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UNITED STATES DEPARTMENT OF INTERIOR
GEOLOGICAL SURVEY

Lithologic Descriptions, Core and Cutting Samples,
Mariano Lake-Lake Valley Drilling Project,
McKinley County, New Mexico, Hole Number 7

by

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Open File Report 81-1206
1981

This report is preliminary and has not been reviewed
for conformity with U.S. Geological Survey editorial
standards and stratigraphic nomenclature.

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INTRODUCTION

In the fall of 1980, the U.S. Geological Survey contracted with Longman Drilling Company of Albuquerque, New Mexico to rotary drill and core twelve holes along a north-south line from Mariano Lake to the vicinity of Lake Valley, New Mexico. This report contains the lithologic descriptions of core and cutting samples from drill hole no. 7.

The drilling project was funded under a reimbursable interagency agreement between the U.S. Bureau of Indian Affairs (BIA) and the U.S. Geological Survey (USGS). The program was designed by representatives of the BIA, USGS, and the Minerals Department of the Navajo Tribe.

PURPOSE

The principal objective of this project was to provide core samples and geophysical logs for petrologic, sedimentologic, geophysical, and geochemical studies of the Upper Jurassic Morrison Formation. Other objectives included the following: stratigraphic and coal studies of Upper Cretaceous rocks; hydrologic and water monitoring of well no. 2; control for a proposed seismic study of the same geographic area; and development of water wells by the Navajo Tribal Water and Sanitation Department.

GENERAL DRILLING PLAN

The locations of all twelve drill holes are shown on figure 1, which is a portion of the Gallup 1° x 2° Quadrangle. The general drilling plan called for most holes to be rotary drilled into the Upper Cretaceous Dakota Sandstone and then cored into or through the Recapture Member of the Morrison Formation. The interval to be cored in each hole was about 600 ft.

Exceptions to the general drilling plan were as follows: Hole no. 2, rotary drilled, surface to Jurassic Entrada Sandstone; Hole no. 4A, cored 21-218 ft, to test an observed near surface I.P. anomaly; Hole no. 6, deepened

after coring by rotary drilling into the Jurassic Entrada Sandstone; Hole no. 7A, cored only the Westwater Canyon Member of the Morrison Formation; Hole no. 8, abandoned in lower part of Westwater Canyon Member of the Morrison Formation; and Hole nos. 9 and 10, abandoned in Upper Cretaceous rocks.

Chip samples were collected at 10-ft or 20-ft intervals throughout each hole and sludge samples collected at 20-ft intervals throughout the cored interval.

The following suite of geophysical logs were included in the general drilling project: natural gamma, self potential, neutron-neutron porosity, resistance, resistivity, temperature, deviation, gamma-gamma density, caliper, magnetic susceptibility, gamma ray spectrometer (KUT), sonic, induced polarization, conductivity, and high-resolution 4-arm digital dipmeter.

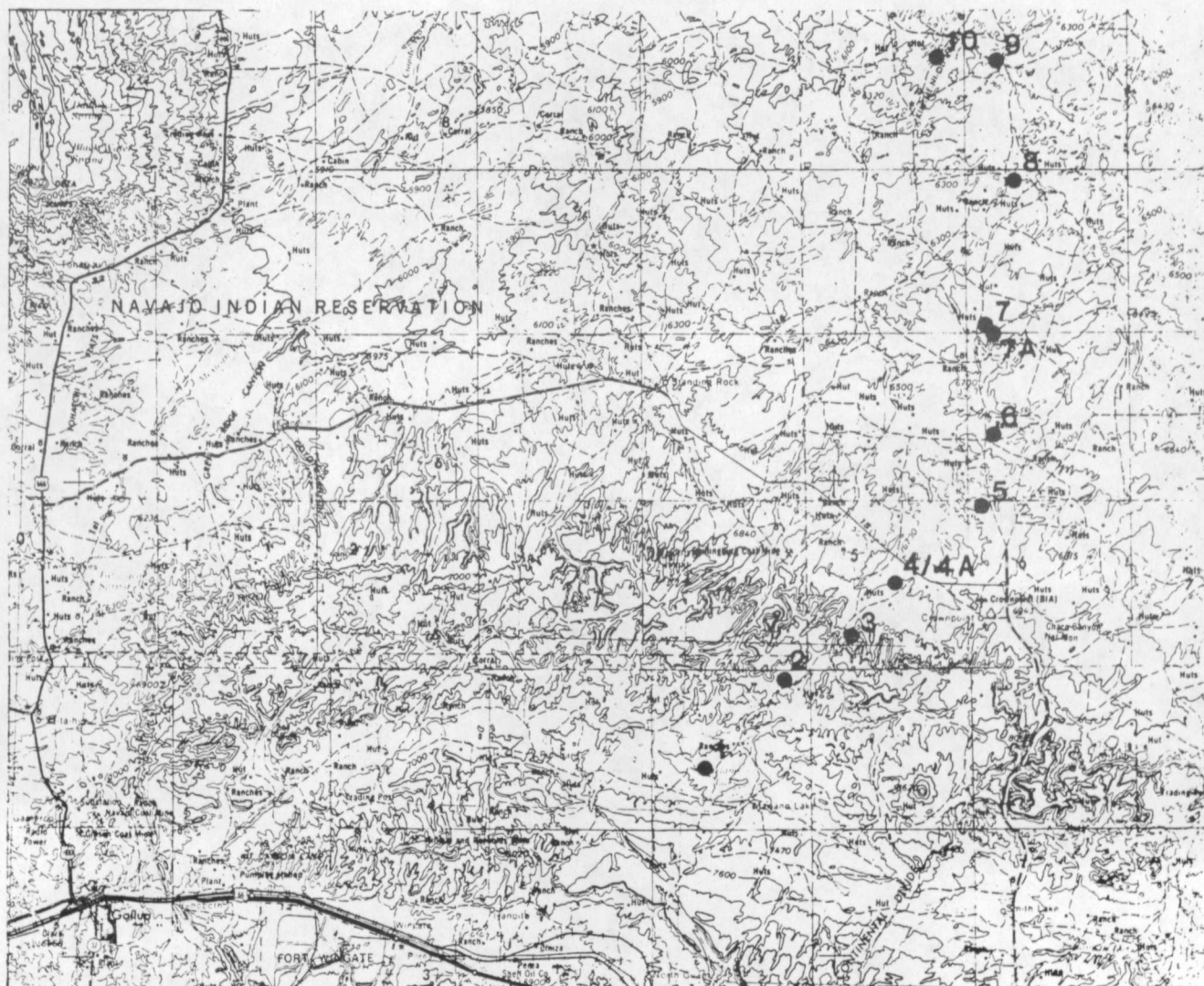


Figure 1. - Location of USGS Drill Holes, Gallup 1° x 2° Quadrangle.

