

Field boring log for Sandia Pueblo Well
City of Albuquerque Piezometer Nest
FY 1998

Prepared for Office of State Engineer

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New Mexico Bureau of Mines and Mineral Resources

Open-file 444-D

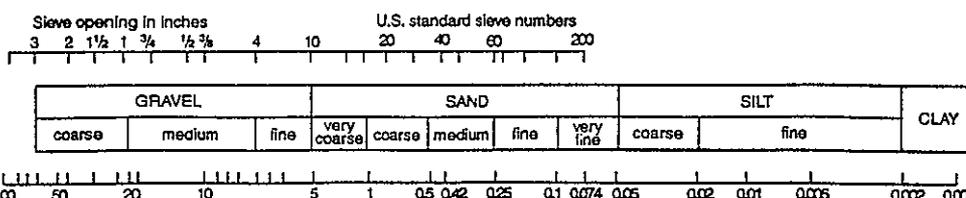
November 1998

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The following borehole logs were completed for the piezometer nest located on the Sandia Indian Reservation, Sandoval County, New Mexico, in May-June 1998. The logs describe sample intervals, general lithologic characteristics and interpretations, supplemental drilling information, borehole geophysical logging information and limited interpretations, and hydrogeologic interpretations. The lithologic descriptions were made from mud-rotary cuttings taken from the well head. Drilling fluids prevent a complete evaluation of the fine-grained fraction; no sieve testing was conducted. The field lithologic descriptions include the following information:

1. Major textural class;
2. Estimated grain-size distribution by major textural class: silt/clay (<0.05 mm), sand (0.05-2 mm), and gravel (>2 mm);
3. Sorting and range of grain and clast size;
4. Shape of grains and clasts;
5. Clast composition;
6. Color (Munsell, 1992) for <2 mm matrix, unless otherwise noted;
7. Other characteristics and driller's comments.

Hydrogeologic interpretations classify materials according to a system of nomenclature developed for alluvial deposits of continental rift basins of New Mexico (Hawley and Haase, 1992; Hawley and Whitworth, 1996). This system describes major hydrostratigraphic units (RA, TA, VA, PA, USF, MSF, LSF) and component lithofacies (I to X). Deposits described in this borehole are provisionally assigned to Santa Fe Group nomenclature discussed in Connell and others (1998). It is important to note that the lithologic summary provides descriptions based on grain-size characteristics, supplemental information on driller's logs and geophysical logs, whereas, lithofacies and hydrogeologic interpretations are based on several integrated criteria including grain size, clast composition, geographic location within the basin and data from neighboring wells. A summary of lithologic descriptions, hydrostratigraphic interpretations and lithofacies are illustrated in the stratigraphic column (Fig. 1). A detailed log of the field descriptions by 10-foot sample interval is provided in Attachment A. Photographs of cuttings are provided in Attachment B. Borehole geophysical logs (three logs) are included as Attachment C.



References

- Connell, S.D., Allen, B.D., and Hawley, J.W., 1998, Subsurface stratigraphy of the Santa Fe Group using borehole geophysics, Albuquerque area, central New Mexico: *New Mexico Geology*, v.20, n.1, p.2-7.
- Hawley, J.W., Hasse, C.S., and Lozinsky, R.P., 1995, An underground view of the Albuquerque basin, in *The water future of Albuquerque and middle Rio Grande basin*: New Mexico Water Resources Research Institute, 1994 conference, p.37-55.
- Hawley, J.W., and Whitworth, T.M., eds., 1996, Hydrogeology of potential recharge areas and hydrogeochemical modeling of proposed artificial-recharge methods in basin- and valley-fill aquifer systems, Albuquerque Basin, New Mexico: New Mexico Bureau of Mines and Mineral Resources Open-File Report 402-D, 5 chapters, various appendices and pagination.
- Munsell, 1992, *Soil Color Chart*: New York, Munsell Company, Kollmorgen Instruments Corporation.

Name: Sandia Pueblo Well (SPW)

Location: Section 29, T12N, R04E. ¹²(~~13~~N.4E.29.344)
 Alameda 7.5-minute quadrangle.
 Pueblo of Sandia Tribal Lands.
 Latitude: 35° 13' 57" Longitude: 106° 32' 30" (NAD 27)

Elevation: 5435 ft (1657 m), estimated from topographic map

Drilling Method: Mud Rotary

Drillers: Steve Grant, assisted by Brian Bretz, USGS

Drilling Started: April 30, 1998

Drilling Completed: May 31, 1998

Sample Interval: 10 feet

Screened Intervals: 485 to 525 ft (Elev: 4950-4910 ft)
 1015 to 1020 ft (Elev: 4420-4415 ft)
 1305 to 1310 ft (Elev: 4130-4125 ft)

Total Depth: 1323 feet (403 m)
 Bottom Hole Elevation: 4115 ft (1254 m)

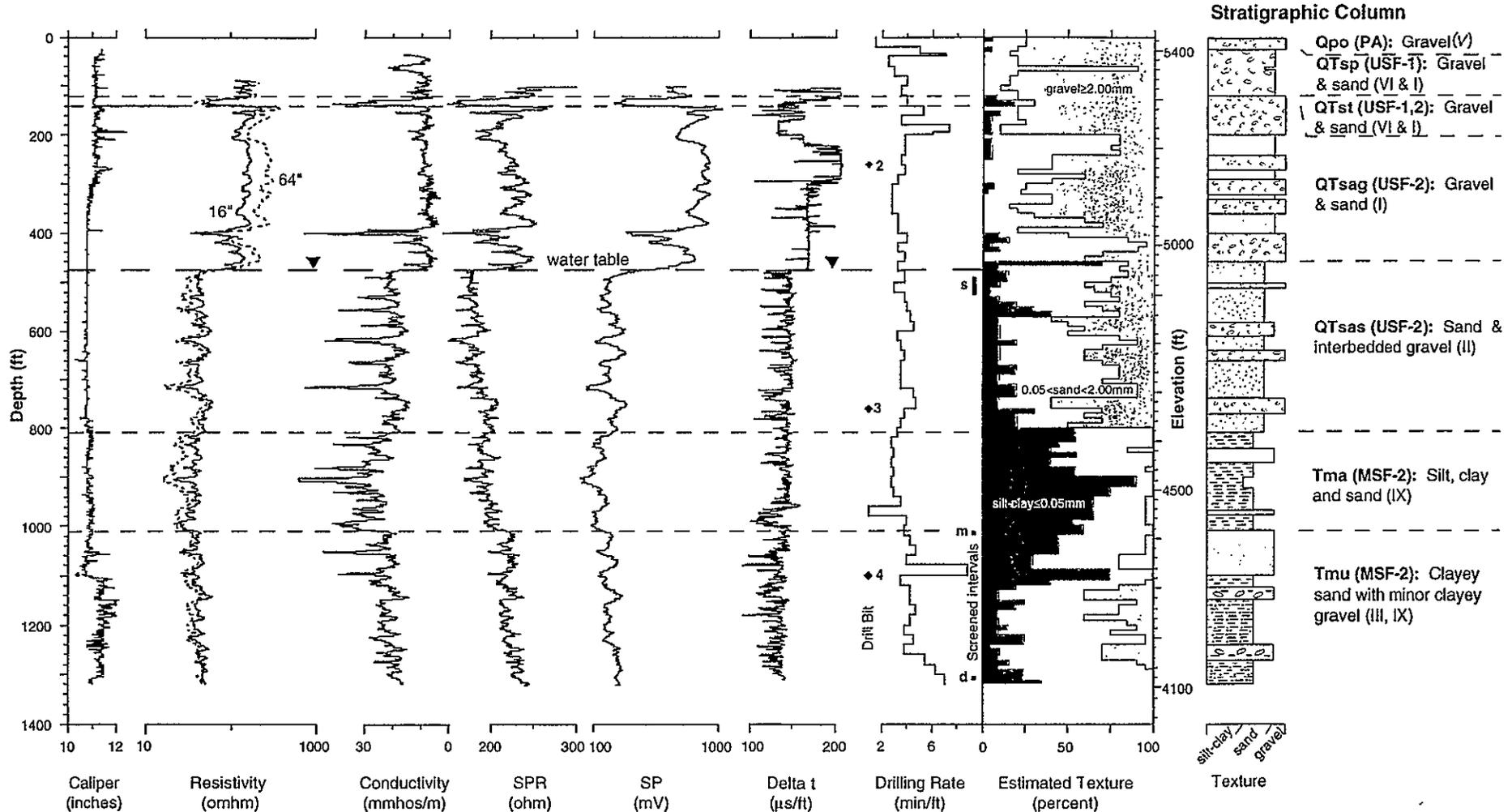
Water Table: 482 ft (Elevation: 4949 ft), based on abrupt increase in Δt
 on acoustic log

