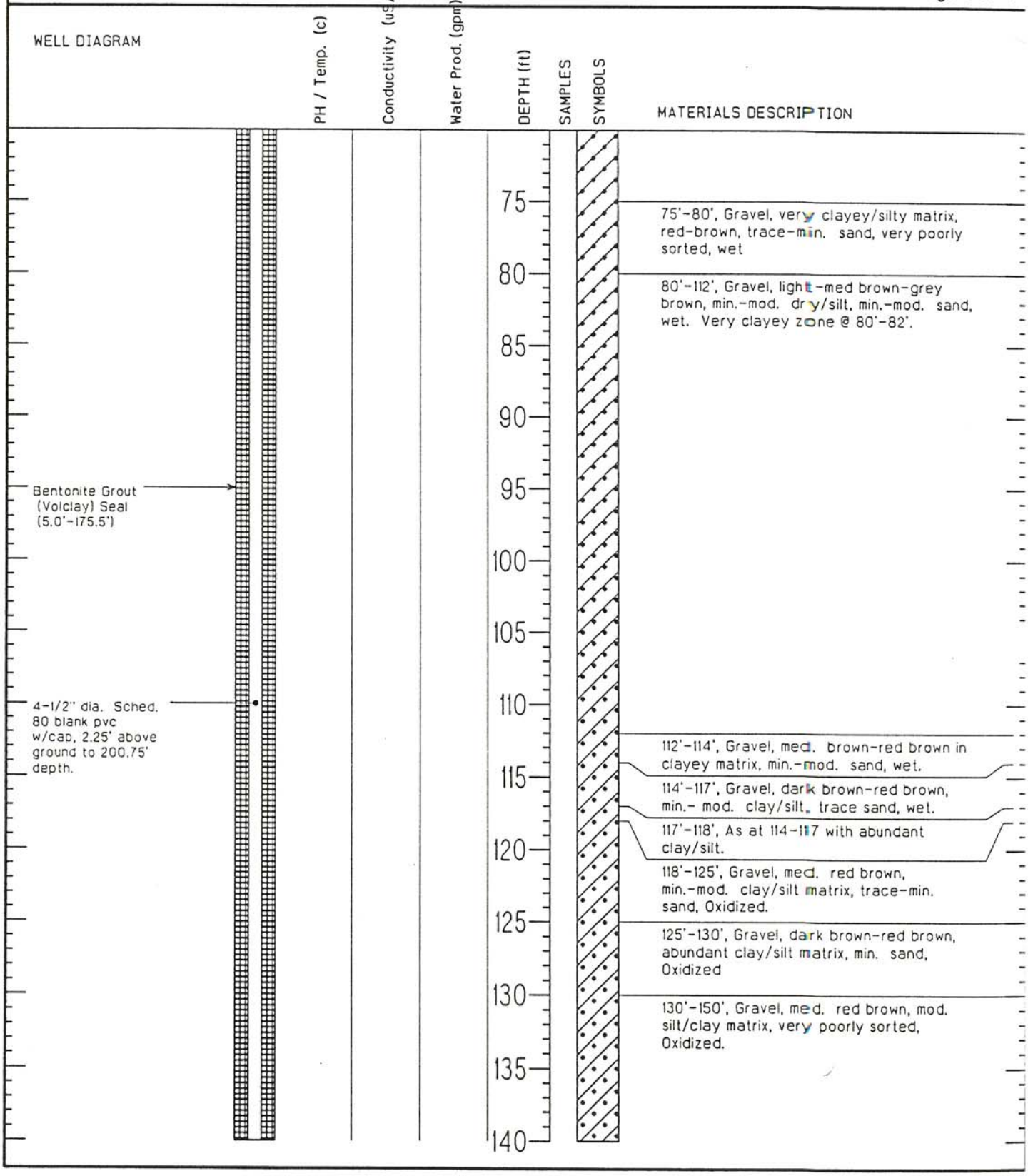
Engineering and Environmental Consultants

LOG OF MONITORING WELL MW-9



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JOB NUMBER 68607 (ref: 68607M9)	SURFACE ELEVATION 4440.14
GEOLOGIST C.W.	TOTAL DEPTH OF HOLE 252.50 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 71.05 Feet

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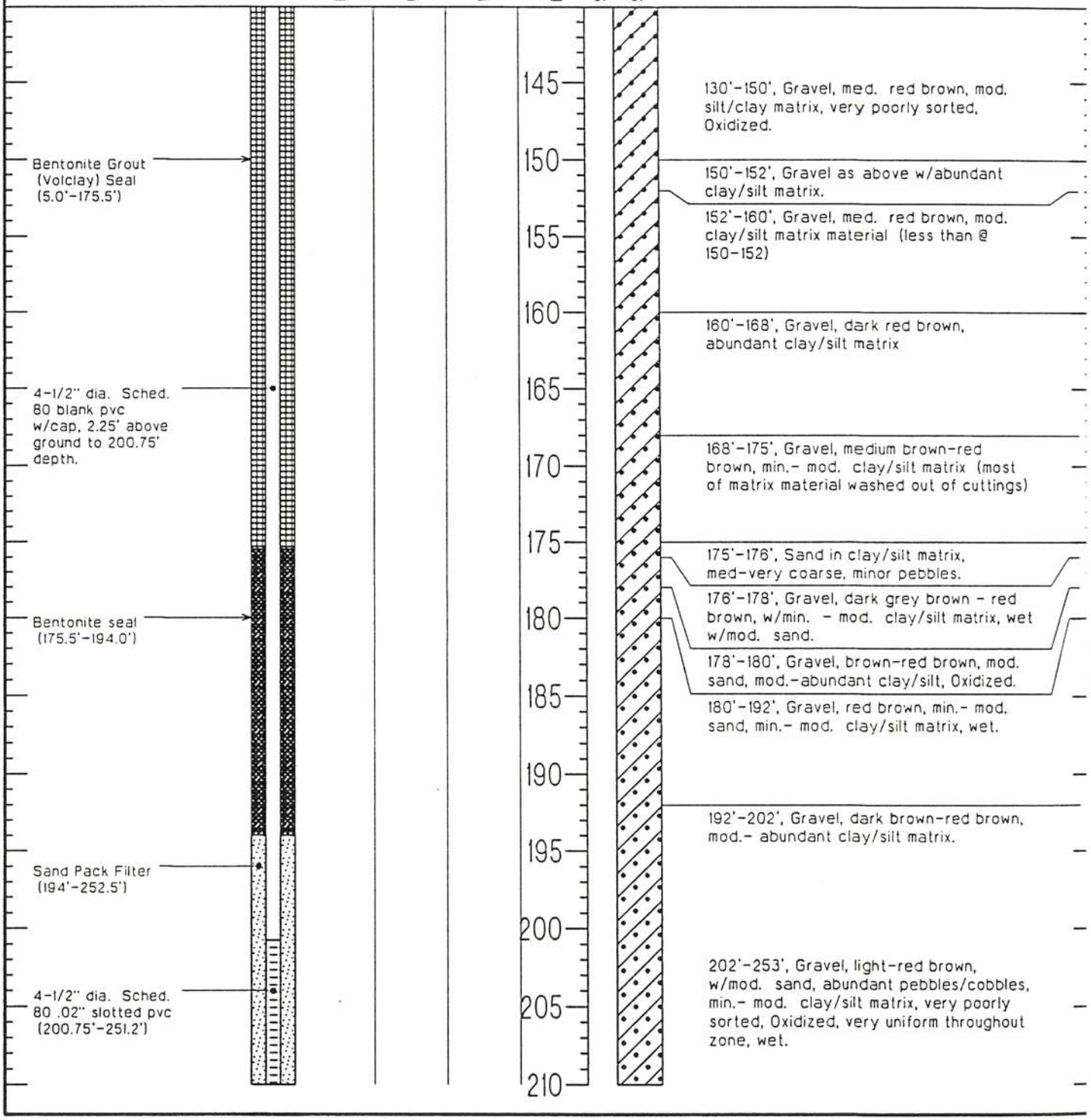
Engineering and Environmental Consultants

LOG OF MONITORING WELL MW-9



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JOB NUMBER 68607 (ref: 68607M9)	SURFACE ELEVATION 4440.14
GEOLOGIST C.W.	TOTAL DEPTH OF HOLE 252.50 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 71.05 Feet