DRILL HOLE NO. 7

The location of this well is shown on figure 2.

The vital statistics on this well include:

Spud date: January 3, 1981

Location: T. 19 N., R. 12 W., SE/4 sec. 31

Lat. $35^{\circ}49'45''$, Long. $108^{\circ}09'00''$

Collar Elevation: 6585 ft (topo) Menefee Fm. (Cretaceous)

Core Point Top: 2833 ft (depth) Dakota Sandstone (Cretaceous)

Bottom Cored Interval: 3440 ft (depth) Recapture Shale Mbr.

Morrison Fm. (Jurassic)

Total Depth: 3440 ft (depth) Recapture Shale Mbr.

Morrison Fm. (Jurassic)

Core Recovery: 82 percent

Casing: Forty-one ft of 7-in. surface casing

Status of well: Abandoned, February 11, 1981.

The following suite of geophysical logs were run on this hole and have been published by the U.S. Geological Survey (1981): natural gamma, self potential, neutron-neutron porosity, resistance, resistivity, deviation, gamma-gamma density, caliper, magnetic susceptibility, and KUT.

Cutting samples from rotary drilling were collected and described on 20-ft intervals to the core point at 2833 ft (table 1). Samples were collected but not described through the cored interval 2833-3440 ft.

Core samples were collected in 20 ft core runs and are 3 in. in diameter. The core samples were described in the field (table 2), taped, boxed, and shipped to the USGS Core Library in Denver where they were frozen, split, photographed, and sampled (for petrography, geochemistry, heavy-mineral-suite, clay-mineralogy, and paleomagnetic studies). A split of the

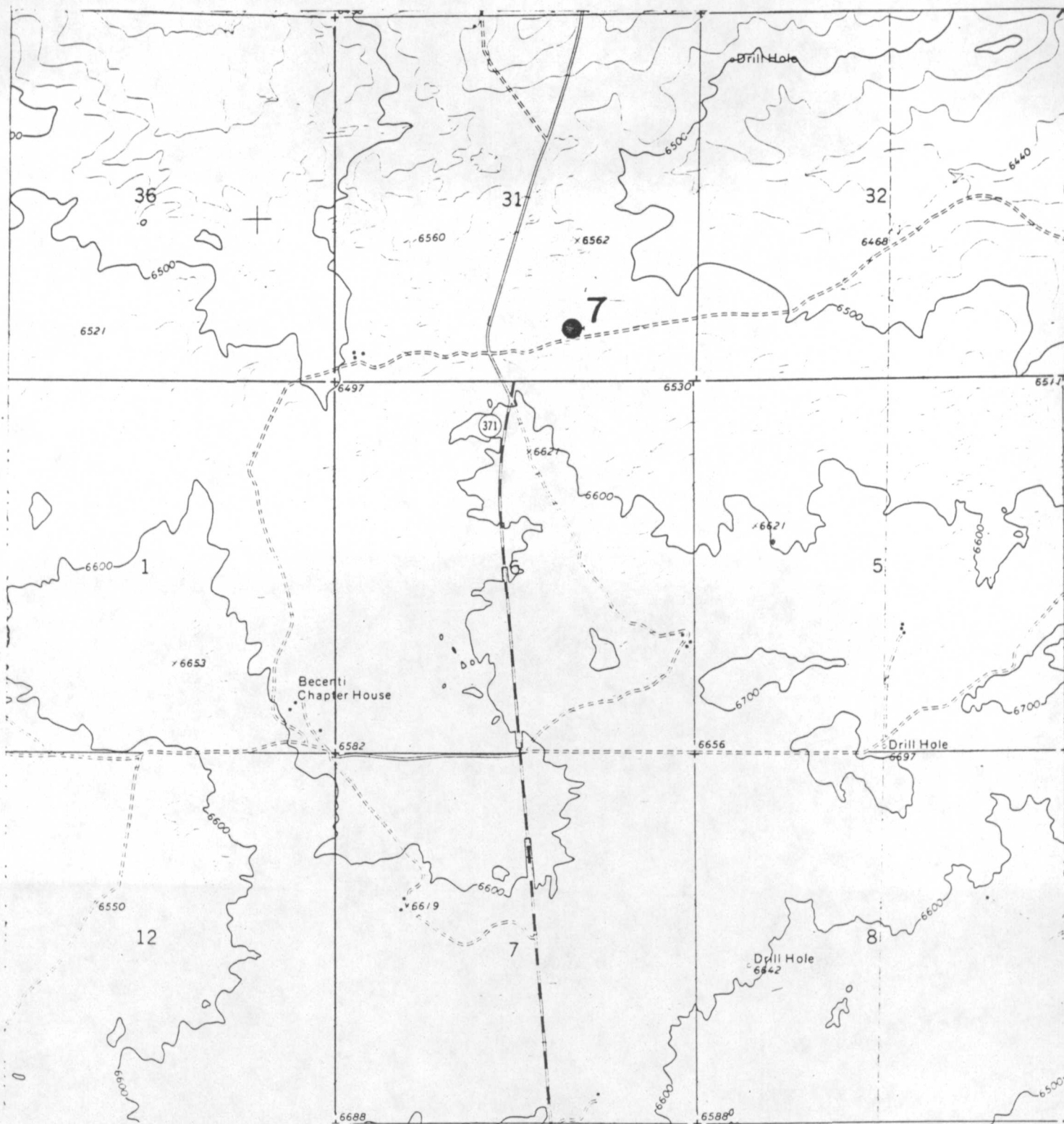


Figure 2.--Location of USGS Drill Hole No. 7, Antelope Lookout Mesa 7 1/2' Quadrangle, T18N, R12W.

core has been archived for reference and future study.