Sample Logging: M. Heynekamp & S.D. Connell

Geophysical Logging: U.S. Geological Survey-Water Resources Division (USGS),
 Albuquerque, New Mexico
 Southwest Geophysical Services, Inc. (SWGÍ), Farmington,
 New Mexico

Geophysical Logs: USGS: Caliper, Induction Resistivity (below 400 ft), and
 Natural Gamma Ray (below 400 ft)
 SWGI: Spontaneous Potential (SP), Single-Point
 Resistivity (SPR), Acoustic, Resistivity (16 and 64 inch coil
 spacing) and Induction Conductivity

Sandia Pueblo Well (T13N, R4E, Section 29, 344) Alameda 7.5-minute Quadrangle



**Lithologic Summary and Borehole Geophysical Interpretations
Sandia Pueblo Well Site
Lithologic Description**

Depth (ft)	Description (all colors are moist)
0-25	<u>Quaternary piedmont-slope deposits (Opo)</u> GRAVEL (75% gravel, 20% sand, <5% silty-clay): Brown (7.5YR 5/4) to reddish-yellow (7.5YR 6/6), angular to subangular, poorly sorted gravel containing granite, schist, white quartz (aplite) and rare limestone. Clasts are broken and less than 20 mm in diameter.
25-120	<u>Sierra Ladrones Formation-eastern margin (piedmont) facies (OTsp)</u> 25-60 GRAVEL (80% gravel, 15-20% sand, 0-5% silt-clay): Brown (7.5YR 5/4 to 4/4) to reddish-yellow (7.5YR 6/6), angular to subangular, moderately to well sorted, fine-grained gravel containing granite, schist, white quartz (aplite) and rare limestone. Clasts are less than 4 mm in diameter. 60-70 SAND (10% gravel, 90% sand): Brown (7.5YR 7/4), subangular to subrounded, well sorted, fine-to coarse-grained sand. 70-120 GRAVEL (80-90% gravel, 10-20% sand): Brown (7.5YR 5/4 to 4/4), subangular to subrounded, moderately sorted gravel containing granite, schist, white quartz (aplite) and rare limestone. Sand is medium to very coarse grained. Clasts are less than 4 mm in diameter.
120-140	<u>Sierra Ladrones Formation-transitional fluvial-piedmont facies (OTst)</u> GRAVEL (70-80% gravel, 10-20% sand, 0-20% silt-clay): Brown (7.5YR 5/4 to 4/4) to yellowish-brown (10YR 5/4 to 3/4), subangular to rounded gravel containing dominantly quartzite, granite and schist with subordinate silicic volcanic clasts. Missing sample interval: 140-150 ft.
140-800	<u>Sierra Ladrones Formation-axial-fluvial facies, upper gravel member (OTSag)</u> SAND and GRAVEL with minor, thin SILTY to CLAYEY SAND interbeds associated with the ancestral Rio Grande fluvial system. Coarsens upward from the top of the Atrisco member contact. Clasts are dominantly quartzite and silicic to intermediate porphyritic volcanic rocks and basalt with subordinate granite. 140-200 GRAVEL and coarse-grained SAND (75-90% gravel, 5-20% sand, 5-10% silt-clay): Brown (7.5YR 4/4) to yellowish-brown (10YR 5/4 to 4/4), subangular to subrounded gravel with interbedded sandy gravel beds. Clasts are broken and contain dominantly quartzite with subordinate red-brown to brown volcanic tuff and basalt. Clasts are up to 20 mm in diameter. 200-240 GRAVELLY SAND (20-25% gravel, 75-80% sand, 0-5% silt-clay): Brown to dark yellowish-brown (10YR 4/3 to 4/4) and brown to yellowish-brown (7.5YR 5/4 and 10YR 5/4), fine-to coarse-grained gravelly sand. Clasts are up to 10 mm in diameter. Many clasts are less than 4 mm in diameter. 240-270 GRAVEL (60% gravel, 40% sand): Dark yellowish-brown to yellowish-brown (10YR 4/4 to 5/4) rounded to subrounded gravel. Missing sample interval: 250-260 ft.

- 270-290 SAND and GRAVEL (40-80% gravel, 20-60% sand): Brown to yellowish-brown (10YR 4/4 to 4/3) sandy gravel to gravelly sand.
- 290-320 GRAVEL and coarse-grained SAND (60-75% gravel, 40-25% sand) Brown (7.5YR 5/4 and 10YR 5/3) to yellowish-brown (10YR 4/4) rounded to subrounded quartzite-bearing gravel. Clasts are dominantly quartzite and reddish-brown, brown and greenish-gray volcanic rock with minor granite, chert and sandstone.
- 320-340 GRAVEL (60% gravel, 40% sand): Fine-grained gravel (<5 mm maximum diameter)
- 340-360 GRAVEL and SAND (80-85% gravel, 15-20% sand): Medium-grained gravel (<25 mm maximum diameter).
- 360-410 SAND and GRAVEL (30-80% gravel, 20-70% sand): Light yellowish-brown to dark yellowish-brown (10YR 4/4, 5/3, and 6/4).
- 410-460 SANDY GRAVEL (5-40% gravel, 60-90% sand, 0-15% silt-clay): Brown to yellowish-brown (10YR 5/4, 5/3) sandy gravel.
Lower sandy member (QTsas)
- 460-500 GRAVELLY to SILTY SAND (15-25% gravel, 15-70% sand, 15-70% silt-clay): Yellowish-brown to dark yellowish-brown (10YR 5/4, 4/3).
- 500-510 GRAVEL (40% gravel, 50% sand, 10% silt-clay): Brown (10YR 5/3, 7.5YR 5/4), subangular to subrounded, fine-grained gravel. Clasts are less than 5 mm maximum diameter.
- 510-580 SILTY to SANDY GRAVEL (20-60% gravel, 30-70% sand, 5-40% silt-clay): Brownish-yellow to dark yellowish-brown (10YR 6/6, 4/4, & 5YR 5/4), subangular to subrounded sand and gravel. Clasts are less than 5 mm maximum diameter.
- 580-610 GRAVEL and SAND (40-50% gravel, 40-50% sand, 10% silt-clay): Grayish-brown to light brown (10YR 5/2, 7.5YR 6/4) gravel and sand. Clasts are less than 5 mm maximum diameter.
585-590: SILTY SAND TO SANDY SILT BED.
- 610-640 SAND (10-30% gravel, 60-70% sand, 10-20% silt-clay): Light yellowish-brown to grayish-brown (10YR 6/4, 5/2), subangular to subrounded, moderately sorted sand.
615-645: SILTY SAND to SANDY SILT BED.
- 640-645 GRAVEL (40% gravel, 50% sand, 10% silt-clay): Brown to light-brown (10YR 5/3, 7.5YR 6/4), subangular to subrounded, poorly sorted, fine-grained gravel. Clasts are less than 5 mm maximum diameter.
- 645-740 SAND (10-40% gravel, 60-70% sand, 10-20% silt-clay): Gray-brown to light reddish-brown (10YR 5/3, 5/4, 5YR 5/4, 6/4), subangular to subrounded very-fine to coarse-grained sand.
660-670: SILTY SAND or SANDY SILT BED.
710-720: SILTY SAND or SANDY SILT BED.
- 740-765 GRAVEL, small pebble (30-70% gravel, 30-40% sand, 20% silt-clay): Light brown to yellowish brown (10YR 5/3, 5/4, 7.5YR 6/4), subangular to subrounded, fine-grained gravel containing quartzite, granite and chert. Clasts are less than 10 mm maximum diameter.
- 770-800 GRAVELLY SAND (30-50% gravel, 30-50% sand, 20% silt-clay): Light brown to yellowish-brown (10YR 5/3, 5/4, 7.5YR 6/4), subangular to subrounded sand and gravel.
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800-1010	<u>Atrisco member of middle red formation (Tma)</u> SILT and CLAY with minor SAND. Provisionally assigned to the Atrisco member of Connell and others (1998).
800-840	SANDY CLAY to CLAYEY SAND (45% sand, 55% silt-clay): Pale brown (10YR 6/3), subangular to subrounded, very fine- to coarse-grained sand.
840-870	SILTY CLAY to CLAYEY SAND (45-60% sand, 40-55% silt-clay): Pale brown (10YR 6/3), subangular to subrounded, moderately sorted, fine-grained gravel.
870-900	SILTY CLAY to SANDY CLAY (0-5% gravel, 40-45% sand, 55% silt-clay): Pale brown (10YR 6/3), sticky clay to clayey sand with light greenish-gray (5GY 7/1) and gray (10YR 5/1) discontinuous mottles
900-920	CLAY (10% sand, 90% silt-clay): Dark gray to brown (7.5YR 4/1, 10YR 5/4, 5/3) very sticky clay. Fine-grained sequence is composed of three prominent clay intervals at 880-885, 890-895, and 900-910 ft. These are recognized by prominent low resistivity (15 to 25 ohmm) and moderately high natural gamma ray (160 to 200 GAPI) log responses.
920-970	SANDY CLAY (0-5% gravel, 30-35% sand, 65% silt-clay): Gray to yellowish-brown (10YR 5/1, 5/4) sticky, sandy clay.
980-1010	SANDY CLAY to CLAYEY SAND (0-5% gravel, 40-45% sand, 55-60% silt-clay): Pale-brown to yellowish-brown (10YR 6/3, 6/4, 5/6) silty to clayey sand.