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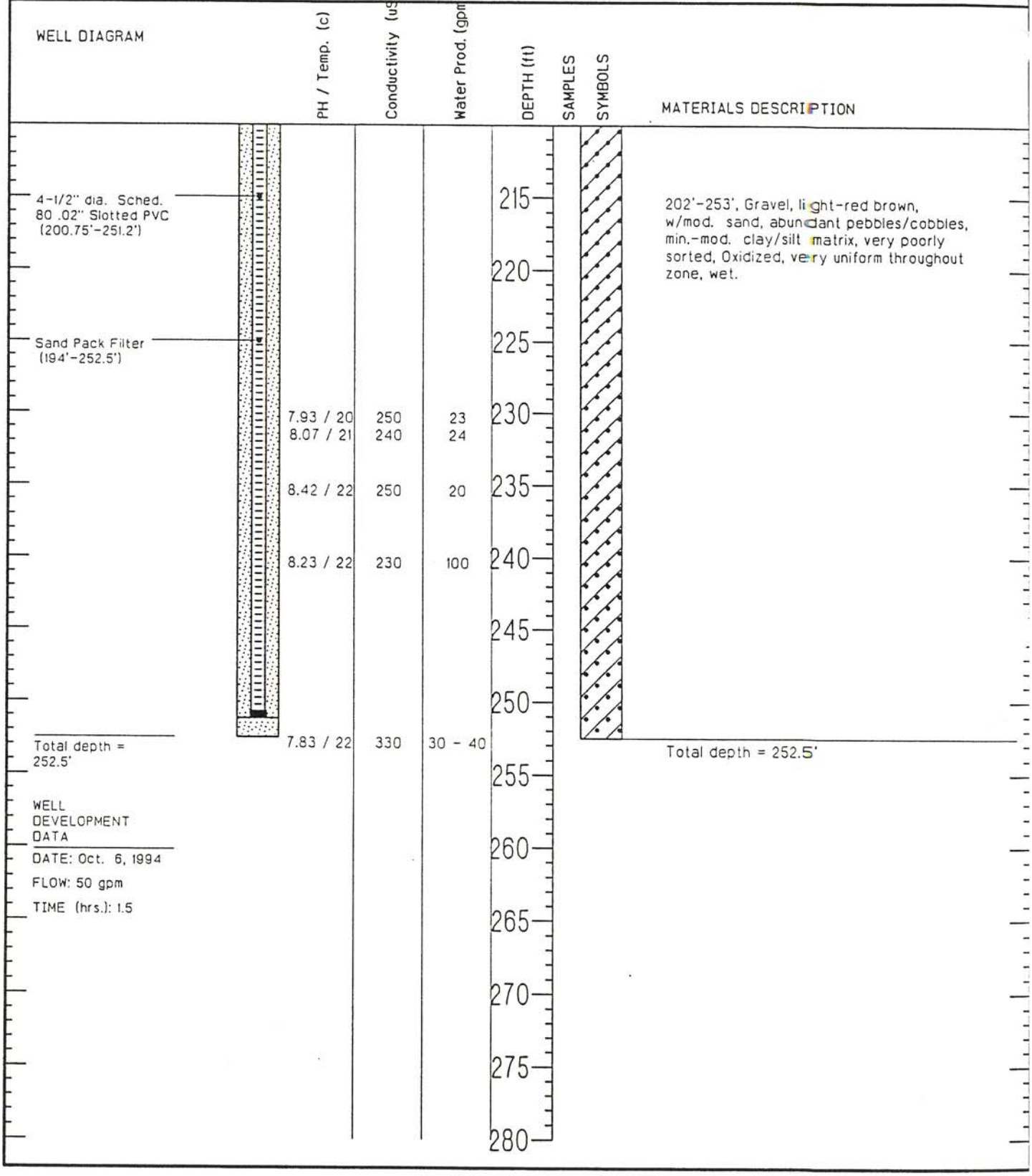
Engineering and Environmental Consultants

LOG OF MONITORING WELL MW-9



PROJECT Copper Flat - Hillsboro, N.M.	DRILLING COMPANY Beylik Drilling
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JOB NUMBER 68607 (ref: 68607M9)	SURFACE ELEVATION 4440.14
GEOLOGIST C.W.	TOTAL DEPTH OF HOLE 252.50 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 71.05 Feet

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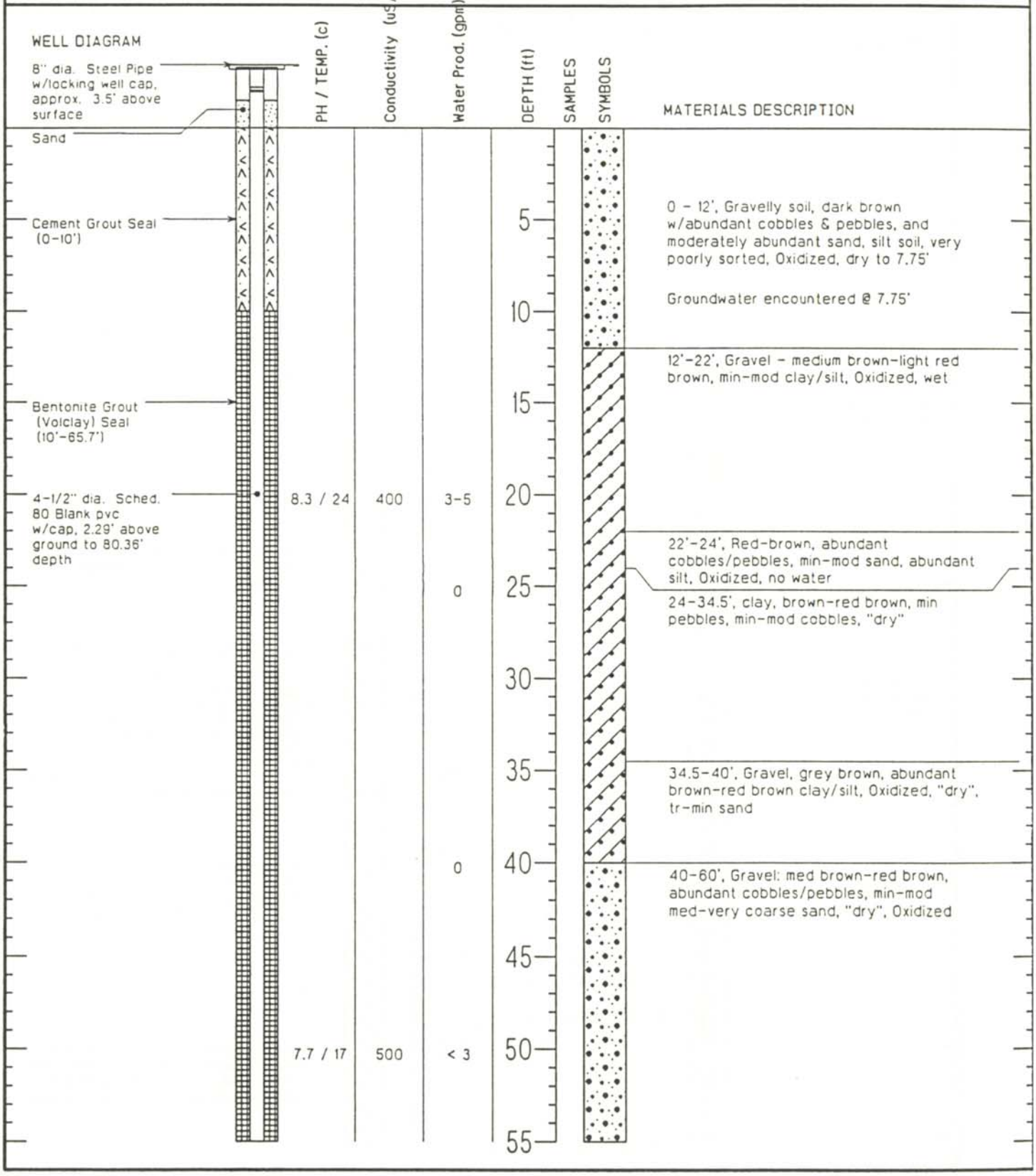
LOG OF MONITORING WELL MW-10



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LOCATION N719968.25, E636740.99 N.M. S.P.C.	DATE DRILLED 10/94
JOB NUMBER 68607 (ref: 68607M10)	SURFACE ELEVATION 4439.27
GEOLOGIST CW	TOTAL DEPTH OF HOLE 128.0 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 70.625 Feet

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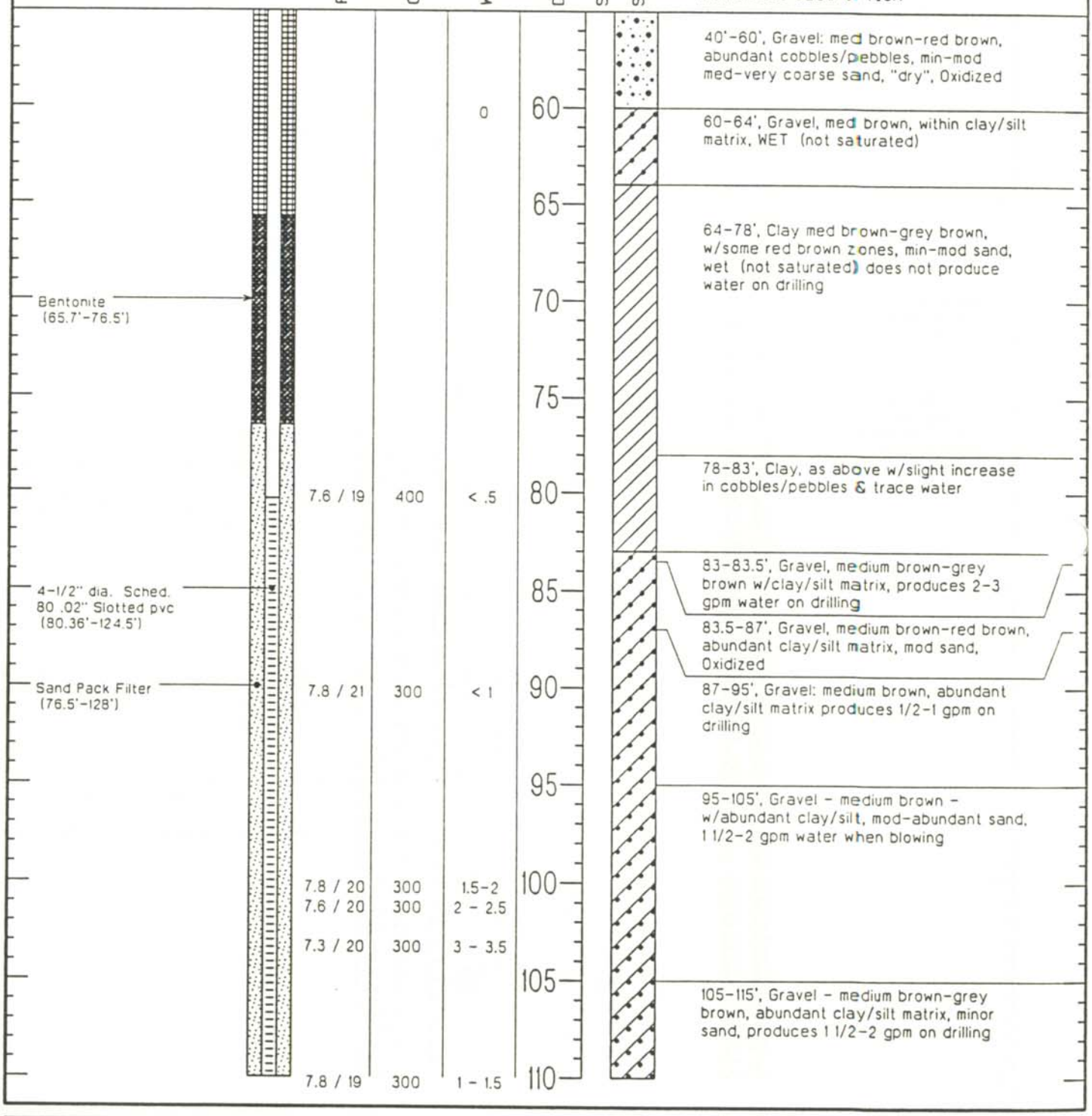
LOG OF MONITORING WELL MW-10