Uranium mineralization was encountered in the intervals: 3165-3167.5 ft, 3211-3216 ft, and 3240-3256 ft. Gamma-ray anomalies were also encountered at 3000, 3036, 3040 and 3154 ft.

Coal and carbonaceous shale zones were encountered at 150, 400-410, 2760 and 2798-2832 ft. The core and cutting sample descriptions were described in the field. The abbreviations and symbols used in the core descriptions are defined in Reynolds and others (1975).

REFERENCES CITED

- Reynolds, M. W., Ahlbrandt, T. S., Fox, J. E., and Lambert, P. W., 1975,
Description of selected drill cores from Paleozoic rocks, Lost Soldier Oil
Field, South Central Wyoming, Part 1: U.S. Geological Survey Open-File
Report 75-662, 34 p.
- USGS, 1981, Geophysical log suite from drill hole no 7, Mariano Lake-Lake
Valley drilling project, McKinley County, New Mexico, USGS Open-File
Report 81-972, 4 p.

CHIP SAMPLE 106
Form

Location: # 7 Sec. 31 T. 19N R. 12W Quadrangle (7.5') Antelope Lookout Mesa
Hole No: 5-7 State: New Mexico Date: 1-8-81
Company: USGS County: McKinley Geologist: Kirk Schurman
Lat/Long: Sheet 1 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Depth to top of sample (feet)	Sample Number	Grain Size	Estimated % of Lithologies				Sandstones						Fossiliferous / Non-fossiliferous	Comments
			Coarse	Med.	Fine	Very Fine	Gravel	Coarse	Med.	Fine	Very Fine	Thin		
20	80-57-20	32												8' cover, abundant limonite and hematite staining
40	80-57-40													limonite staining
60	80-57-60													minor limonite staining
80	80-57-80													tr. limonite staining
100	80-57-100													
120	80-57-120													
140	80-57-140													
160	80-57-160													silt is ripple bounded
180	80-57-180													hematite staining
210	80-57-210													

Background 32

CHIP SAMPLE 106
FORM

Location: #7 Sec. 21 T. 19N R. 12W Quadrangle (p.s.) Antelope Lookout
 Hole No: 5-7 State: New Mexico Date: 1-8-81
 Company: USGS County: McKinley Geologist: Kirk / Schurman
 Lat/Long: _____ Sheet 2 of 15

Depth to top of Sample Interval	Sample Number	Core / Loc	Estimated % of Lithologies						Limestone	Grain Size	Sorting	Rounded	Foliation	Lamination	Rhyolite	Horst	Sandstone Color	Fossils / Remarks	Comments
			Congl.	Sandst.	Siltst.	Shale	Shale Color	Coal											
220	80-57-220	32		95%		5%	N3			U.F.	M.	SR-					N7	Allostr. Monogr. Menafce Fm.	
240	80-57-240			10%	carb.	8%	Sh. N6	tr.		U.F.		SR-							gr. shale is ripple laminated
260	80-57-260			20%	carb.	6%	N4			U.F.	M.	SR-							
280	80-57-280			20%	10%	5%	Sh. N3			U.F.									limonite staining
300	80-57-300			25%	carb.	20%	54 4/12			U.F.									
320	80-57-320			35%	20%	30%	Sh. N3	tr.		U.F.	M.								siltstone is ripple laminated
340	80-57-340			30%	carb.	20%	Sh. N3			U.F.	M.								
360	80-57-360			60%		30%	N3	tr.		U.F.									coar. fine plant fragments
380	80-57-380			90%		2%	54 4/12	tr.		U.F.									
400	80-57-400			40%		30%	Sh. N3	10%		U.F.	M.								

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

CHIP SAMPLE 106
FORM

Location: #7 Sec. 31 T. 19N R. 12W

Quadrangle (S.) Antelope Lockhart Mesa

Hole No: 5-7

State: New Mexico

Date: 1-8-51

Company: USGS

County: McKinley

Geologist: Kirk / Schurman

Lat/Long:

Sheet 3 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Depth to top of Sample Interval	Sample Number	Gravel	Sandst.	Siltst	Shale	shale color	Coal	Lenses	Grain size	Sorting	Rounded	Feldspar	Lenses	Pyrite	Flint	Subsac color	Formal Name / Number	Comments
420	80-57-420	32	65%		20% 5% lignite stained	N3			VF	ML	SA			tan chert		N7	Clear Pool Mbr. Mn. Fe. Fm.	
	440		75%		20% 5% lignite stained	N3				MM	SR	tr.		black tan chert				
460	80-57-460		65%		30% 5%	N3								tan chert				
	480		70%		30% 5%	N3						tr.		red tan chert				
500	80-57-500		70%		25% 5%	N3								red chert				
	520		60%		30% 5%	N3			u.F. - 1.F.	ML	SA	tr.		red chert 5% in sh. streak				tr. red shales hematitic
540	80-57-540		80%		15% 5%	N3			F.	MM	SA	tr.		red chert			Clear Coal Mbr. Mn. Fe. Fm. Point of Sandstone	tr. red shales hematitic staining Mn. Fe.
	560		94%		5% 1%	N3			F.	MM	SA			red chert			Point of Sandstone	hematite / lignite staining Mn. Fe. very clean ss.
580	80-57-580		94%		10% 5%	N3			u.F. - 1.M.	ML	SA			tan chert				lignite staining Mn. Fe. very clean ss.
	600		85%		5% 5%	N3			1.M.	MM	SA	tr.		tan chert 9% Mn. Fe.		N8		hematite / lignite staining Mn. Fe. very clean ss.