1010-1320	<u>Middle red formation: undivided fluvial facies (Tmu)</u> SILTY to CLAYEY SAND with minor very small pebble to granule GRAVEL. Clasts are predominantly quartzite, reddish-brown and brown silicic tuff, granite and minor non-vesiculated basalt.
1010-1100	CLAYEY SAND TO GRAVELLY CLAY (0-5% gravel, 40-55% sand, 40-60% silt-clay). Yellowish-brown (10YR 5/4 to 5/6) clayey sand to gravelly clay. Clasts are less than 5 mm maximum diameter and composed of quartzite, silicic volcanic rocks, granite and rare basalt. Contains 2 to 5-ft thick clayey sand interbeds.
1100-1120	SANDY CLAY (0-5% gravel, 55-65% sand, 40-65% silt-clay): Yellowish-brown (10YR 5/4) subangular to subrounded sand. Clasts are <4 mm maximum diameter and include quartzite and volcanic lithologies.
1120-1150	SILTY SAND to GRAVELLY SAND (20-40% gravel, 50-60% sand, 10-20% silt/clay): Grayish-brown (10YR 5/2) to brown (10YR 5/3) moderately to well sorted, subangular to subrounded silty sand and muddy gravel. Clasts include quartzite and volcanic lithologies.
1150-1200	SILTY SAND to GRAVELLY SAND (10-40% gravel, 50-75% sand, 10-20% silt-clay): Pale-brown (10YR 6/3), moderately to well sorted, subangular to subrounded. Clasts include quartzite, volcanic and granitic lithologies.
1200-1320	SILTY to CLAYEY SAND and GRAVEL (0-30% gravel, 60-85% sand, 0-25% silt-clay): Brown (10-7.5YR 5/3), subangular to subrounded, very fine- to medium-grained sand. Clasts contain quartzite, reddish-brown, brown and gray volcanic tuff and basalt, granite and sandstone.

**Hydrogeologic Interpretation
Sandia Pueblo Well Site**

Depth (ft)	Hydrostratigraphic Units	Lithofacies
0-25	Piedmont-slope Alluvium (PA)	V
25-120	Ancestral Sandia Mountains piedmont-slope alluvium (USF-1)	V, VI
120-140	Ancestral river valley and piedmont-slope alluvium: (USF1&2)	VI,I
140-460	Ancestral river valley and basin-floor deposits, gravel dominated: (USF-2)	I
460-800	Ancestral river valley and basin-floor deposits, sand dominated: (USF-2)	II
800-1010	Ancestral basin-floor deposits, dominantly silt-clay with interbedded sand: (MSF-2)	IX
1010-1320	Ancestral basin-floor and river valley deposits, dominantly silty to clayey sand with interbedded granule gravel and sand interbeds. (MSF-2)	III, IX

Note: The identification of lithofacies units is interpretive and based on several criteria, including texture, composition (provenance), and geographic location of the described sample within the basin. The interpretation of lithofacies is tentative and preliminary due to the limitations of the data and the fact that correlation to adjacent wells has not been fully established; accordingly, these lithofacies interpretations are subject to revision.

Attachment A
Field Lithologic Descriptions
Sandia Pueblo Well (T13N, R4E, Section 29.344)

Sample No.	Depth Interval (ft)	Description
SPW-1	0-10	Gravel (75% gravel, 20% sand, <5% silt/clay); moderately to poorly sorted, angular. Granite, schist, and aplite clasts. Reddish yellow (7.5YR 6/6) silt/clay; brown (7.5YR 5/4) sand. Driller's log: 0-5 ft: cobble sand; 5-10 ft: sand, gravel.
SPW-2	10-20	Gravel (75% gravel, 25% sand); moderately sorted, subangular sand, and angular gravel. Granite, schist, and aplite clasts. Strong brown (7.5YR 5/6). Driller's log: sand, small gravel.
SPW-3	20-30	Gravel (80% gravel, 15% sand <5% silt/clay); moderately to well sorted, angular to subangular. Granite, schist, and aplite clasts. Reddish-yellow (7.5YR 6/6) silt/clay; brown (7.5YR 4/4) sand. Driller's log: 20-25 ft: sand, small gravel; 25-30 ft: sand, sandy clay.
SPW-4	30-40	Gravel (85% gravel, 15% sand); moderately to well sorted, angular to subangular. Granite, schist, and aplite clasts. Brown (7.5YR 5/4). Light gray concrete chips from grout used to set surface casing. Driller's log: 30-35 ft: sand, coarse sand, gravel.
SPW-5	40-50	Gravel (80% gravel, 20% sand); well sorted, angular to subangular. Granite, aplite, and schist clasts. Brown (7.5YR 5/4). Driller's log: sand, gravel, coarse sand.
SPW-6	50-60	Same as above. Driller's log: sand, gravel, coarse sand.
SPW-7	60-70	Sand (90% sand, 10% gravel); well sorted, angular to subangular. Granite, aplite, schist, and limestone clasts. Brown (7.5YR 5/4). Silt- or clay-rich bed at 62 ft. Driller's log: sand, coarse sand.
SPW-8	70-80	Gravel (80% gravel, 20% sand); angular to subangular. Granite, aplite, schist, and limestone clasts. Brown (7.5YR 5/5). Driller's log: sand, coarse sand, gravel.
SPW-9	80-90	Gravel (85% gravel, 15% sand); well sorted, angular to subangular. Granite, schist, and aplite clasts. Brown (7.5YR 5/4). Driller's log: sand, coarse sand, gravel.
SPW-10	90-100	Same as above. Driller's log: sand, coarse sand, gravel.
SPW-11	100-110	Gravel (90% gravel, 10% sand); moderately to well sorted, angular to subangular. Granite and schist clasts. Brown (7.5YR 5/2). Driller's log: sand, coarse sand, gravel.
SPW-12	110-120	Gravel (80% gravel, 20% sand); moderately to well sorted, angular to subangular. Granite and schist clasts. Brown (7.5YR 4/2). Driller's log: sand, coarse sand, gravel.
SPW-13	120-130	Gravel (80% gravel, 10% sand, 10% silt/clay); moderately sorted, angular to subangular (sand), subangular to rounded (gravel). Granite, schist, and quartzite clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (7.5YR 5/4) sand. Rounded quartzite clasts mark top of ancestral Rio Grande fluvial facies. Driller's log: 120-125 ft: coarse sand, gravel; 125-130 ft: sand, silty clay.