PROJECT Copper Flat - Hillsboro, N.M.	DRILLING COMPANY Beylik Drilling
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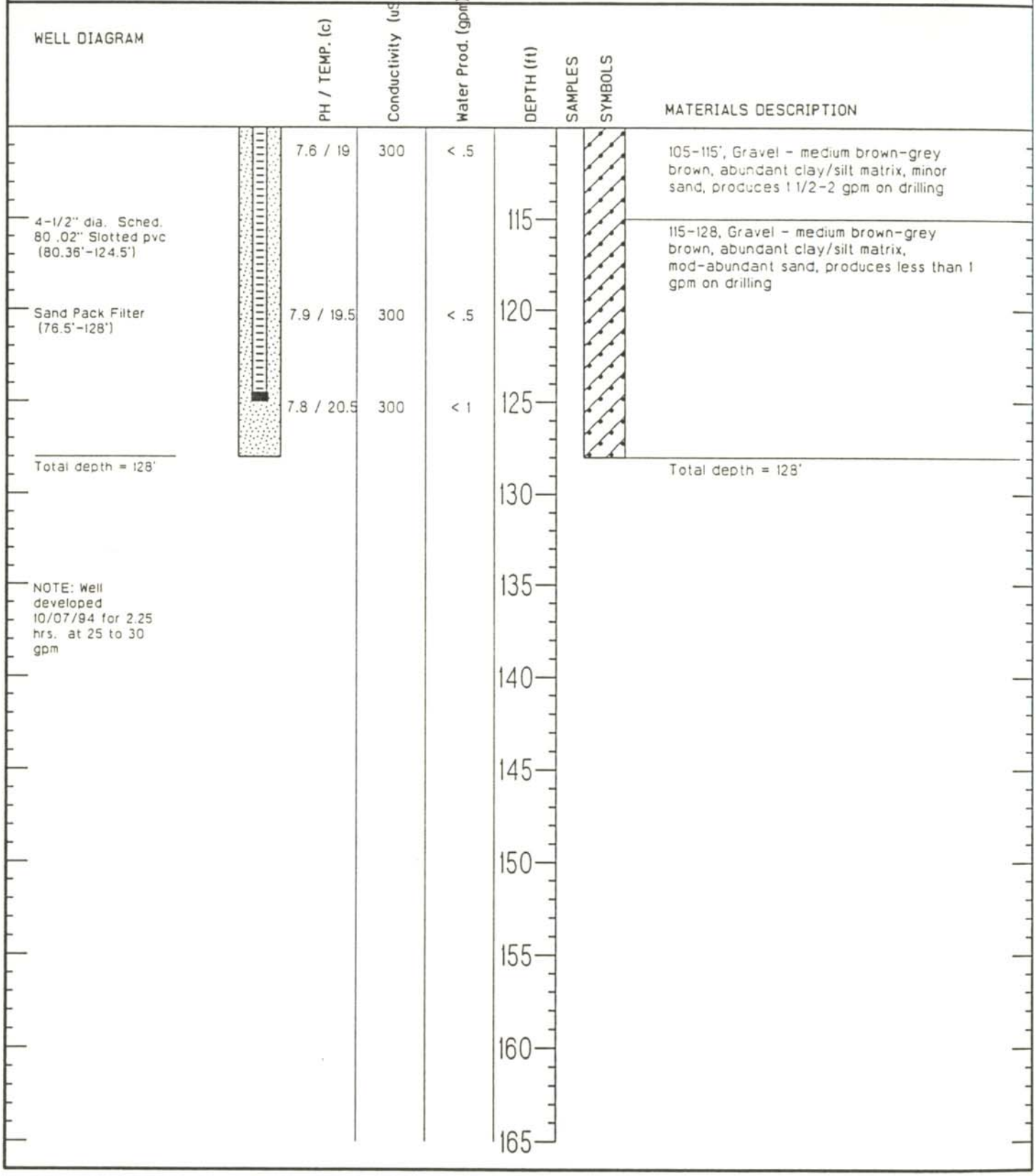
JOB NUMBER 68607 (ref: 68607M10)	SURFACE ELEVATION 4439.27
GEOLOGIST CW	TOTAL DEPTH OF HOLE 128.0 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 70.625 Feet

Steffen Robertson and Kirsten
Engineering and Environmental Consultants

LOG OF MONITORING WELL MW-10



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JOB NUMBER 68607 (ref: 68607M10)	SURFACE ELEVATION 4439.27
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DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 70.625 Feet

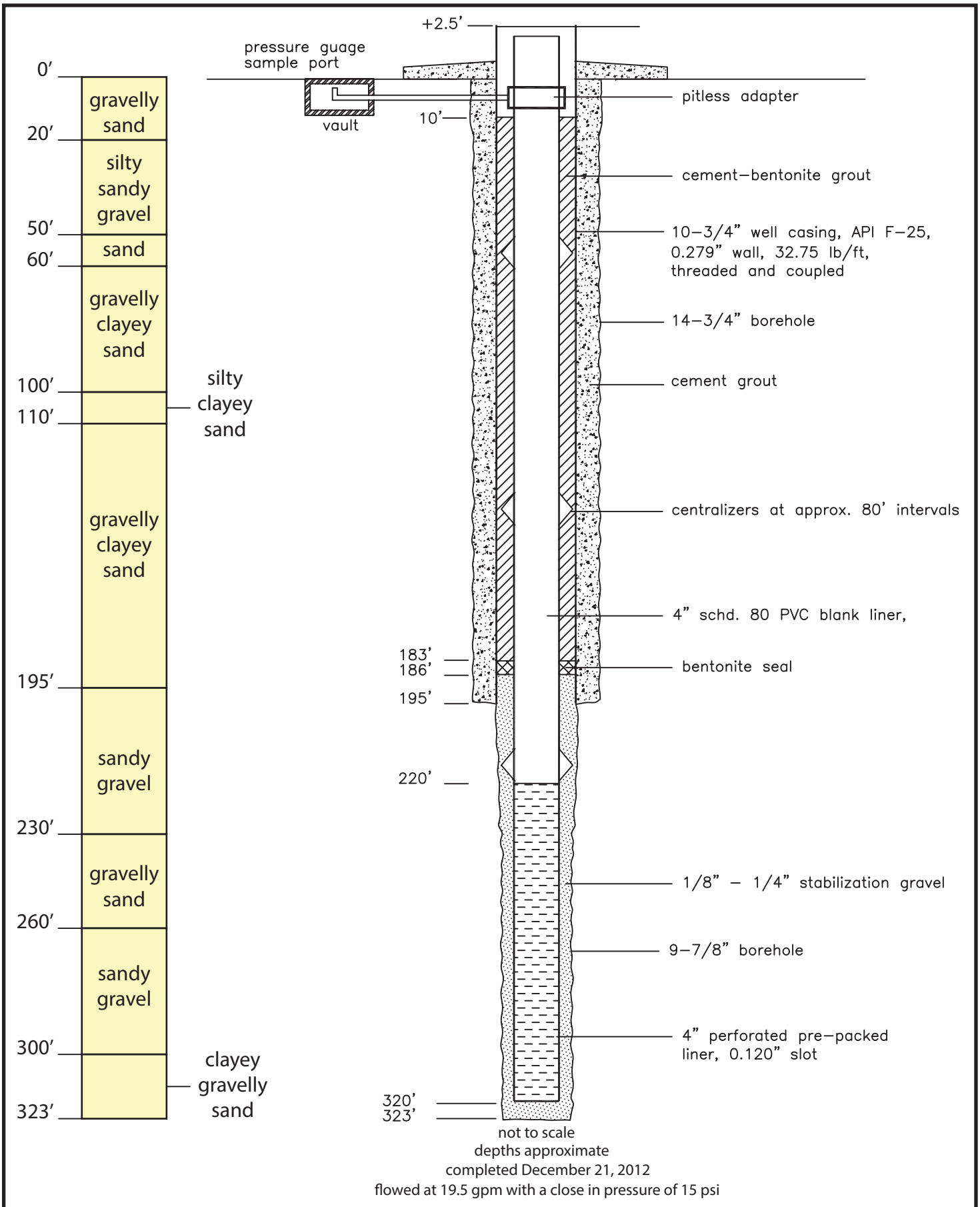


Figure B19. Well completion diagram for GWQ-11-27 (LA 00228 POD 1), Copper Flat Mine, Sierra County, New Mexico