CHIP SAMPLE 106
FORM

Location: #7 Sec. 31 T. 19N R. 12W Quadrangle (9.5') Antelope Lookout Mesa
Hole No: 547 State: New Mexico Date: 1-8-80
Company: USGS County: McKinley Geologist: Kirk / Schurman
Lat/Long: _____ Sheet 4 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Sample Number	Grain Size	Estimated % of Lithologies								Limestone	Grain Size	Sorting	Rounded	Feldspar	Glimmer	Pyrite	Flint	Sandstone Color	Comments
		Congl.	Sandst.	Siltst.	Shale	Shale Color	Cal												
630	80-57-620	32		99%	3%	N3			F	poor	SAI SA	tr						Point Lookout Sandstone	
640	80-57-640		98%		2%	N3			F		SAI SA	1-2%							
660	80-57-660		95%		3%	N3			VF		SAI SR								
680	80-57-680		88%		10%	N3			F		SAI SR	tr							
700	80-57-700		98%		2%	N3			VF		SAI SA	tr							
720	80-57-720		65%		1%	N3			VF		SAI SA	tr						Point Lookout Sandstone / Spartan Tongue Mancos Shale	
740	80-57-740		55%		4%	N3			VF- I.M.		SAI SA	tr						Spartan Tongue Mancos Shale	
760	80-57-760		44%		5%	N3			F		SAI SA	tr							
780	80-57-780		45%		5%	N3			F		SAI SR							possible shale clasts	
800	80-57-800		30%		8%	N3			F		SAI SR								

CHIP SAMPLE 106
FORM

Location: 47 Sec. 31 T. 19N R. 12W Quadrangle (P.S.) Antelope Lookout Mesa
Hole No: 5-7 State: New Mexico Date: 1-8-81
Company: USGS County: Mc. Kinley Geologist: Kirk / Schurman
Lat/Long: _____ Sheet 5 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Top to Bottom of Sample Interval	Sample Number	Grain Size	Estimated % of Lithologies								Sandstones								Remarks/Notes	Comments							
			Coarse	Med.	Fine	Siltst.	Shale	Shale color	Coal	Limestone	Grain size	Sandst.	Rhyolite	Feldspar	Calcite	Pyrite	Flint	Sandst. Color									
830	80-57-830	3L				27%		60%	N3									U.F.	SAI	SA	tr.				Satur. Targue	tr. ball bearings	
840	80-57-840					24%		70%	N3									U.F.								Monks Shale	tr. ball bearings
860	80-57-860					19%		80%	5Y 2/2									I.F.	SAI	SA							lg. chips of limy cemented sandstone
880	80-57-880					19%		80%	5Y 2/2									U.F.	SAI	SA							
900	80-57-900					32%		60%	5YR 2/2									I.F.	SAI	SA							
920	80-57-920					47%		19%	10YR 6/6									I.F.	SAI	SA							
940	80-57-940					39%		17%	10YR 6/6									U.F.	SAI	SA							shell frag.
960	80-57-960					88%		2%	10YR 6/6									U.F.	SAI	SA							Hosta Targue
980	80-57-980					88%		2%	5YR 2/2									I.F.	SAI	SA							Poor hosta
1000	80-57-1000					90%		10%	5Y 2/2									U.F.	SAI	SA							Sandstone
									5Y 2/2									U.F.	SAI	SA							tr. ball bearings

CHIP SAMPLE 106
FORM

Location: # 7 Sec. 31 T. 19N R. 12W Quadrangle (9.5) Antelope Lookout
Hole No: 5-7 State: New Mexico Date: 1-9-81
Company: USGS County: McKinley Geologist: Kirk / Schurman
Lat/long: Sheet 6 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Lake valley drilling project, note no. 7, New Mexico										Sandstones					Estimated % of Lithologies										Comments									
Depth to top of Sample Interval	Sample Number	Core/Len	Congl.	Sandst.	Siltst	Shale	Shale Color	Coal	Limestone	Grain Size	Sorting	Roundness	Feldspar	Lunstone	Pyrite	Flint	Succine Color	Formation/Member	Comments															
1030	80-57-1020	32				15%	5Y 2/1			1/2	M	SA	tr				red + bl. chert	N7	Hood Tongue Point Lookout Sandstone (?)															
1040	80-57-1040					10%	5Y 2/1			1/2	M	SA	tr				bl. + tan chert			limonite staining on gr. grains														
1060	80-57-1060					15%	5Y 2/1			1/2	M	SA	tr				bl. + tan chert																	
1080	80-57-1080					20%	5Y 2/1			1/2	M	SA	tr				tan chert		Gribovka Canyon Fm															
1100	80-57-1100					10%	N3				M	SA	tr				tan chert		Hood Tongue Point Lookout Sandstone (?)															
1120	80-57-1120					20%	5Y 2/1				M	SA	tr				red chert																	
1140	80-57-1140					5%	N3				M	SA	tr				tan chert																	
1160	80-57-1160					5%	N3				M	SA	tr				red chert			nubby sample, limonite staining on gr. grains														
1180	80-57-1180					3%	N3				M	SA	tr				red chert			limonite staining on gr. grains														
1200	80-57-1200					10%	5Y 2/1				M	SA	tr				tan chert																	

CHIP SAMPLE 106
FORM

Location: #7 Sec. 31 T. 19N R. 12W Quadrangle (p.s.) Antelope Lookout Mesa
 Hole No: 5-7 State: New Mexico Date: 1-9-81
 Company: USGS County: McKinley Geologist: Kirk / Schurman
 Lat/long: _____ Sheet 7 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake -
Lake Valley Drilling Project, Hole No. 7, New Mexico

Lake Valley Drilling Project, Hole No. 1, New Mexico																				
Depth to top of Capped Interval	Sample Number	Core/Log	Estimated % of Lithologies						Sandstones							Form. Unit / Member	Comments			
			Congl.	Sandst.	Siltst.	Shale	shale color	bed	Location	Grain Size	Sorting	Rounded	Fid. par.	bed. mass.	Pyrite			Flint.	Subs. color	
1230	80-57-1220	32		99%		1%	N3			4.5E	VL	SW	tr.			fin. bl. chert	N7	Hasty Tongue Point Lookout Sandstone (?)		
1340	80-57-1240			50%		45%	N3	5Y 2/1		1.5E	VL					fin. chert, blue area		Gaboso Coal Mbr. Grease Canyon Fm		limonite stained gbs.
1360	80-57-1260			85%		15%	N3			E	W		tr.			red + tan chert				
1380	80-57-1280			60%		35%	N3	5Y 2/1		1.5E	N		tr.			red + tan chert				limonite staining on gbs grains
1400	80-57-1300			95%		5%	N3			4.5E	MXL					tan chert		(?)		
1420	80-57-1320			98%		2%	N3	5Y 2/1		4.5E	VL		abund.			red chert		(?)		
1440	80-57-1340			99%		1%	N3			4.5E	W		tr.			tan chert				
1460	80-57-1360			75%		25%	N3	5Y 2/1		1.5E	MXL		tr.			tan chert				
1480	80-57-1380			95%		5%	N3			4.5E	W		abund.			tan chert				limonite stained gbs. & tan grains
1500	80-57-1400			90%		10%	N3			4.5E	W		tr.			tan chert				