Sample No.	Depth Interval (ft)	Description
SPW-14	130-140	(70% gravel, 20% silt/clay, 10% sand); moderately to well sorted, subangular. Granite, schist, quartzite, and chert clasts. Dark yellowish-brown (10YR 3/4) silt/clay; brown (7.5YR 4/4) sand. Driller's log: 130-135 ft: sand, silty; 135-140 ft: silty clay, gravel, small cobble.
SPW-15	140-150	No sample. Driller's log: 140-145 ft: coarse sand, gravel; 145-150 ft: gravel, small cobble.
SPW-16	150-160	Gravel (80% gravel, 10% sand, 10% silt/clay); well sorted, subangular to subrounded (sand), subangular (gravel). Granite, basalt, sandstone, quartzite, and schist clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (7.5YR 4/4) sand. Driller's log: 150-155 ft: gravel, coarse sand, silty clay; 145-150 ft: gravel, coarse sand, small cobble.
SPW-17	160-170	Gravel (80% gravel, 15% sand, 5% silt/clay); well sorted, angular to subangular. Quartzite, schist, granite, and basalt clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (7.5YR 4/4) sand. Driller's log: 160-165 ft: cobble, coarse sand; 165-170 ft: coarse sand, sand, sandy clay.
SPW-18	170-180	Sandy gravel (75% gravel, 20% sand, 5% silt/clay); well sorted, angular to subangular (sand), subrounded to rounded (gravel). Quartzite, schist, granite, and basalt clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (7.5YR 4/4) sand. Driller's log: 170-175 ft: coarse sand, sand, sandy clay; 175-180 ft: gravel, coarse sand.
SPW-19	180-190	Gravel (90% gravel, 5% sand, 5% silt/clay); well sorted, angular to subangular (sand), subrounded to rounded (gravel). Quartzite, schist, granite, silicic (reddish-brown)-volcanic, and basalt clasts. Yellowish-brown (10YR 5/6) silt/clay; brown (7.5YR 4/4) sand. Driller's log: 180-185 ft: coarse sand, gravel; 185-190 ft: gravel, cobble, coarse sand.
SPW-20	190-200	Gravel (90% gravel, 5% sand, 5% silt/clay); well sorted, angular to subangular sand, and subrounded to rounded gravel. Schist, quartzite, granite, and silicic (reddish-brown)-volcanic clasts. Yellowish-brown (10YR 5/6) silt/clay; brown (7.5YR 4/4) sand. Driller's log: gravel, cobble, coarse sand.
SPW-21	200-210	Sandy gravel (80% sand, 20% gravel); well sorted, angular to subangular sand, and subangular to subrounded gravel. Volcanic (andesite), quartzite, and granite clasts. Brown (10YR 4/3). Driller's log: 200-205 ft: gravel, coarse sand; 205-210 ft: sand, silty clay.
SPW-22	210-220	Sandy gravel (75% sand, 20% gravel, 5% silt/clay); well sorted, angular to subangular sand, and subrounded gravel. Quartzite, granite, and schist clasts. Brown (7.5YR 5/4 and 10YR 4/3). Driller's log: sand, silty clay.
SPW-23	220-230	Sandy gravel (70% sand, 25% gravel, 5% silt/clay); well sorted, angular to subangular sand, and subrounded gravel. Quartzite, granite, and schist clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (10YR 4/3) sand. Driller's log: 220-225 ft: coarse sand, silty clay; 225-230 ft: small gravel, silty clay.
SPW-24	230-240	Sandy gravel (75% sand, 20% gravel, <5% silt/clay); well sorted, angular to subangular sand, and subangular to subrounded gravel. Quartzite, andesite, granite, and schist clasts. Yellowish-brown (10YR 5/4) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: 230-235 ft: sand, coarse sand; 235-240 ft: coarse sand, silty clay, gravel.

Sample No.	Depth Interval (ft)	Description
SPW-25	240-250	Sandy gravel (60% gravel, 40% sand, 5% silt/clay); moderately to well sorted, angular to subangular sand, and subrounded to rounded gravel. Quartzite, granite, schist, and chert clasts. Yellowish-brown (10YR 5/4) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: coarse sand, sandy clay.
SPW-26	250-260	No sample. Driller's log: 250-255 ft: coarse sand, sandy clay; 255-260: gravel, coarse sand.
SPW-27	260-270	Sandy gravel (60% gravel, 40% sand); well sorted, angular sand, and subrounded to rounded gravel. Quartzite, basalt, and granite clasts. Dark yellowish-brown (10YR 4/4). Driller's log: 260-265 ft: sand, coarse sand; 265-270 ft: gravel.
SPW-28	270-280	Gravel (80% gravel, 20% sand); well sorted, angular sand, and subangular to subrounded gravel. Quartzite, schist, and granite clasts. Dark yellowish-brown (10YR 4/4). Driller's log: 270-275 ft: gravel, coarse sand; 275-280 ft: sand, sandy clay, coarse sand.
SPW-29	280-290	Sandy gravel (60% sand, 40% gravel); moderately to well sorted, subangular sand, and subangular to subrounded gravel. Quartzite, andesite, and schist clasts. Brown (10YR 4/3). Driller's log: coarse sand, sand.
SPW-30	290-300	Sandy gravel (60% gravel, 40% sand); moderately to well sorted, subangular sand, and subrounded to rounded gravel. Granite, andesite, basalt, volcanic, and quartzite clasts. Brown (10YR 4/3). Abundant volcanic clasts. Driller's log: 290-295 ft: coarse sand, gravel; 295-300 ft: gravel, coarse sand.
SPW-31	300-310	Gravel (75% gravel, 20% sand, 5% silt/clay); well sorted, angular, subrounded to rounded. Quartzite and granite clasts. Brown (7.5YR 5/4) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: 300-305 ft: sand, coarse sand; 305-310: sand, coarse sand with sandy clay.
SPW-32	310-320	Gravel (75% gravel, 20% sand, 5% silt/clay); moderately to well sorted, subangular sand, and subrounded gravel. Granite, quartzite, and schist clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: sand, small gravel.
SPW-33	320-330	Sandy gravel (60% gravel, 40% sand); well sorted, subangular sand, and subrounded to rounded gravel. Granite, quartzite, and schist clasts. Brown (10YR 5/3). Driller's log: sand, gravel.
SPW-34	330-340	Sandy gravel (60% gravel, 40% sand); well sorted, angular to subangular sand, and subrounded to rounded gravel. Quartzite, granite, schist, and basalt clasts. Brown (10YR 5/3). Driller's log: 330-335 ft: sand, gravel; 335-340 ft: sand, gravel, cobble.
SPW-35	340-350	Gravel (85% gravel, 15% sand); well sorted, angular to subangular sand, and rounded gravel. Quartzite and granite clasts. Dark yellowish-brown (10YR 4/4). Driller's log: 340-345 ft: gravel, coarse sand; 345-350 ft: gravel, coarse sand, silty clay.
SPW-36	350-360	Gravel (80% gravel, 20% sand); well sorted, angular sand, and subrounded gravel. Quartzite, granite, and chert clasts. Brown (10YR 4/3). Driller's log: coarse sand, sandy clay.
SPW-37	360-370	Gravel (70% gravel, 30% sand); well sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, and chert. Dark yellowish-brown (10YR 4/4). Driller's log: 360-365 ft: sand, coarse sand; 365-370 ft: gravel coarse sand.