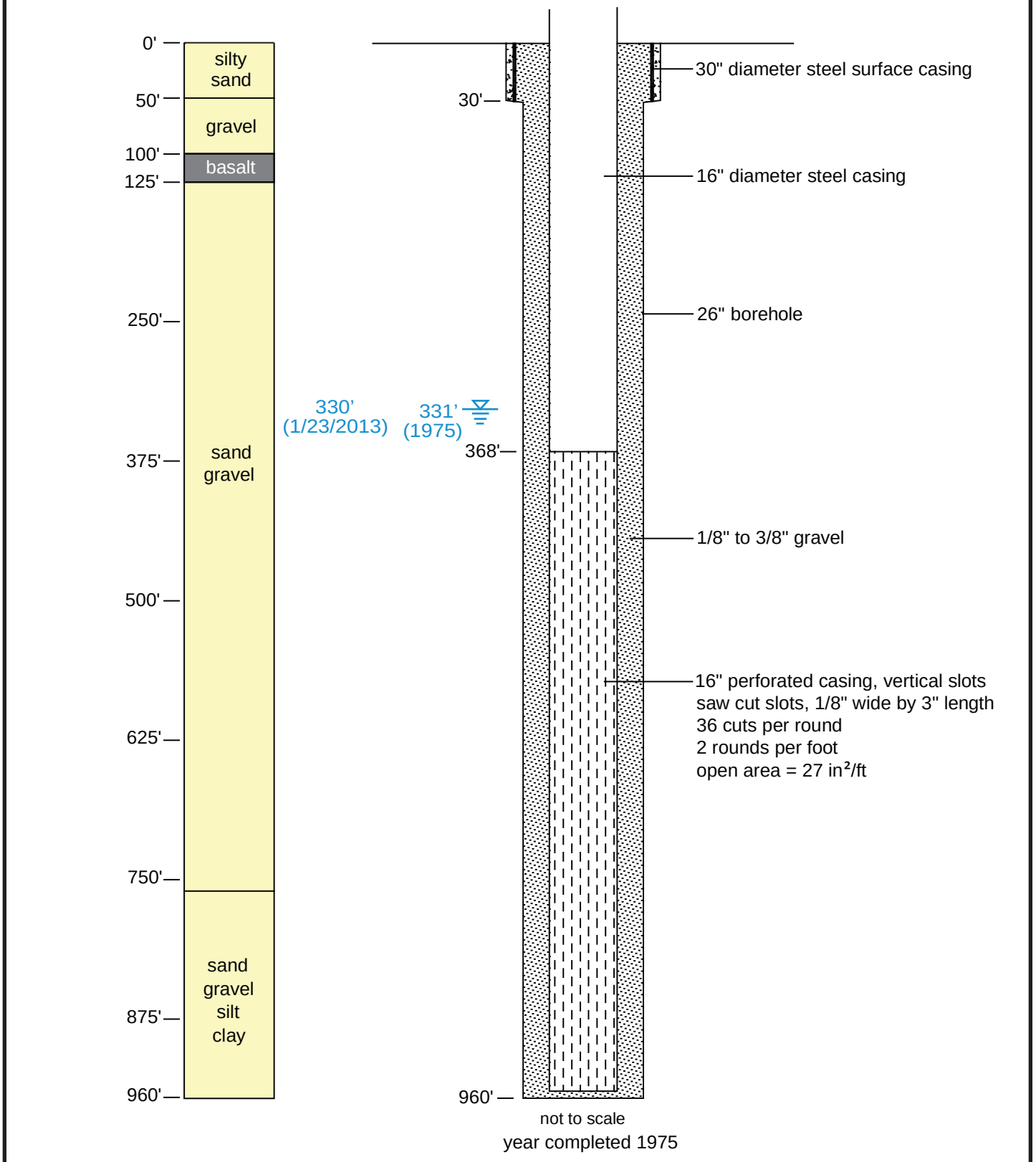


Figure B1. Well completion diagram for LRG-4652 (PW-1), Copper Flat Mine, Sierra County, New Mexico.

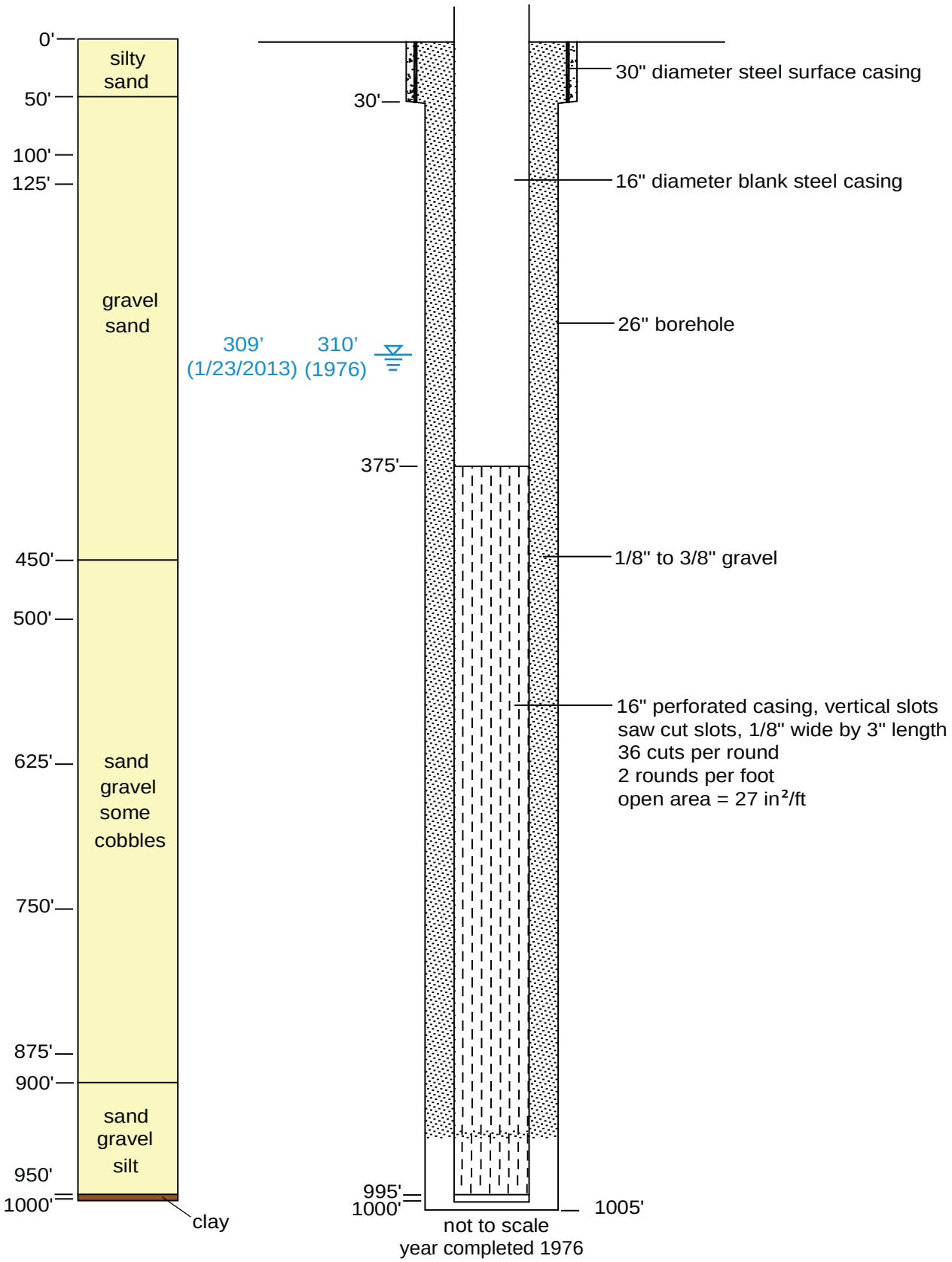


Figure B2. Well completion diagram for LRG-4652-S (PW-2), Copper Flat Mine, Sierra County, New Mexico.