CHIP SAMPLE 106
FORM

Location: # 7 Sec. 31 T. 19N R. 12W Quadrangle (7.5') Antelope Lookout Mesa
Hole No: 5-7 State: New Mexico Date: 1-9-81
Company: U.S.G.S County: McKinley Geologist: Kirk / Schurman
Lat/Long: Sheet 8 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Sample Number	Core/Loss	Estimated % of Lithologies						Sandstones						Comments
		Gravel	Sandst.	Siltst.	Shale	Shale	Shale	Shale	Shale	Shale	Shale	Shale	Shale	
80-57-1420	32		87%		10%	N3	51 2/3							laminitic staining on qtz grains
80-57-1440			43%		2%	N3	51 2/3							
80-57-1460			53%		40%	N3	51 2/3							
80-57-1480			65%		50%	N3	51 2/3							
80-57-1500			25%		5%	N3	51 2/3							
80-57-1520			20%		70%	N3	51 2/3							
80-57-1540			15%		5%	N3	51 2/3							
80-57-1560			5%		40%	N3	51 2/3							
80-57-1580			30%		10%	N3	51 2/3							
80-57-1600			35%		5%	N3	51 2/3							carb. mat. in N3 shale

CHIP SAMPLE 106
FORM

Location: #7 Sec. 31 T. 14N R. 12W Quadrangle (7.5') Antelope Creek Mesa
Hole No: S-7 State: New Mexico Date: 1-9-81
Company: USGS County: McKinley Geologist: Kirk / Schurman
Lat/Long: Sheet 9 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Lake valley unfilling Project, Hole No. 1, New Mexico																			
Depth to top of Sample Interval	Sample Number	Grain Size	Estimated % of Lithologies						Sandstones						Fossils	Sandstone Color	Remarks / Notes	Comments	
			Congl.	Sandst.	Siltst	Shale	shale color	Coal	Limestone	Grain Size	Sorting	Roundness	Feldspar	Carbonates					Pyrite
1620	80-57-1620	32		47%		40%	N3			1.5	M	SA	tr.	tr.	tr.	red + tan chert	N7	Drill core / Mbit Crevasse Channel	limonite staining on ptz grains
1640	80-57-1640			57%		90%	N3			F			tr.	tr.	tr.	tan chert			
1660	80-57-1660			25%		10%	N3	tr.		1.5	M	SA	tr.	tr.	tr.	red + blk + tan chert			
1680	80-57-1680			65%		30%	N3	tr.		4.5	M		tr.	tr.	tr.	red + tan chert			
1700	80-57-1700			35%		50%	N3			4.5	M		tr.	tr.	tr.	tan chert			abun. carb. material in gray shale
1720	80-57-1720			30%		60%	N3			1.5	MW					blk + tan chert			
1740	80-57-1740			85%		15%	N3	tr.		4.5	MW		tr.	tr.	tr.	tan chert			abun. carb. material in N3 shale
1760	80-57-1760			78%		20%	N3			4.5	MW		tr.	tr.	tr.	blk + tan white chert	main body of Sandstone		blue ptz, a little limonite staining
1780	80-57-1780			95%		5%	N3	tr.		4.5	N	SA	tr.	tr.	tr.	blk + tan red chert			limonite staining on ptz grains
1800	80-57-1800			93%		4%	N3	tr.		4.5	N	SA	tr.	tr.	tr.	blk + tan red chert			

CHIP SAMPLE 106
FORM

Location: #7 Sec. 31 T. 19N R. 12W Quadrangle (9.5') Antelope Lake
Mesa
Hole No: 5-7 State: New Mexico Date: 1-9-81
Company: U.S.G.S County: McKinley Geologist: Kirk / Schurman
Lat/Long: Sheet 12 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake -
Lake Valley Drilling Project, Hole No. 7, New Mexico

Depth to top of Sample Interval	Sample Number	Gravel/Inch	Estimated % of Lithologies								Sandstones										Formation / member	COMMENTS
			Coargl.	Sandst.	Siltst.	Shale	Streak color	Coal	Limestone	Grain size	Sorting	Rounded	Feldspar	Carbonates	Rhyolite	Horst.	Sandstone Color					
1820	80-57-1820	32		94%		5%	N3				F	MM	SR	tr.				60% tan chert	N7	Gravel / Sandstone		
1840	80-57-1840			100%							F	N	SR	tr.								limonite staining on gta. grains
1860	80-57-1860			93%		2%	54 2/1	N3			F	MM	SR									
1880	80-57-1880			65%		30%	54 2/1	N3			U.F.		SR									
1900	80-57-1900			90%		5%	54 2/1	N3			U.F.		SR	tr.								
1920	80-57-1920			88%		2%	54 2/1	N3			U.F.		SR	tr.								
1940	80-57-1940			82%		10%	54 2/1	N3			U.F.		SR	tr.								
1960	80-57-1960			50%		30%	54 2/1	N3			U.F.		SR	tr.								
1980	80-57-1980			40%		40%	54 2/1	N3			U.F.		SR	tr.								
2000	80-57-2000			35%		65%	54 2/1	N3			U.F.		SR	tr.								
																	</					