Sample No.	Depth Interval (ft)	Description
SPW-38	370-380	Sandy gravel (60% sand, 40% gravel); well sorted, angular sand, and subrounded to rounded gravel. Granite, quartzite, and chert clasts. Dark yellowish-brown (10YR 4/4). Driller's log: coarse sand, sandy clay, sand.
SPW-39	380-390	Gravel (70% sand, 30% gravel); well sorted, angular sand, and subangular to subrounded gravel. Granite, quartzite, and chert clasts. Dark yellowish-brown (10YR 4/4). Driller's log: coarse sand, sandy clay.
SPW-40	390-400	Gravel (80% gravel, 20% sand); well sorted, angular sand, and subangular to subrounded gravel. Silicic (reddish-brown)-volcanic, andesite, quartzite, and granite clasts. Dark yellowish-brown (10YR 4/4). Driller's log: 390-395: coarse sand, sandy clay; 395-400 ft: coarse sand, sandy clay, gravel.
SPW-41	400-410	Sandy gravel (50% gravel, 40% sand, 10% silt/clay); well sorted, angular sand, and subangular to subrounded gravel. Quartzite, chert, silicic-volcanic, granite, and andesite clasts. Light yellowish-brown (10YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 400-405 ft: sand, silty clay; 405-410 ft: sand, sandy clay
SPW-42	410-420	Sand (70% sand, 15% gravel, 15% silt/clay); well to moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite and granite clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: sand, sandy clay.
SPW-43	420-430	Gravel (90% sand, 5% gravel, 5% silt/clay); moderately sorted, angular sand, and subrounded gravel. Quartzite and granite clasts. Light yellowish-brown (10YR 6/4) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: sand, sandy clay.
SPW-44	430-440	Sand (80% sand, 10% gravel, 10% silt/clay); moderately to well sorted, angular sand, and subangular to subrounded gravel. Quartzite and granite clasts. Yellowish-brown (10YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: sand, sandy clay.
SPW-45	440-450	Gravelly sand (70% sand, 30% gravel); well to moderately sorted, angular sand, and well sorted, subangular to subrounded gravel. Granite, quartzite, and chert clasts. Brown (10YR 5/3). Possible clasts of volcanic ash. Driller's log: sand, sandy clay, coarse sand.
SPW-46	450-460	Gravelly sand (60% sand, 40% gravel); well sorted, angular to subangular sand, and well sorted, subrounded to rounded (gravel). Quartzite, granite, and chert clasts. Brown (10YR 5/3). Driller's log: 450-455 ft: sand, sandy clay; 455-460 ft: sand, sandy clay, gravel.
SPW-47	460-470	Sandy to gravelly silt and clay (70% silt/clay, 15% sand, 15% gravel); well sorted, angular to subangular sand, and subrounded to rounded gravel. Quartzite, granite, and chert. Yellowish-brown (10YR 5/4) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: 460-465 ft: sand, gravel, sandy clay; 465-470 ft: sand, coarse sand.
SPW-48	470-480	Gravelly sand (70% sand, 20% gravel, 10% silt/clay); well to moderately sorted, angular to subangular sand, and subangular to subrounded gravel. Quartzite, granite, and chert clasts. Brown (7.5YR 5/4) silt/clay; brown (10YR 4/3) sand. Driller's log: 470-475 ft: sand, coarse sand; 475-480 ft: sand, coarse sand with sandy clay.

Sample No.	Depth Interval (ft)	Description
SPW-49	480-490	Silty to gravelly sand (70% sand, 15% gravel, 15% silt/clay); well to moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and chert. Brown (10YR 5/3). Water table at 482 ft. Driller's log: 480-485 ft: sand, sandy clay; 485-490 ft: sand, sandy clay, gravel.
SPW-50	490-500	Gravelly to silty sand (60% sand, 25% gravel, 15% silt/clay); well to moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and chert clasts. Brown (7.5YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: sand, sandy clay, gravel.
SPW-51	500-510	Gravelly sand (50% sand, 40% gravel, 10% silt/clay); moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and chert clasts. Brown (7.5YR 5/4 and 10YR 5/3). Driller's log: 500-505 ft: sand, coarse sand, sandy clay; 505-510 ft: sand, coarse sand.
SPW-52	510-520	Gravelly sand (60% sand, 35% gravel, 5% silt/clay); well to moderately sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, and chert clasts. Brown (7.5YR 5/4 and 10YR 5/3). Driller's log: 510-515 ft: sand, coarse sand; 515-520 ft: sand, coarse sand, gravel.
SPW-53	520-530	Gravelly sand (70% sand, 25% gravel, 5% silt/clay); moderately sorted, angular sand, and subrounded gravel. Quartzite, granite, and chert clasts. Brown (7.5YR 5/4) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: 520-525 ft: sand, coarse sand; 525-530 ft: sand, coarse sand, silty clay.
SPW-54	530-540	Gravelly sand (70% sand, 20% gravel, 10% silt/clay); moderately to well sorted, angular sand, and subangular to subrounded gravel. Granite, quartzite, and chert clasts. Brownish-yellow (10YR 6/6) silt/clay; dark yellowish-brown (10YR 4/4) sand. Driller's log: 530-535 ft: sand, coarse sand, silty clay; 535-540 ft: sand, coarse sand with sandy clay.
SPW-55	540-550	Silty sand and gravel (40% gravel, 40% sand, 20% silt/clay); moderately to well sorted, angular sand, and subangular to rounded gravel. Quartzite, granite, and chert clasts. Brown (7.5YR 5/4) silt/clay; yellowish-brown (10YR 5/4) sand. Driller's log: coarse sand, sandy clay.
SPW-56	550-560	Gravelly to silty sand (40% sand, 30% gravel, 30% silt/clay); moderately sorted, subangular sand, and subrounded to rounded gravel. Quartzite, granite, schist, and chert. Light reddish-brown (5YR 6/4) silt/clay; yellowish-brown (10YR 5/4) sand. Driller's log: 550-555 ft: coarse sand, sandy clay, silty clay; 555-560 ft: sand, coarse sand.
SPW-57	560-570	Gravelly sand and silt/clay (40% sand, 40% silt/clay, 20% gravel); moderately sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, chert, and schist. Light reddish-brown (5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 560-565 ft: sand, coarse sand, silty clay; 565-570 ft: small gravel, coarse sand.
SPW-58	570-580	Sandy gravel (60% gravel, 30% sand, 10% silt/clay); moderately to well sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and schist. light-brown (7.5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: small gravel, coarse sand, sandy clay.

Sample No.	Depth Interval (ft)	Description
SPW-59	580-590	Sandy gravel (50% gravel, 40% sand, 10% silt/clay); moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and schist clasts. Light-brown (7.5YR 6/4) silt/clay; brown (10YR 5/4) sand. Driller's log: 580-585 ft: coarse sand, sand; 585-590 ft: coarse sand, sand, sandy clay.
SPW-60	590-600	Sandy gravel (50% gravel, 40% sand, 10% silt/clay); moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and schist clasts. Light-brown (7.5YR 6/4) silt/clay; grayish-brown (10YR 5/2) sand. Driller's log: 590-595 ft: coarse sand, sand, sandy clay; 595-600 ft: coarse sand, sand.
SPW-61	600-610	Sandy gravel (50% gravel, 40% sand, 10% silt/clay); well to moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, schist, and chert clasts. Light-brown (7.5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: sand, coarse sand, silty clay.
SPW-62	610-620	Gravelly sand (70% sand, 20% gravel, 10% silt/clay); moderately to well sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, and schist clasts. Light reddish-brown (5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 610-615 ft: sand, silty clay; 615-620 ft: sand, coarse sand, sandy clay.
SPW-63	620-630	Gravelly sand (70% sand, 20% gravel, 10% silt/clay); moderately to well sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, and schist clasts. Light reddish-brown (5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 620-625 ft: sand, coarse sand, clay; 625-630 ft: sand, silty clay.
SPW-64	630-640	Gravelly sand (60% sand, 30% gravel, 10% silt/clay); moderately sorted, angular to subangular sand, and subangular to subrounded gravel. Quartzite, granite, and schist clasts. Light yellowish-brown (10YR 6/4) silt/clay; grayish-brown (10YR 5/2) sand. Driller's log: 630-640 ft: sand, coarse sand, sandy clay.
SPW-65	640-650	Gravelly sand (50% sand, 40% gravel, 10% silt/clay); well to moderately sorted, angular to subangular sand, and subangular to subrounded gravel. Quartzite, granite, and schist clasts. Light-brown (7.5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 640-645 ft: sand, coarse sand; 645-650 ft: same with sandy clay.
SPW-66	650-660	Gravelly sand (50% sand, 40% gravel, 10% silt/clay); moderately to well sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, chert, and schist clasts. Light reddish-brown (5YR 6/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 650-660 ft: sand, coarse sand with sandy clay.
SPW-67	660-670	Gravelly sand (60% sand, 30% gravel, 10% silt/clay); well sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, chert, and schist clasts. Reddish-brown (5YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 660-665 ft: sand, coarse sand; 665-670 ft: sand, silty clay
SPW-68	670-680	Gravelly sand (60% sand, 20% gravel, 20% silt/clay); well sorted, angular sand, and subangular to subrounded gravel. Quartzite and granite clasts. Reddish-brown (5YR 5/4) silt/clay; yellowish-brown (10YR 5/4) sand. Driller's log: 670-680 ft: sand, silty clay.