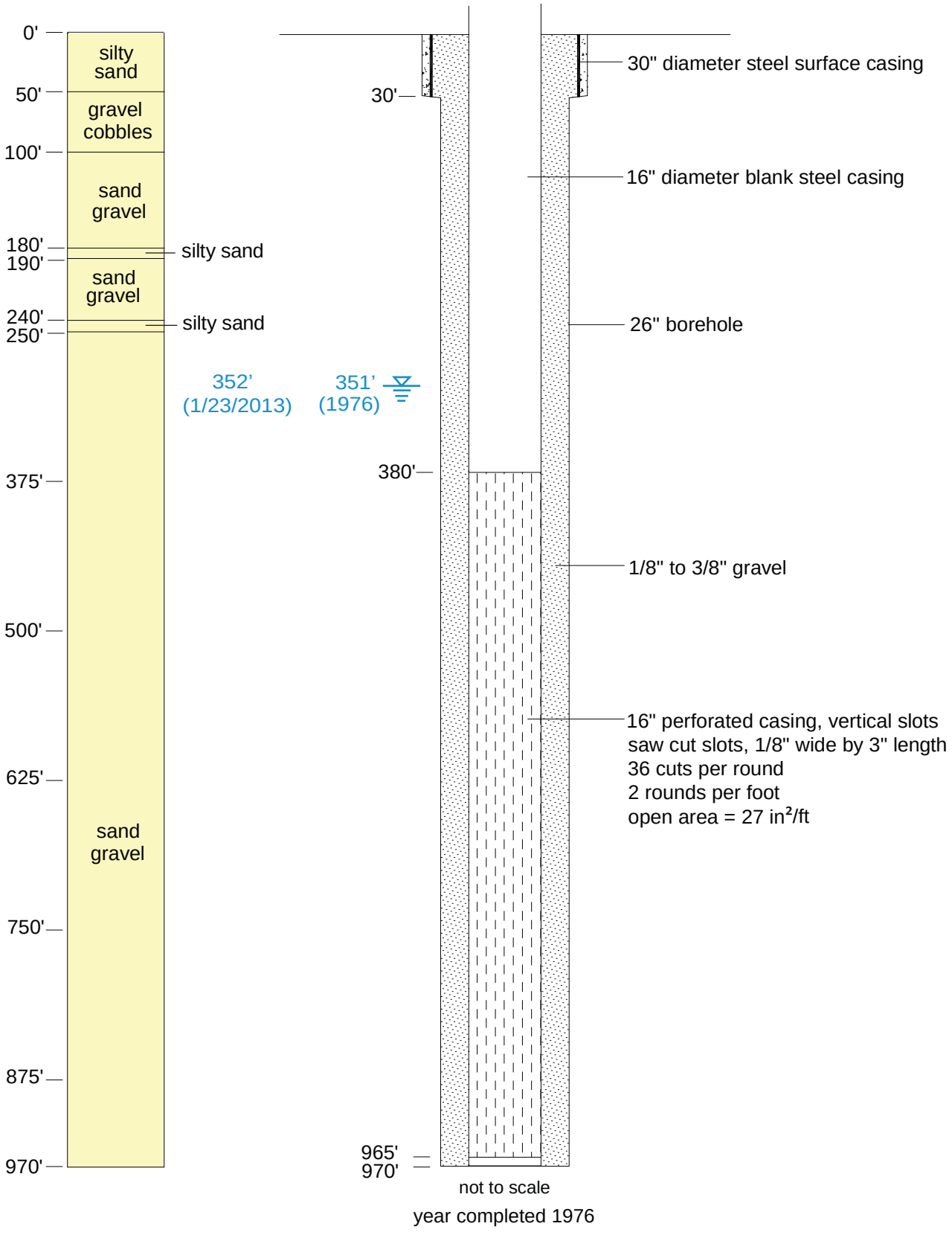


Figure B3. Well completion diagram for LRG-4652-S-2 (PW-3), Copper Flat Mine, Sierra County, New Mexico.

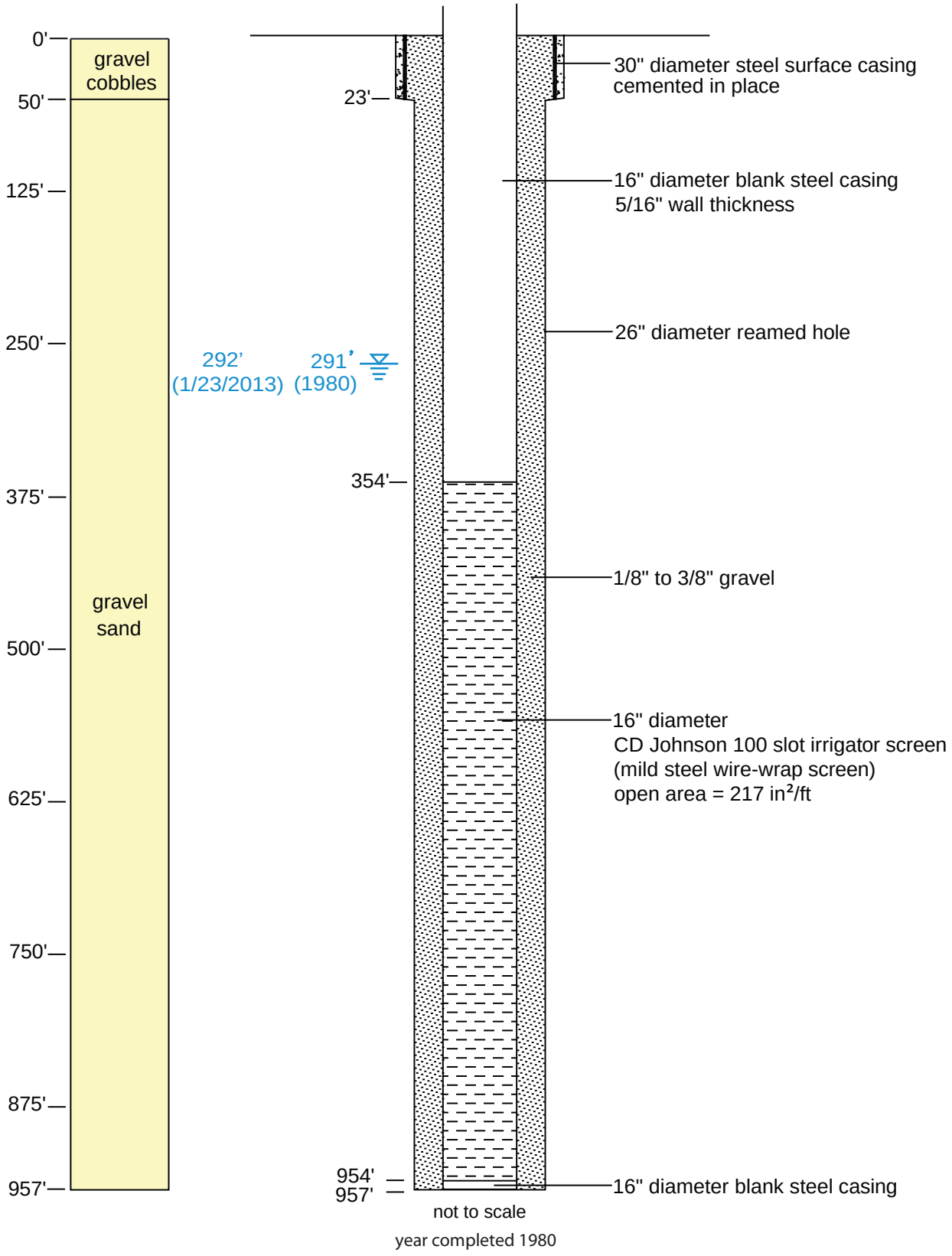
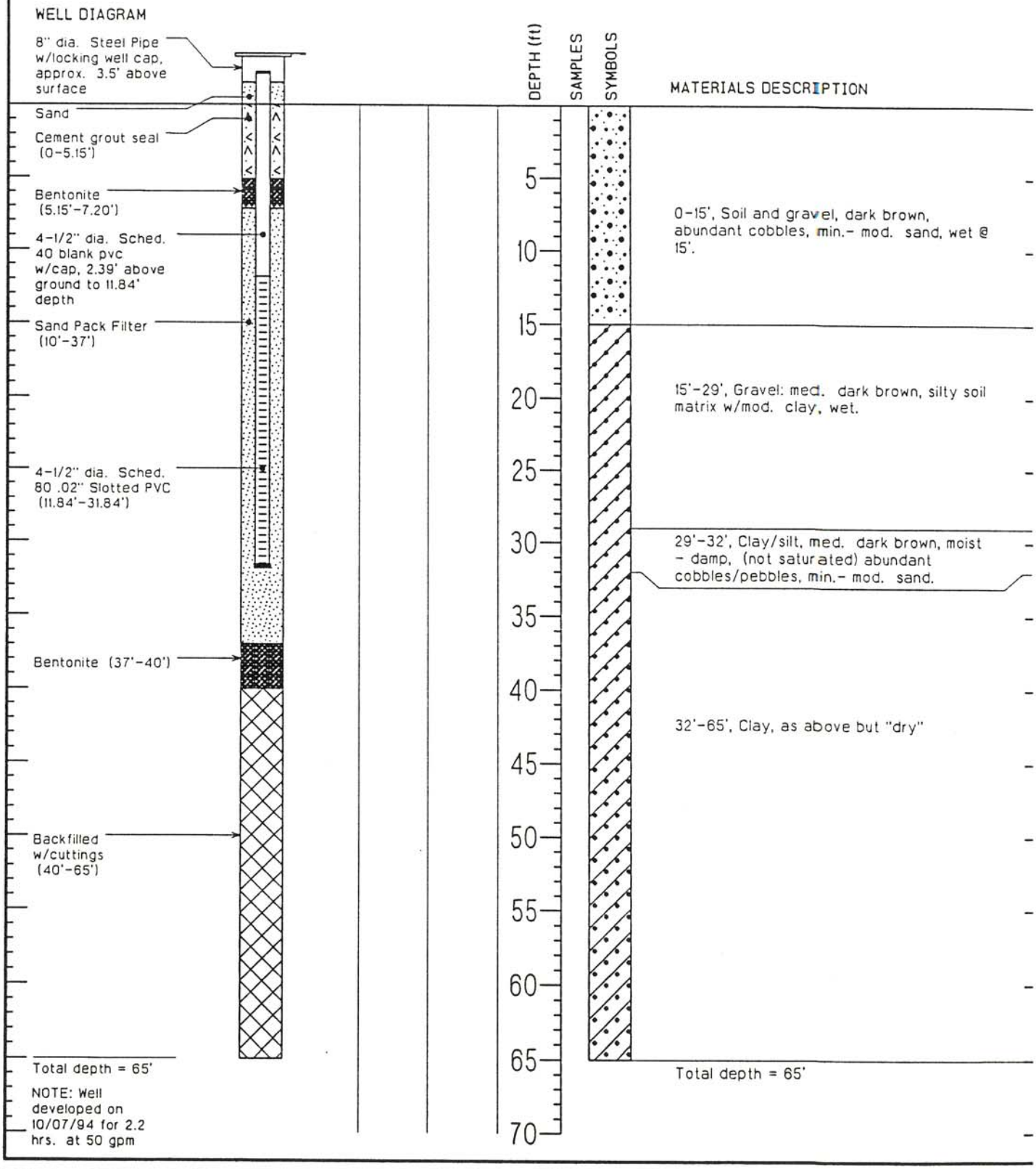


Figure B4. Well completion diagram for LRG-4652-S-3 (PW-4), Copper Flat Mine, Sierra County, New Mexico.