CHIP SAMPLE 106
FOAM

Location: #7 Sec. 31 T. 19N R. 2W Quadrangle (V.S.) Antelope Lookout Mesa
Hole No: 5-7 State: New Mexico Date: 1-9-81
Company: USGS County: McKinley Geologist: Kirk / Schurman
Lat/Long: Sheet 11 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Depth to top of Sample Interval	Sample Number	Grain/ton	Estimated % of Lithologies								Sandstones							Fossils/fragments	Comments	
			Congl.	Sandst.	Siltst.	Shale	Shale color	Coal	Limestone	Grain size	Sorting	Roundness	Feldspar	Carbonates	Pyrite	Fossils	Sandstone color			
2020	80-57-2020	32		2%		90%	N3					40% M. silt.	SR/ S. A	tr.		tr.	tan chert glaucon.	Manaos Shale	glauconitic or chert	
2040	80-57-2040					90%	N3							tr.		tr.	tan chert			
2060	80-57-2060			1%		60%	5Y 2/1										red tan chert		limonite staining on pyrite grains	
2080	80-57-2080			5%		60%	N3					40% E					tan chert			
2100	80-57-2100			5%		60%	5Y 2/1					1% E					tan chert		limonite staining on pyrite grains	
2120	80-57-2120			tr.		60%	N3					40% E				tr.				
2140	80-57-2140					50%	5YR 2/1									tr.				limonite staining on pyrite grains
2160	80-57-2160					60%	N3													altered pyrite w/ intense limonite staining
2180	80-57-2180			tr.		60%	N3									abn.	tan chert			altered pyrite w/ limonite staining
2200	80-57-2200			tr.		60%	N3										red chert			altered pyrite w/ limonite staining

CHIP SAMPLE 106
FORM

Location: 47 Sec. 31 T. 19N R. 12W Quadrangle (9.5') Antelope Lookout Mesa
Hole No: 5-7 State: New Mexico Date: 1-11-81
Company: USGS County: McKinley Geologist: Kirk / Schurman
Lat/long: _____ Sheet 12 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Depth to bottom of Sample Interval	Sample Number	Core/Len	Estimated % of Lithologies									Sandstones							Formation / Member	Comments
			Congl.	Sandst.	Siltst.	Shale	shale color	Coal	Limestone	Grain size	Sourcing	Roundness	Feldspar	Carbonates	Pyrite	Fluores.	Sandstone Color			
2220	80-57-2220	32		tr.		95% N3								tr.	tan chert		Malpais Shale	pyrite with limonite alteration		
2240	80-57-2240			tr.		95% N3	tr.				tr.			tr.	red chert					
2260	80-57-2260			30%		95% N3				USF					red chert			pyrite with limonite alteration		
2280	80-57-2280			tr.		99% N3	1%	51 2/1							Highly calc.					
2300	80-57-2300			tr.		95% N3	tr.	51 2/1							tan chert					
2320	80-57-2320					70% N3	30%	51 2/1												
2340	80-57-2340			tr.		90% N3	10%	51 2/1	tr.					tr.	Highly calc.					
2360	80-57-2360					99% N3	1%	51 2/1												
2380	80-57-2380			tr.		99% N3	1%	51 2/1							tan chert					
2400	80-57-2400					99% N3	1%	51 2/1												

CHIP SAMPLE 106
FORM

Location: #7 Sec. 31 T. 19N R. 13W Quadrangle (9.s.) Antelope Lookout
 Hole No: 5-7 State: New Mexico Date: 1-11-81
 Company: 11565 County: McKinley Geologist: Kirk / Scherman
 Lat/Long: _____ Sheet 13 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake -
 Lake Valley Drilling Project, Hole No. 7, New Mexico

Sample Number	Depth to top of Sample (feet)	Estimated % of Lithologies						Sandstones						Formal Name / Member	Comments
		Gravel	Coarse	Med.	Fine	Very Fine	Clay	Gravel	Coarse	Med.	Fine	Very Fine	Clay		
2420	80-57-2420	32												Maricopa Shale	limonite stained
2440	80-57-2440														
2460	80-57-2460														
2480	80-57-2480														
2500	80-57-2500														
2520	80-57-2520														
2540	80-57-2540														
2560	80-57-2560														
2580	80-57-2580														
2600	80-57-2600														

CHIP SAMPLE 106
FORM

Location: # 7 Sec. 31 T. 19N R. 12W Quadrangle (7.5') Antelope Knotat Mesa
Hole No: 5-7 State: New Mexico Date: 1-11-81
Company: 4545 County: Mc Kinley Geologist: Kirk Schurman
Lat/long: Sheet 14 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake - Lake Valley Drilling Project, Hole No. 7, New Mexico

Depth to top of sample interval	Sample Number	Grain/lin	Estimated % of Lithologies						Sandstones										Form. th. / number	Comments
			Congl.	Sandst.	Siltst.	Shale	Shale color	Coal	Limestone	Grain size	Sorting	Roundness	Feldspar	Lithom.	Pyrite	Flowers	Sandstone color			
2620	80-57-2630	32		59%		90%	N3	tr.	U.F.						tr.	trig		Lower Marianas Shale	hematite staining on gr. grains, pyrite in shale	
2640	80-57-2640			59%		80%	N3		U.F.											
2660	80-57-2660			59%		90%	N3		U.F.						tr.					
2680	80-57-2680			59%		25%	N3		U.F.							tr. H. gr. Discs				
2700	80-57-2700			60%		10%	N3		U.F.							red + silt. chert, tr. sp		Dakota Sandstone		
2720	80-57-2720			75%		25%	N3		U.F.						tr.	Fun + silt. chert			tr. pyrite in black shales	
2740	80-57-2740			55%		40%	N3		U.F.							Fun + silt. chert, tr. sp?			tr. pyrite in black shales, tr. carb. in sand	
2760	80-57-2760			70%		20%	N3		U.F.						indk shale					
2780	80-57-2780			55%		40%	N3		U.F.						tr.				pyrite in black shale	
2800	80-57-2800			68%		30%	N3		U.F.							blk chert			some lms. - possible shell frags?	