Sample No.	Depth Interval (ft)	Description
SPW-69	680-690	Gravelly to silty sand (60% sand, 20% gravel, 20% silt/clay); moderately to well sorted, angular to subangular sand, and well sorted, subrounded to rounded gravel. Quartzite and granite clasts. Reddish-brown (5YR 5/4) silt/clay; grayish-brown (10YR 5/2) sand. Driller's log: 680-690 ft: sand, silty clay.
SPW-70	690-700	Gravelly sand (70% sand, 30% gravel, 10% silt/clay); moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and schist clasts. Reddish-brown (5YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 690-695 ft: sand, silty clay; 695-700 ft: sand, sandy clay.
SPW-71	700-710	Gravelly sand (60% sand, 30% gravel, 10% silt/clay); moderately to well sorted, angular to subangular sand, and subrounded to rounded gravel. Quartzite, chert, and granite clasts. Brown (7.5YR 5/4) silt/clay; brown (10YR 5/3) sand. Driller's log: 700-710 ft: sand, sandy clay.
SPW-72	710-720	Silty sand to gravelly sand (70% sand, 20% silt/clay, 10% gravel); moderately to well sorted, angular sand, and well sorted, subrounded to rounded gravel. Quartzite and granite clasts. Light-brown (7.5YR 6/4) silt/clay; brown (10YR 5/4) sand. Driller's log: 710-720 ft: sand, sandy clay.
SPW-73	720-730	Silty sand to gravelly sand (70% sand, 20% silt/clay, 10% gravel); well sorted, angular sand, and subrounded to rounded gravel. Quartzite and granite clasts. Light-brown (7.5YR 6/4) silt/clay; grayish-brown (10YR 5/2) sand. Driller's log: 720-725 ft: sand, sandy clay; 725-730 ft: small gravel, sand.
SPW-74	730-740	Silty sand to gravelly sand (70% sand, 20% silt/clay, 10% gravel); moderately to well sorted, angular sand, and subrounded to rounded gravel. Quartzite, granite, and schist clasts. Brown (7.5YR 5/4 & 10YR 5/3). Driller's log: 730-740 ft: small gravel, sand.
SPW-75	740-750	Sandy gravel (60% gravel, 30% sand, 10% silt/clay); moderately sorted, angular sand, and moderately to well sorted, subangular to subrounded gravel. Quartzite, granite, and schist clasts. Light-brown (7.5YR 6/4) silt/clay; yellowish-brown (10YR 5/4) sand. Driller's log: 740-745 ft: sand, coarse sand; 745-750 ft: sand, coarse sand with small gravel.
SPW-76	750-760	Sandy gravel (60% gravel, 30% sand, 10% silt/clay); moderately sorted, angular to subangular sand, and subangular to subrounded gravel. Granite, quartzite, and chert clasts. Light-brown (7.5YR 6/4) silt/clay; Brown (10YR 5/3) sand. Driller's log: 750-755 ft: sand, coarse sand with small gravel; 755-760 ft: sand, coarse sand with small gravel and sandy clay.
SPW-77	760-770	Gravelly to silty sand (40% sand, 30% gravel, 30% silt/clay); moderately sorted, angular sand, and well sorted, subangular gravel. Quartzite, granite, and chert clasts. Light-brown (7.5YR 6/4) silt/clay; Brown (10YR 5/3) sand. Driller's log: 760-765 ft: sand, sandy clay; 765-770 ft: sand, coarse sand.
SPW-78	770-780	Silty sand and gravel (40% gravel, 40% sand, 20% silt/clay); moderately sorted, angular sand, and subangular to subrounded gravel. Quartzite, granite, and schist clasts. 7.5YR 6/4, silt/clay; 10YR 5/3, sand. Driller's log: 770-780 ft: sand, sandy clay.

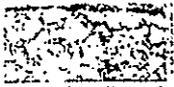
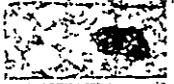
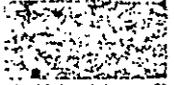
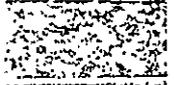
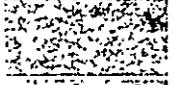
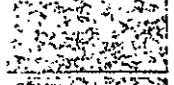
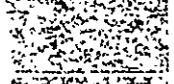
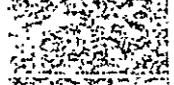
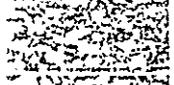
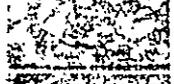
Sample No.	Depth Interval (ft)	Description
SPW-79	780-790	Gravelly to silty sand (50% sand, 30% gravel, 20% silt/clay); moderately sorted, angular (sand), subangular to subrounded (gravel). Granite, quartzite, schist. Light-brown (7.5YR 6/4) silt/clay; Brown (10YR 5/3) sand. Driller's log: 780-790 ft: sand, coarse sand.
SPW-80	790-800	Gravelly to silty sand (50% gravel, 30% sand, 20% silt/clay); moderately sorted, angular sand, and subangular to subrounded gravel. Granite, quartzite, andesite, and schist clasts. Light-brown (7.5YR 6/4) silt/clay; Brown (10YR 5/3) sand. Driller's log: 790-800 ft: sand, coarse sand.
SPW-81	800-810	Silty to sandy clay (55% silt/clay, 45% sand (m-vc)); moderately to well sorted, angular to subrounded sand and clay. Pale-brown (10YR 6/3). Very sticky. Driller's log: 800-805 ft: sand, sandy clay; 805-810 ft: coarse sand, small gravel.
SPW-82	810-820	Silty to sandy clay (55% silt/clay, 45% sand (f-c)); well to moderately sorted, subangular to subrounded sand, and clay. Pale-brown (10YR 6/3). Very sticky. Driller's log: 810-815 ft: coarse sand, small gravel; 815-820 ft: coarse sand, sand.
SPW-83	820-830	Same as above. Driller's log: 820-830 ft: sand, coarse sand, sandy clay.
SPW-84	830-840	Clayey sand (55% sand (f-vc), 45% silt/clay); well to moderately sorted, angular to subrounded sand. Pale-brown (10YR 6/3). Very sticky. Driller's log: 830-840 ft: sand, coarse sand, sandy clay.
SPW-85	840-850	Clayey sand (55% sand, 40% silt/clay, <5% gravel); moderately sorted, angular to subrounded sand, and angular gravel. Granite, quartzite, rounded basalt and volcanic clasts. Pale-brown (10YR 6/3). Driller's log: 840-845 ft: coarse sand, small gravel; 845-850 ft: coarse sand, small gravel with sandy clay.
SPW-86	850-860	Silty clay to clayey sand (55% silt/clay, 45% sand); moderately sorted, angular to subrounded sand. Pale-brown (10YR 6/3). Sticky. Driller's log: 850-855 ft: coarse sand, small gravel, with sandy clay; 855-860: gravel, coarse sand.
SPW-87	860-870	Clayey sand (60% sand, 40% silt/clay); moderately sorted, angular to subrounded. Pale-brown (10YR 6/3). Driller's log: 860-865 ft: sand, coarse sand; 865-870 ft: sand, coarse sand with sandy clay.
SPW-88	870-880	Same as above. Driller's log: 870-875 ft: sand, coarse sand with sandy clay; 875-880 ft: coarse sand, gravel.
SPW-89	880-890	Silty clay to clayey sand (55% silt/clay, 40% sand (vf-vc), <5% gravel); moderately sorted. Quartzite and volcanic (rhyolite, basalt) clasts. Pale-brown (10YR 6/3) with light greenish-gray (5GY 7/1) discontinuous mottles. Driller's log: 880-885 ft: sand, coarse sand; 885-890 ft: sand, silty clay.
SPW-90	890-900	Silty clay to clayey sand (55% silt/clay, 45% sand); angular to subrounded. Pale-brown (10YR 6/3) and gray 10YR 5/1). Driller's log: 890-895 ft: coarse sand, sand; 895-900 ft: sand, silty clay.
SPW-91	900-910	Clay (90% silt/clay, <10% sand). Dark-gray (7.5YR 4/1). Very sticky. Driller's log: 900-905 ft: sand, sandy clay; 905-910 ft: sand, coarse sand.
SPW-92	910-920	Clay (90% silt/clay, <10% sand). Yellowish-brown (10YR 5/4) and very dark-gray (10YR 3/1) with light greenish-gray (5GY 7/1) discontinuous mottles. Very sticky. Driller's log: 910-915 ft: sand, coarse sand; 915-920 ft: silty clay, sand.
SPW-93	920-930	Sandy clay (75% silt/clay, 25% sand (vf-c)). Gray (10YR 5/1) and yellowish-brown (10YR 5/4). Sticky. Driller's log: 920-925 ft: sand clay; 925-930 ft: silty clay, sand.