Shallow Alluvial Aquifer Wells

Steffen Robertson and Kirsten
Engineering and Environmental Consultants

LOG OF MONITORING WELL MW-11



PROJECT Copper Flat - Hillsboro, N.M.	DRILLING COMPANY Beylik Drilling
LOCATION N713751.31, E603378.24 N.M. S.P.C.	DATE DRILLED 10/11/94
JOB NUMBER 68607 (ref: 68607M11)	SURFACE ELEVATION 4439.48
GEOLOGIST CW	TOTAL DEPTH OF HOLE 65 Feet
DRILL RIG Air Rotary	WATER LEVEL Static, from TOC on 11/7/94: 10.65 Feet

LRG-14545
TRN-420799

WELL RECORD & LOG

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1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
LRG-14545-POD1 (MWOL)	LRG-14545
WELL OWNER NAME(S)	PHONE (OPTIONAL)
U.S. Bureau of Reclamation	575-894-6661 Ext 105
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
H.C. 32 Box 312	Truth or Consequences N.M 87901

WELL LOCATION (FROM GPS)	DEGREES	MINUTES	SECONDS	
	LATITUDE			N
	LONGITUDE			W

* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
NE ¼	NE ¼	SW ¼	¼	21	16 ☐ NORTH ☒ SOUTH	5 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1433	Jefferie Van Ausdal	U.S. Bureau of Reclamation

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
1-5-09	1-6-09	32.9'	32.9'	25.75'

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)

STATIC WATER LEVEL IN COMPLETED WELL (FT): 25.75'

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER – SPECIFY: AUGER

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
32.9'	22.9'	6"	PVC SCH 40	Threaded	2"	SCH 40	0.010
22.9'	+18"	6"	PVC SCH 40	Threaded	2"	SCH 40	BLANK

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
25.75'	32.9'	7.15'	SAND & GRAVEL AND CLAY	Not Tested

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 1 OF 2

5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	32.9'	5.0'	6"	No Filter Pack		
	5.0'	0.0'	6"	3/8" Gravel Bentonite	1	Poured in

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0.0'	3.0'	3.0'	Dark Brown Silt, Sand, Clay, Gravel	☐ YES ☒ NO
3.0'	9.5'	6.5'	Dark Brown Sandy, Silt, Clay, Gravel	☐ YES ☒ NO
9.5'	14.0'	4.5'	Dark Brown Sandy, Clay, Silt, Gravel	☐ YES ☒ NO
14.0	28.0'	14.0'	Dark Brown Gravelly, Sand, Clay, Silt	☒ YES ☐ NO
28.0'	29.0'	1.0'	Dark Brown Gravelly, Sand, Clay, Silt	☒ YES ☐ NO
29.0'	32.9'	3.9'	Dark Brown Gravelly, Sand, Clay, Silt	☒ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:
Well Has A 4" Stand Pipe 18" Above Ground Level

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Jeffrie Van Arsdal — SIGNATURE OF DRILLER

1-12-09 — DATE

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FILE NUMBER	POD NUMBER	TRN NUMBER
LOCATION		PAGE 2 OF 2

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TRN-420799

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WELL RECORD & LOG

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1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
LRG-14545-POD2 (MW02)	LRG-14545
WELL OWNER NAME(S)	PHONE (OPTIONAL)
U.S. Bureau of Reclamation	575-894-6661 ext. 105
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
H.C. 32 Box 312	Truth or Consequences NM 87901

WELL LOCATION (FROM GPS): DEGREES / MINUTES / SECONDS
LATITUDE N
LONGITUDE W
* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SW ¼	SE ¼	NW ¼	¼	21	16 ☐ NORTH ☒ SOUTH	5 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1433	Jefferie Van Ausdal	U.S. Bureau of Reclamation

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
1-6-09	1-6-09	29.0'	29.0'	21.1'

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)
STATIC WATER LEVEL IN COMPLETED WELL (FT): 21.1'

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER – SPECIFY: AUGER

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
29.0'	19.0'	6"	P.V.C SCH 40	Threaded	2"	SCH 40	0.010
19.0'	+18"	6"	P.V.C. SCH 40	Threaded	2"	SCH 40	BLANK

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
21.1'	29.0'	8.9'	SAND, GRAVEL AND CLAY	Not Tested

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

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5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	29.0'	5.0'	6"	No Filter Pack		
	5.0'	0.0'	6"	3/8" Gravel Bentonite	1	Poured in

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0.0'	1.5'	1.5'	DARK BROWN Silt, SAND, Clay, Gravel	☐ YES ☒ NO
1.5'	5.0'	3.5'	DARK BROWN Gravelly, SAND, Silt, Clay	☐ YES ☒ NO
5.0'	7.0'	2.0'	DARK BROWN Gravelly, SAND	☐ YES ☒ NO
7.0'	14.0'	7.0'	DARK BROWN Gravelly, SAND, Clay	☐ YES ☒ NO
14.0'	29.0'	15.0'	DARK BROWN Gravelly, SAND, Clay	☒ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:
Well Has A 4" Stand pipe 18" Above Ground Level

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Jefferie Van Ausdell — SIGNATURE OF DRILLER

1-12-09 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

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TRN-420799

WELL RECORD & LOG

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1. GENERAL AND WELL LOCATION

POD NUMBER (WELL NUMBER)	OSE FILE NUMBER(S)
LRG-14545-POD3 (MW03)	LRG-14545
WELL OWNER NAME(S)	PHONE (OPTIONAL)
U.S. Bureau of Reclamation	575-894-6661 Ext 105
WELL OWNER MAILING ADDRESS	CITY / STATE / ZIP
HC. 32 Box 312	Truth or Consequences NM 87901

WELL LOCATION (FROM GPS): DEGREES / MINUTES / SECONDS
LATITUDE N
LONGITUDE W
* ACCURACY REQUIRED: ONE TENTH OF A SECOND
* DATUM REQUIRED: WGS 84

DESCRIPTION RELATING WELL LOCATION TO STREET ADDRESS AND COMMON LANDMARKS

2. OPTIONAL

(2.5 ACRE)	(10 ACRE)	(40 ACRE)	(160 ACRE)	SECTION	TOWNSHIP	RANGE
SW ¼	NW ¼	SE ¼	¼	22	16 ☐ NORTH ☒ SOUTH	5 ☐ EAST ☒ WEST

SUBDIVISION NAME	LOT NUMBER	BLOCK NUMBER	UNIT/TRACT

HYDROGRAPHIC SURVEY	MAP NUMBER	TRACT NUMBER

3. DRILLING INFORMATION

LICENSE NUMBER	NAME OF LICENSED DRILLER	NAME OF WELL DRILLING COMPANY
WD-1433	Jefferic Van Ausdal	U.S. Bureau of Reclamation

DRILLING STARTED	DRILLING ENDED	DEPTH OF COMPLETED WELL (FT)	BORE HOLE DEPTH (FT)	DEPTH WATER FIRST ENCOUNTERED (FT)
1-7-09	1-7-09	24.8'	24.8'	23.3'

COMPLETED WELL IS: ☐ ARTESIAN ☐ DRY HOLE ☒ SHALLOW (UNCONFINED)
STATIC WATER LEVEL IN COMPLETED WELL (FT): 23.3'

DRILLING FLUID: ☐ AIR ☐ MUD ☐ ADDITIVES – SPECIFY:

DRILLING METHOD: ☐ ROTARY ☐ HAMMER ☐ CABLE TOOL ☒ OTHER – SPECIFY: AUGER

DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	CASING MATERIAL	CONNECTION TYPE (CASING)	INSIDE DIA. CASING (IN)	CASING WALL THICKNESS (IN)	SLOT SIZE (IN)
24.8'	14.8'	6"	P.V.C SCH 40	Threaded	2"	SCH 40	0.010
14.8'	+18"	6"	P.V.C SCH 40	Threaded	2"	SCH 40	Blank

4. WATER BEARING STRATA

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	FORMATION DESCRIPTION OF PRINCIPAL WATER-BEARING STRATA (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	YIELD (GPM)
23.3'	24.8'	1.5'	Sand, Gravel, Clay	Not Tested