CHIP SAMPLE 106
Form

Location: #7 Sec. 31 T. 19N R. 12W Quadrangle (7.5') Antelope Lookout
Hole No: 5-7 State: New Mexico Date: 1-15-81
Company: USGS County: McKinley Geologist: Kirk / Schurman
Lat/long: _____ Sheet 15 of 15

Table 1. Descriptions of cuttings samples from Mariano Lake -
Lake Valley Drilling Project, Hole No. 7, New Mexico

Lake Valley Drilling Project, note no. 1, new Mexico																				
Depth to top of sample interval	Sample Number	Grain/size	Estimated % of Lithologies						Sandstones						Remarks/notes	Comments				
			Congl.	Sandst.	Siltst.	Shale	Shale color	Coal	Limestone	Grain size	Sorting	Rounded	Feldspar	Lenses			Pyrite	Flint	Sandstone color	
2820	80-57-2820	32		100		30%	N3		19%	542/1	19%	?	4-6 R	vi	SA/				Dolomite Sandstone	wet sample
2840	No sample collected																			
2860-344 TD	Samples collected but not described through the varied interval																			
																				</

Table 2 Descriptions of core from Mariano Lake - Lake Valley Drilling Project Hole No. 7, New Mexico

LOCATION S-7 Sec 31 T 19N R 12W QUADRANGLE (7.5') Antelope Lookout Mesa
STATE New Mexico COUNTY McKinley DATE _____
LAT.-LONG. _____ GEOL. _____

THICKNESS	SAMPLE NO.	UNIT NO.	FM/MBR.	RADIOACT.	CPS	VISUAL POROSITY	CORE	ROCK TYPE	FOOTNOTES	COLOR	GRAIN SIZE	BEDDING	SEDIMENTARY STRUCTURES	BIOLOGY/ORGANICS	SORTING/ROUNDNESS	CEMENT	PERCENT FELDSPAR	ACCESSORY MINERALS OR FRAGMENTS	NOTES: (ALTERATION, ATTITUDE, CLASTS, MINERALIZATION, & MISC. INFO.)	INFERRED ENVIRONMENT OF DEPOSITION	DIRECTION OF TRANSPORT	(NO. OF MEASUREMENTS)
2833				65		Exc	None			N7	Med	thin med.	dwth	~	mu/sg	v. gl. calc			lt. gn. calc blk. top 31k. top tr. pyrox 23.6 blk. m clst	interbedded sand & carb shale		
2840			65	65		Exc	None			N7		lam	dwth clust ripple dwth	~	mu/sg	calc				interbedded sand & carb shale - 6' from top, 1cm sand unit		
2850			65	65		Exc	None			SVR 3/4		dwth	dwth	abnt plant frag.	mu/sg	non-calc				carb. shale w/ some infilling of rippled sand		
2860			65	65		Exc	None			SVR 3/4		lam	dwth	abnt plant debris	mu/sg	non-calc			blk. top red blk tan chit lt. gn. calc blk. red tan chit	midstn top 3" grades into sandstone, grey clay chips, clay matrix, fractures are slickensides 80-57-2855 P		MS=0
2870			65	65		Exc	None			N6		dwth	dwth	~	mu/sg	non-c				NO RECOVERY		
2880			65	65		Exc	None			SVR 3/4		dwth	dwth	~	mu/sg	non-c			red, blk cont lt. tan blk tr. pyrox	very lg v. burrow, shaped calcite zones, 2 agate-like mat chips, burrows more abnt to middle		MS=0
2890			65	65		Exc	None			SVR 3/4		dwth	dwth	~	mu/sg	non-c			lt. gn. calc tr. pyrox	irreg. bands of carb. mat'l 80-57-2882SP intra of burrows are calc.		MS=0
2900			65	65		Exc	None			SVR 3/4		dwth	dwth	~	mu/sg	non-c			blk. calc tan chit H/dk gn. Access	blastic frag, qtz sand, strata frag, put (lt. tan flake) (volc.) 3-5 v.f. med 1 1/2 sand, transitional cont, clay chips, frag. burrows intensely silica cement. mdstn, conoidal fracture		MS=0
2910			65	65		Exc	None			SVR 3/4		dwth	dwth	~	mu/sg	non-c				NO RECOVERY		
2920			65	65		Exc	None			SVR 3/4		dwth	dwth	~	mu/sg	non-c			red, blk tan chit H/dk gn. Access	80-57-2896 P		MS=0

Table 2 Descriptions of core from Mariano Lake - Lake Valley
Drilling Project Hole No. 7, New Mexico

ARK/RLS/MUX/HW/12
2 of 8

LOCATION 5-7 Sec. 31 T. 19N R. 12W
STATE New Mexico COUNTY Mckinley
U.S.G.S. CORE LIBRARY NUMBER _____ API WELL NUMBER _____