Sample No.	Depth Interval (ft)	Description
SPW-94	930-940	Same as above. Driller's log: 930-940 ft: coarse sand, sand.
SPW-95	940-950	Sandy clay (65% silt/clay, 30% sand, 5% gravel); angular to subrounded. Pale-brown (10YR 6/3). Very sticky. Driller's log: 940-950 ft: sand, silty clay.
SPW-96	950-960	Same as above. Driller's log: 950-960 ft: sand, coarse sand.
SPW-97	960-970	Same as above. Sand and silt clay. Driller's log: 960-970 ft: coarse sand, sand.
SPW-98	970-980	Sandy clay (65% silt/clay, 30% sand, <5% gravel); angular to subrounded. Pale-brown (10YR 6/3) to light yellowish-brown (10YR 6/4). Sand grades coarser downhole. Driller's log: 970-980 ft: coarse sand, sand.
SPW-99	980-990	Sandy clay (65% silt/clay, 30% sand, <5% gravel); angular to subrounded. Pale-brown (10YR 6/3) to light yellowish-brown (10YR 6/4). Driller's log: 980-990 ft: sand, coarse sand.
SPW-100	990-1000	Sandy clay (55% silt/clay, 40% sand, 5% gravel); well to moderately sorted, subangular to subrounded. Quartzite, volcanic, and granite clasts. Yellowish brown (10YR 5/6). Driller's log: 990-1000 ft: sandy clay, sand.
SPW-101	1000-1010	Clayey sand (60% silt/clay, 40% sand); well to moderately sorted, subangular to subrounded. Granite, quartzite, and volcanic clasts. Yellowish-brown (10YR 5/4-5/6). Driller's log: 1000-1005 ft: sand; 1005-1010 ft: sand, coarse sand.
SPW-102	1010-1020	Same as above. Driller's log: 1010-1015 ft: coarse sand; 1015-1020 ft: sand, coarse sand.
SPW-103	1020-1030	Clayey sand to sandy clay (50% sand, 45% silt/clay, 5% gravel); well sorted. Subrounded pebbles. Yellowish-brown (10YR 5/4). Driller's log: 1020-1025 ft: sand, coarse sand; 1025-1030 ft: coarse sand, gravel.
SPW-104	1030-1040	Clayey sand (55% sand, 40% silt/clay, 5% gravel); moderately to well sorted. Granite, quartzite, and volcanic (basalt?) clasts. Yellowish-brown (10YR 5/4). Driller's log: 1030-1035 ft: coarse sand, gravel; 1035-1040 ft: coarse sand, gravel, with sandy clay.
SPW-105	1040-1050	Same as above. Driller's log: 1040-1050 ft: sand, coarse sand.
SPW-106	1050-1060	Same as above. Driller's log: 1050-1055 ft: sand, coarse sand; 1055-1060 ft: sand, coarse sand, sandy clay.
SPW-107	1060-1070	Silty sand and gravelly silty sand (50% sand, 30% silt/clay, 20% gravel); moderately to well sorted, subangular to subrounded. Quartzite, granite, and volcanic (reddish-brown rhyolite, and dark gray basalt?) clasts. Brown (10YR 5/3). Driller's log: 1060-1070 ft: coarse sand, sand.
SPW-108	1070-1080	Same as above. Driller's log: 1070-1080 ft: coarse sand, sand.
SPW-109	1080-1090	Same as above. Driller's log: 1080-1085 ft: sand, silty clay; 1085-1090 ft: silty clay.
SPW-110	1090-1100	Sandy clay (65% silty/clay, 35% sand(vf-m)); subangular to subrounded sand. Brown (10YR 5/3). Sticky. Driller's log: 1090-1100 ft: silty clay, sand.
SPW-111	1100-1110	Same as above. Driller's log: 1100-1110 ft: sandy clay, sand.
SPW-112	1110-1120	Sandy silt and clay (55% sand, 40% silt/clay, 5% gravel); subangular to subrounded sand. Yellowish-brown (10YR 5/4). Driller's log: 1110-1115 ft: sandy clay, sand; 1115-1120 ft: coarse sand, sand.

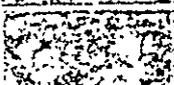
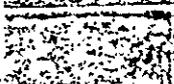
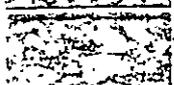
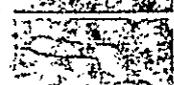
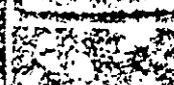
Sample No.	Depth Interval (ft)	Description
SPW-113	1120-1130	Silty sand (60% sand, 20% silt/clay, 20% gravel); moderately to well sorted, subangular to subrounded sand, and subangular gravel. Quartzite and volcanic (reddish-brown rhyolite) clasts. Grayish-brown (10YR 5/2) to brown (10YR 5/3). Driller's log: 1120-1130 ft: sand, coarse sand.
SPW-114	1130-1140	Gravelly sand (50% sand, 40% gravel, <10% silt/clay); well to moderately sorted, subangular to rounded sand and gravel. Grayish-brown (10YR 5/2) to brown (10YR 5/3). Vesicular basalt not recognized. Driller's log: 1130-1135 ft: sand, coarse sand; 1135-1140 ft: sand, coarse sand with gravel.
SPW-115	1140-1150	Same as above. Driller's log: 1140-1150 ft: small gravel, sand, coarse sand.
SPW-116	1150-1160	Silty sand (65% sand, 25% silt/clay, 10% gravel); subangular to subrounded sand and gravel. 10YR 5/2-5/3, fines; grayish brown green, coarse. Driller's log: 1150-1155 ft: small gravel, sand, coarse sand; 1155-1160 ft: coarse sand, sand.
SPW-117	1160-1170	Silty sand and gravel (60% sand, 20% silt/clay, 20% gravel). Quartzite, volcanic (rhyolite, minor basalt), and granite clasts. Pale-brown (10YR 6/3). No vesicular basalt. Driller's log: 1160-1170 ft: sand, sandy clay.
SPW-118	1170-1180	Gravelly sand (70% sand, 20% gravel, 10% silt/clay); angular to subrounded sand and gravel. Quartz, quartzite, volcanic (rhyolite, basalt, brown porphyritic), granite, and sandstone clasts. Yellowish-brown (10YR 5/4) to strong-brown (5YR 5/8). Driller's log: 1170-1180 ft: coarse sand, sandy clay.
SPW-119	1180-1190	Gravelly sand (50% sand, 40% gravel, 10% silt/clay); well to moderately sorted, angular to subrounded sand and gravel. Quartz, quartzite, and volcanic clasts. No basalt. Pale-brown (10YR 6/3). Driller's log: 1180-1190 ft: sand, coarse sand.
SPW-120	1190-1200	Gravelly sand (75% sand, 15% gravel, 10% silt/clay); well to moderately sorted, subangular to subrounded sand and gravel. Quartzite, granite, volcanic, and sandstone clasts. Pale-brown (10YR 6/3). Driller's log: 1190-1195 ft: sand, coarse sand; 1195-1200 ft: sand, coarse sand with sandy clay.
SPW-121	1200-1210	Silty sand (75% sand, 15% silt/clay, 10% gravel); moderately sorted, subangular to subrounded sand and gravel. Brown (10YR 5/3). Driller's log: 1200-1205 ft: coarse sand; 1205-1210 ft: sand, sandy clay.
SPW-122	1210-1220	Gravelly sand (65% sand, 25% gravel, 10% silt/clay); well sorted, subangular to rounded sand and gravel. Quartzite, volcanic, and granite clasts. Pale-brown (10YR 6/3). Driller's log: 1210-1215 ft: sand, sandy clay; 1215-1220 ft: sand, coarse sand.
SPW-123	1220-1230	Silty sand (70% sand, 25% silt/clay, 5% gravel); moderately to well sorted, subangular to subrounded sand and gravel. Brown (7.5-10YR 5/3). Driller's log: 1220-1225 ft: coarse sand, sand; 1225-1230 ft: sand, sandy clay.
SPW-124	1230-1240	Same as above. Driller's log: 1230-1235 ft: sand, sandy clay; 1235-1240 ft: sand, coarse sand.
SPW-125	1240-1250	Gravelly sand (65% sand, 30% gravel, <5% silt/clay); well to moderately sorted, subangular to subrounded sand and gravel. Quartzite, volcanic, granite. Brown (7.5-10YR 5/3). Driller's log: 1240-1245 ft: coarse sand, sand; 1245-1250 ft: sand, sandy clay.