METHOD USED TO ESTIMATE YIELD OF WATER-BEARING STRATA	TOTAL ESTIMATED WELL YIELD (GPM)

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

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5. SEAL AND PUMP

TYPE OF PUMP: ☐ SUBMERSIBLE ☐ JET ☒ NO PUMP – WELL NOT EQUIPPED ☐ TURBINE ☐ CYLINDER ☐ OTHER – SPECIFY:

ANNULAR SEAL AND GRAVEL PACK	DEPTH (FT) FROM	DEPTH (FT) TO	BORE HOLE DIA. (IN)	MATERIAL TYPE AND SIZE	AMOUNT (CUBIC FT)	METHOD OF PLACEMENT
	24.8'	5.0'	6"	No Filter Pack		
	5.0'	0.0'	6"	3/8" Gravel Bentonite	1	Poured in

6. GEOLOGIC LOG OF WELL

DEPTH (FT) FROM	DEPTH (FT) TO	THICKNESS (FT)	COLOR AND TYPE OF MATERIAL ENCOUNTERED (INCLUDE WATER-BEARING CAVITIES OR FRACTURE ZONES)	WATER BEARING?
0.0'	0.4'	0.4'	Dark Brown Silt, SAND, CLAY	☐ YES ☒ NO
0.4'	3.0'	2.6'	Dark Brown CLAY, SAND, Silt	☐ YES ☒ NO
3.0'	4.0'	1.0'	Dark Brown CLAY, SAND, Silt	☐ YES ☒ NO
4.0'	5.0'	1.0'	Dark Brown Gravelly, SAND, CLAY, Silt	☐ YES ☒ NO
5.0'	18.0'	13.0'	Dark Brown Gravelly, SAND, CLAY, Silt	☐ YES ☒ NO
18.0'	24.8'	6.8'	Dark Brown Gravelly, SAND, CLAY, Silt	☒ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO
				☐ YES ☐ NO

ATTACH ADDITIONAL PAGES AS NEEDED TO FULLY DESCRIBE THE GEOLOGIC LOG OF THE WELL

7. TEST & ADDITIONAL INFO

WELL TEST — METHOD: ☐ BAILER ☐ PUMP ☐ AIR LIFT ☐ OTHER – SPECIFY:

TEST RESULTS - ATTACH A COPY OF DATA COLLECTED DURING WELL TESTING, INCLUDING START TIME, END TIME, AND A TABLE SHOWING DISCHARGE AND DRAWDOWN OVER THE TESTING PERIOD.

ADDITIONAL STATEMENTS OR EXPLANATIONS:
Well Has A 4" Standpipe 18" ABOVE GROUND Level

8. SIGNATURE

THE UNDERSIGNED HEREBY CERTIFIES THAT, TO THE BEST OF HIS OR HER KNOWLEDGE AND BELIEF, THE FOREGOING IS A TRUE AND CORRECT RECORD OF THE ABOVE DESCRIBED HOLE AND THAT HE OR SHE WILL FILE THIS WELL RECORD WITH THE STATE ENGINEER AND THE PERMIT HOLDER WITHIN 20 DAYS AFTER COMPLETION OF WELL DRILLING:

Jefferie Van Ausdel — SIGNATURE OF DRILLER

1-12-09 — DATE

FOR OSE INTERNAL USE — WELL RECORD & LOG (Version 6/9/08)

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Crystalline Bedrock Wells

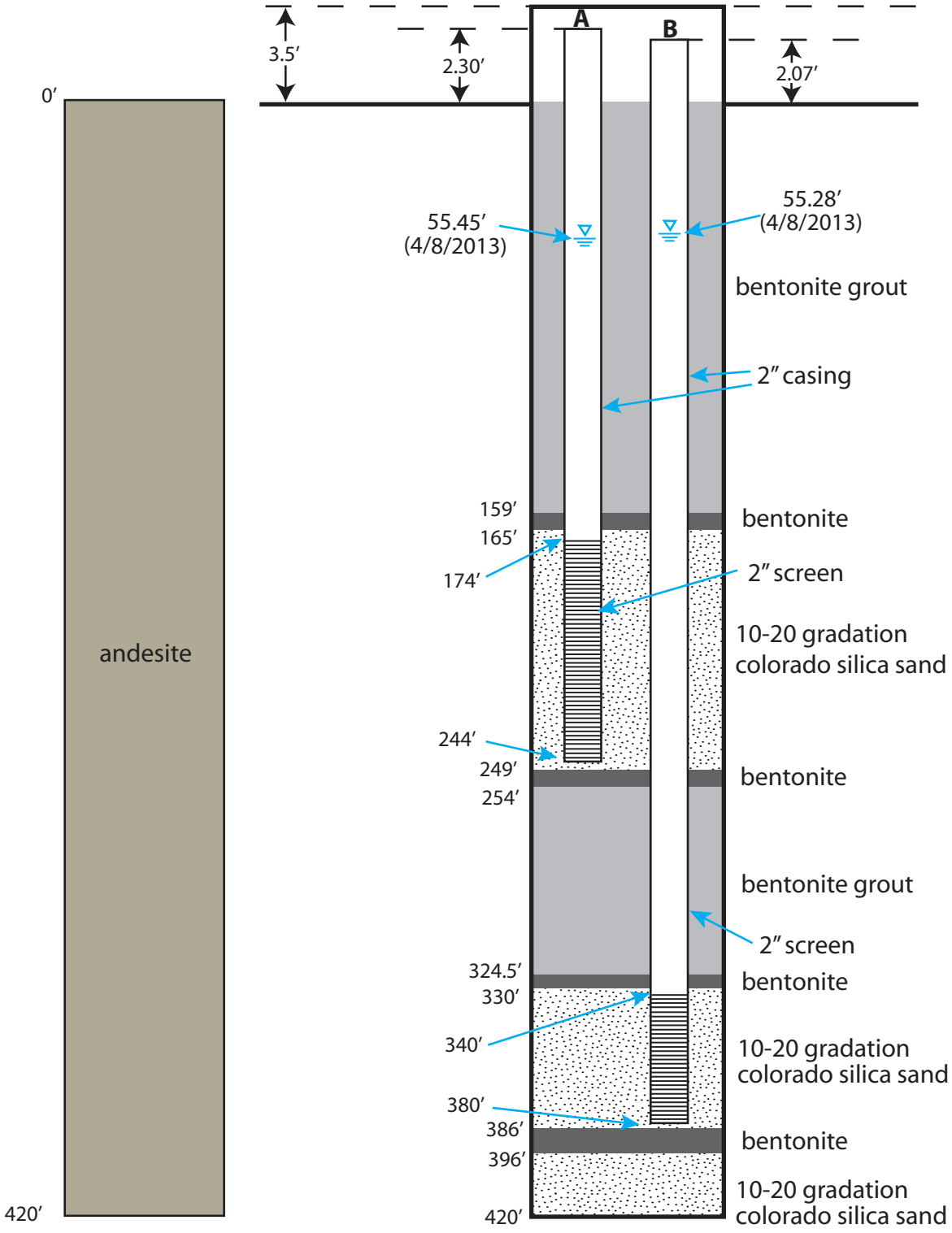

Figure A1. Well diagram, GWQ96-22, Copper Flat Mine, Sierra County, New Mexico.

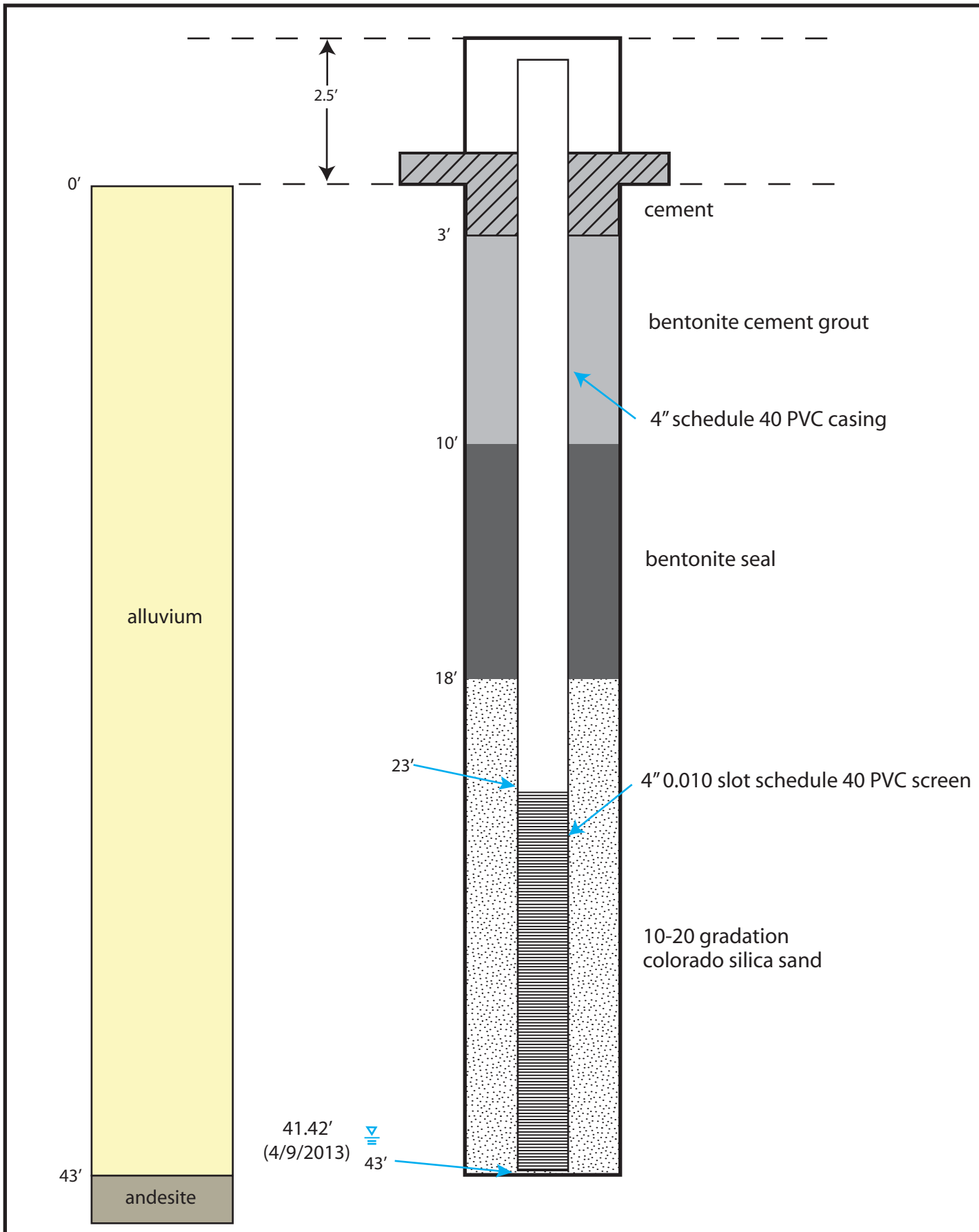

Figure A5. Well diagram, GWQ11-26, Copper Flat Mine, Sierra County, New Mexico.

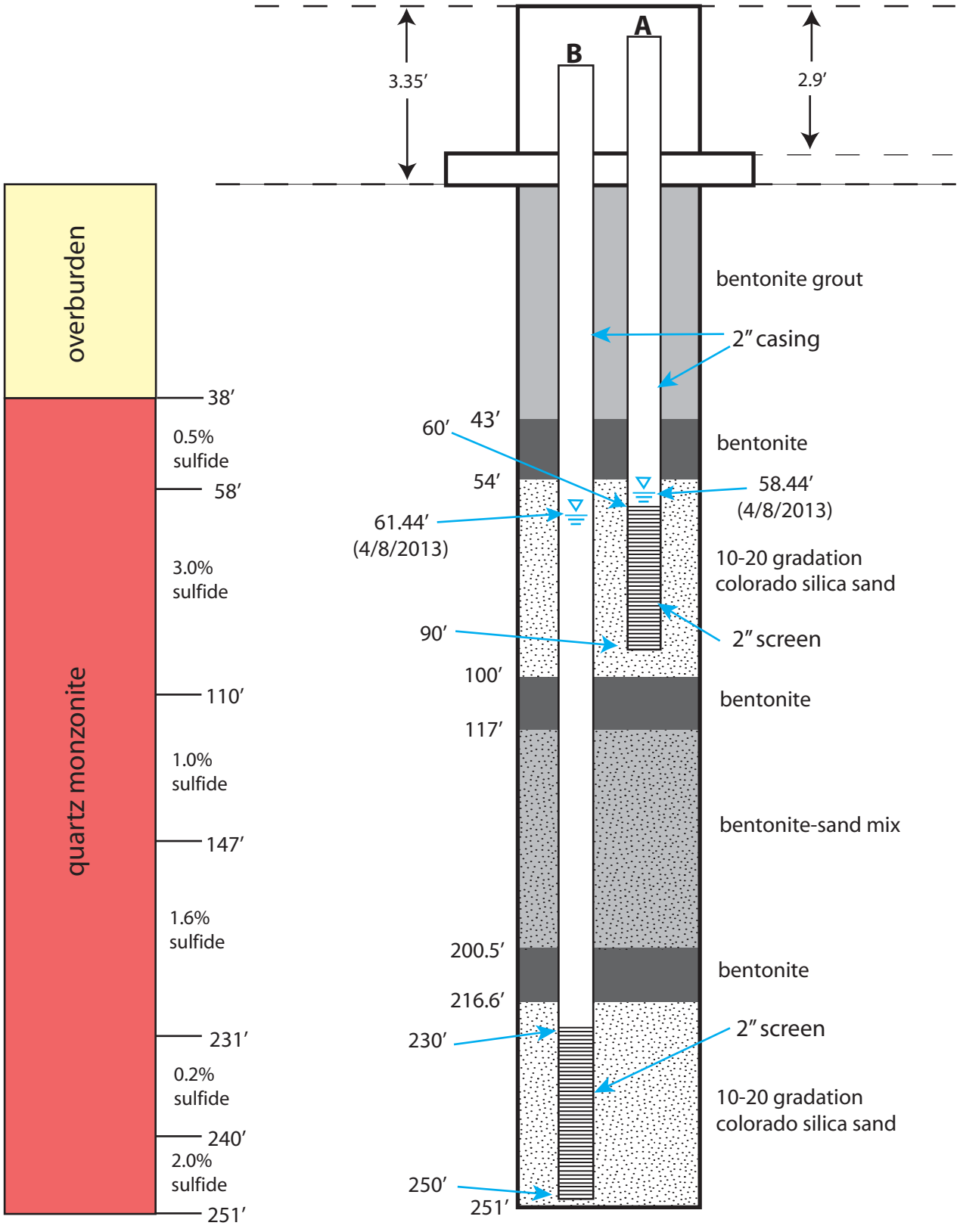

Figure A3. Well diagram, GWQ11-24, Copper Flat Mine, Sierra County, New Mexico.

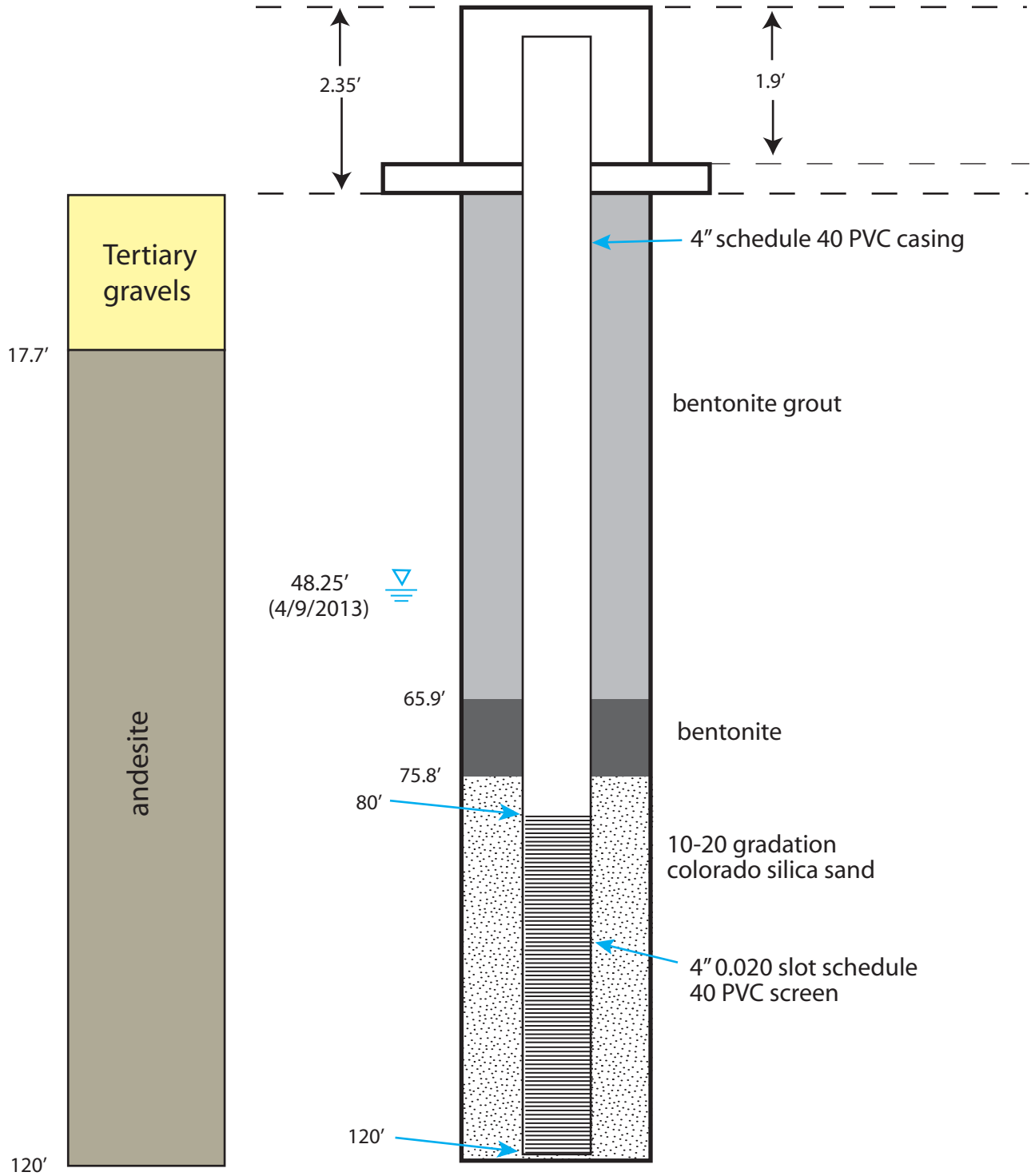

Figure A7. Well diagram, GWQ-5R, Copper Flat Mine, Sierra County, New Mexico.