Sample No.	Depth Interval (ft)	Description
SPW-126	1250-1260	Gravelly silty sand (60% sand, 30% gravel, 10% silt/clay); well to moderately sorted, subangular to rounded sand and gravel. Quartzite and granite. Brown (7.5-10YR 5/3). Driller's log: 1250-1255 ft: sand, sandy clay; 1255-1260 ft: coarse sand, sand.
SPW-127	1260-1270	Same as above. Driller's log: 1260-1270 ft: sand, coarse sand, sandy clay.
SPW-128	1270-1280	Silty sand (75% sand, 15% silt/clay, 10% gravel); well to moderately sorted, subangular to subrounded sand and gravel. Quartzite, volcanic, granite, and sandstone clasts. Brown (7.5-10YR 5/3). Driller's log: 1270-1280 ft: sandy clay, sand.
SPW-129	1280-1290	Sand (85% sand, 10% silt/clay, 5% gravel); well to moderately sorted, subangular to subrounded sand and gravel. Quartzite, volcanic, granite, and sandstone clasts. Brown (10YR 5/3). Driller's log: 1280-1290 ft: coarse sand, sand.
SPW-130	1290-1300	Silty sand (75% sand, 25% silt/clay). well to moderately sorted, subangular to subrounded sand. Brown (7.5-10YR 5/3). Driller's log: 1290-1295 ft: coarse sand, sand; 1295-1300 ft: sand, silty clay.
SPW-131	1300-1310	Same as above. Driller's log: 1300-1310 ft: sand, silty clay.
SPW-132	1310-1320	Silty sand (65% sand (vf-m), 35% silt/clay); well to moderately sorted, subangular to subrounded sand. Brown (10YR 6/3). Driller's log: 1310-1320 ft: sand, silty clay.

Sandia Pueblo Well (T13N, R04E, S29.344)

	0-	10
	10-	20
	20-	30
	30-	40
	40-	50
	50-	60
	60-	70
	70-	80
	80-	90
	90-	100
	100-	110
	110-	120
	120-	130
	130-	140
	140-	150
	150-	160
	160-	170
	170-	180
	180-	190
	190-	200

Sandia Pueblo Well (T13N, R04E, S29.344)

	200-	210
	210-	220
	220-	230
	230-	240
	240-	250
	250-	260
	260-	270
	270-	280
	280-	290
	290-	300
	300-	310
	310-	320
	320-	330
	330-	340
	340-	350
	350-	360
	360-	370
	370-	380
	380-	390
	390-	400

Sandia Pueblo Well (T13N, R04E, S29.344)

	800-
	810
	810-
	820
	820-
	830
	830-
	840
	840-
	850
	850-
	860
	860-
	870
	870-
	880
	880-
	890
	890-
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	900-
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	940
	940-
	950
	950-
	960
	960-
	970
	970-
	980
	980-
	990
	990-
	1000

Sandia Pueblo Well (T13N, R04E, S29.344)

	1000-
	1010
	1010-
	1020
	1020-
	1030
	1030-
	1040
	1040-
	1050
	1050-
	1060
	1060-
	1070
	1070-
	1080
	1080-
	1090
	1090-
	1100
	1100-
	1110
	1110-
	1120
	1120-
	1130
	1130-
	1140
	1140-
	1150
	1150-
	1160
	1160-
	1170
	1170-
	1180
	1180-
	1190
	1190-
	1200

Sandia Pueblo Well (T13N, R04E, S29.344)

	400-
	410
	410-
	420
	420-
	430
	430-
	440
	440-
	450
	450-
	460
	460-
	470
	470-
	480
	480-
	490
	490-
	500
	500-
	510
	510-
	520
	520-
	530
	530-
	540
	540-
	550
	550-
	560
	560-
	570
	570-
	580
	580-
	590
	590-
	600

Sandia Pueblo Well (T13N, R04E, S29.344)

	600-
	610
	610-
	620
	620-
	630
	630-
	640
	640-
	650
	650-
	660
	660-
	670
	670-
	680
	680-
	690
	690-
	700
	700-
	710
	710-
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	720-
	730
	730-
	740
	740-
	750
	750-
	760
	760-
	770
	770-
	780
	780-
	790
	790-
	800

Sandia Pueblo Well (T13N, R04E, S29.344)

1200-
1210

1210-
1220

1220-
1230

1230-
1240

1240-
1250

1250-
1260

1260-
1270

1270-
1280

1280-
1290

1290-
1300

1300-
1310

1310-
1320

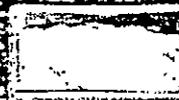
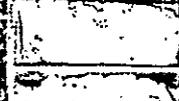
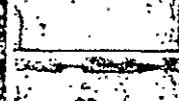
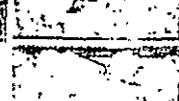
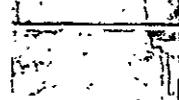
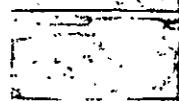
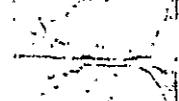
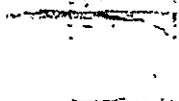
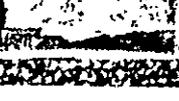
Sandia Pueblo Well (T13N, R04E, S29.344)

	0-	10
	10-	20
	20-	30
	30-	40
	40-	50
	50-	60
	60-	70
	70-	80
	80-	90
	90-	100
	100-	110
	110-	120
	120-	130
	130-	140
X	140-	150
	150-	160
	160-	170
	170-	180
	180-	190
	190-	200

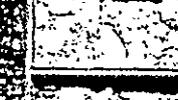
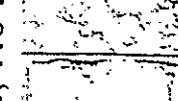
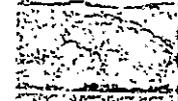
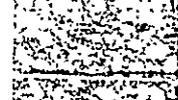
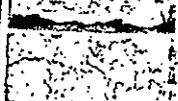
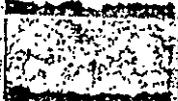
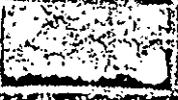
Sandia Pueblo Well (T13N, R04E, S29.344)

	200-	210
	210-	220
	220-	230
	230-	240
	240-	250
X	250-	260
	260-	270
	270-	280
	280-	290
	290-	300
	300-	310
	310-	320
	320-	330
	330-	340
	340-	350
	350-	360
	360-	370
	370-	380
	380-	390
	390-	400

Sandia Pueblo Well (T13N, R04E, S29.344)

	800- 810
	810- 820
	820- 830
	830- 840
	840- 850
	850- 860
	860- 870
	870- 880
	880- 890
	890- 900
	900- 910
	910- 920
	920- 930
	930- 940
	940- 950
	950- 960
	960- 970
	970- 980
	980- 990
	990- 1000

Sandia Pueblo Well (T13N, R04E, S29.344)

	1000- 1010
	1010- 1020
	1020- 1030
	1030- 1040
	1040- 1050
	1050- 1060
	1060- 1070
	1070- 1080
	1080- 1090
	1090- 1100
	1100- 1110
	1110- 1120
	1120- 1130
	1130- 1140
	1140- 1150
	1150- 1160
	1160- 1170
	1170- 1180
	1180- 1190
	1190- 1200

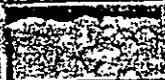
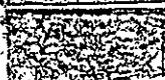
Sandia Pueblo Well (T13N, R04E, S29.344)

400-	410
410-	420
420-	430
430-	440
440-	450
450-	460
460-	470
470-	480
480-	490
490-	500
500-	510
510-	520
520-	530
530-	540
540-	550
550-	560
560-	570
570-	580
580-	590
590-	600

Sandia Pueblo Well (T13N, R04E, S29.344)

600-	610
610-	620
620-	630
630-	640
640-	650
650-	660
660-	670
670-	680
680-	690
690-	700
700-	710
710-	720
720-	730
730-	740
740-	750
750-	760
760-	770
770-	780
780-	790
790-	800

Sandia Pueblo Well (T13N, R04E, S29.344)

	1200- 1210
	1210- 1220
	1220- 1230
	1230- 1240
	1240- 1250
	1250- 1260
	1260- 1270
	1270- 1280
	1280- 1290
	1290- 1300
	1300- 1310
	1310- 1320
	