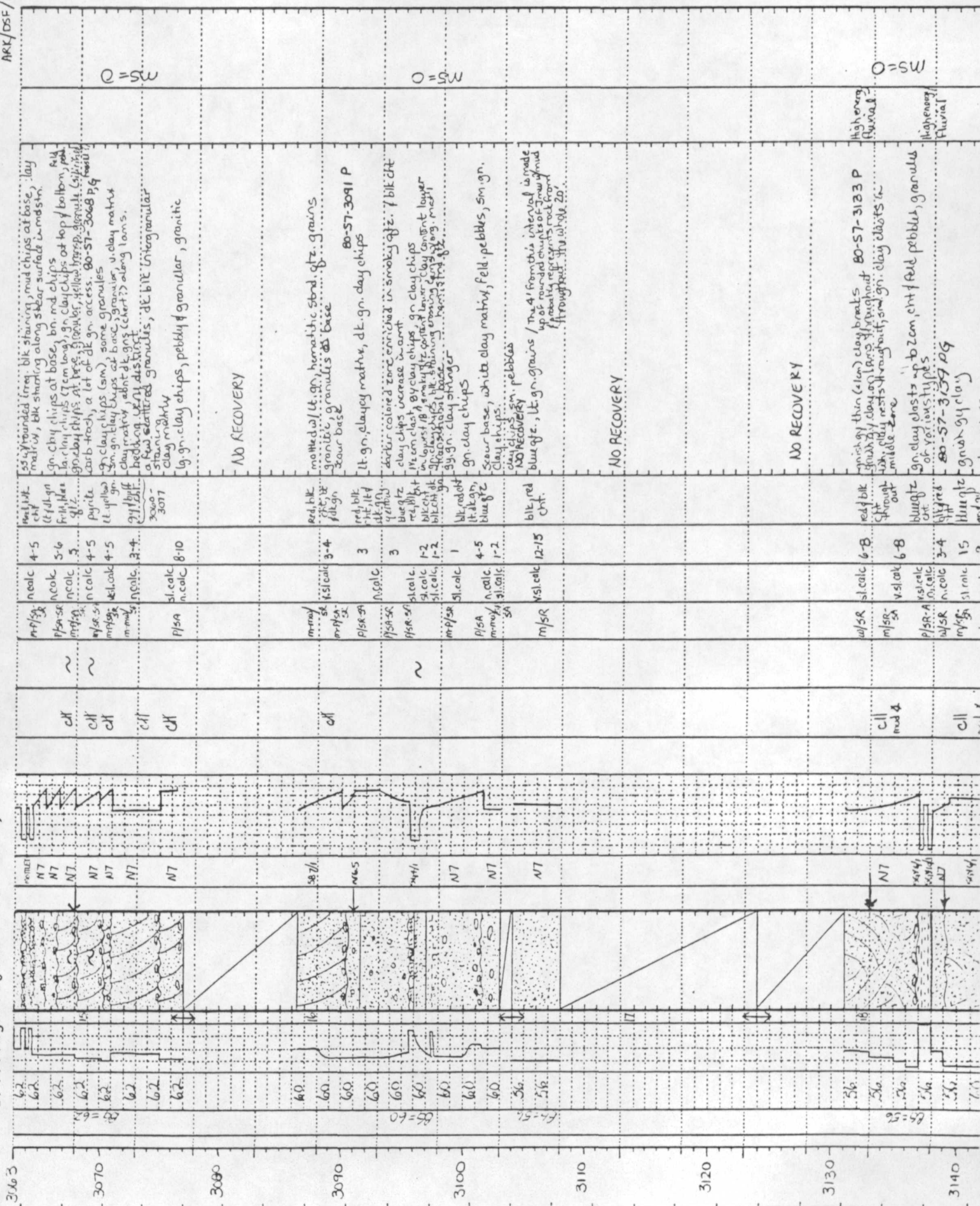
Depth (ft)	Core Description	Grain Size	Color	Texture	Bedding	Remarks	Notes
2903	thin lam	50%	50%	tk	tk	thin lam	
2910	50%	50%	50%	tk	tk	thin lam	
2920	50%	50%	50%	tk	tk	thin lam	
2930	50%	50%	50%	tk	tk	thin lam	
2940	50%	50%	50%	tk	tk	thin lam	
2950	50%	50%	50%	tk	tk	thin lam	
2960	50%	50%	50%	tk	tk	thin lam	
2970	50%	50%	50%	tk	tk	thin lam	
2980	50%	50%	50%	tk	tk	thin lam	

Table 2 Descriptions of core from Mariano Lake - Lake Valley
Drilling Project Hole No. 7, New Mexico

ARK/WMH/DSF 3 of 8		LOCATION S-7		Sec. 31	T. 19N	R. 12W
		STATE New Mexico		COUNTY McKinley		
		U.S.G.S. CORE LIBRARY NUMBER		API WELL NUMBER		
Depth (ft)	Depth (m)	Core Description	Grain Size	Mineralogy	Notes	Energy
2983	2983	Small fine-grained ss. in a set of small scale troughs	SS	Pyrite	MS-50	
2990	2990	Large clast of calc. w/ gr. clay clasts w/ in. blk seam from base	SS	Pyrite	MS-50	
2995	2995	NO RECOVERY				
3000	3000	Clayey matrix, in clay clast, sand size quartzite	SS	Pyrite	MS-50	
3005	3005	Calc. nodules, irregular, in grain size, mfg. blk stained blotches	SS	Pyrite	MS-50	
3010	3010	Thin white stringer of calc. nodules, vert. fracture w/ pyrite (pyrite)	SS	Pyrite	MS-50	
3015	3015	10% ss, fr. small calc. nodules	SS	Pyrite	MS-50	
3020	3020	Blk stringers of blotches organics(?) small calc. nodules, 10% ss	SS	Pyrite	MS-50	
3025	3025	mottled gr. white, blk, lg nodules stringers of calc. not	SS	Pyrite	MS-50	
3030	3030	fr. blk. vert. fracture filled w/ pyrite, 10% ss	SS	Pyrite	MS-50	
3035	3035	scattered nodules	SS	Pyrite	MS-50	
3040	3040	NO RECOVERY				
3045	3045	(80-57-3017? 4)				
3050	3050	15% ss, calc. irreg. nodules, no organics?	SS	Pyrite	MS-50	
3055	3055	20% ss, calc. rounded, increase in ss light color, pyrite filled fractures, calcite filled fractures, disseminated	SS	Pyrite	MS-50	
3060	3060	80-57-3013 P, 4				
3065	3065	Blk metallic xtls, zeolite (red), clonophiles (37)	SS	Pyrite	MS-50	
3070	3070	Calc. glauconite or blk chert, bright gr. clay chips	SS	Pyrite	MS-50	
3075	3075	buried filled w/ pyrite, irreg. blk banding, sand grains possible	SS	Pyrite	MS-50	
3080	3080	Blk clay seams organic? red zeolites (clonophiles)	SS	Pyrite	MS-50	
3085	3085	pyrite filled fractures	SS	Pyrite	MS-50	
3090	3090	zeolite coloration, zeolite (red) clonophiles, stringers	SS	Pyrite	MS-50	
3095	3095	Sand base w/ clay stringer	SS	Pyrite	MS-50	
3100	3100	Clayey matrix	SS	Pyrite	MS-50	
3105	3105	Anhyd. blk discoloration organic, 1% clay chips, sand	SS	Pyrite	MS-50	
3110	3110	Pockets in claystone	SS	Pyrite	MS-50	
3115	3115	NO RECOVERY				
3120	3120	you have gr. clay chips, feldspar pebbles	SS	Pyrite	MS-50	
3125	3125	gr. clay chips, feldspar pebbles	SS	Pyrite	MS-50	
3130	3130	80-57-3038 P				
3135	3135	Scattered sm. gr. clay chips, not much clay, hematite or org	SS	Pyrite	MS-50	
3140	3140	gr. clay chips common throughout, v. clay matrix	SS	Pyrite	MS-50	
3145	3145	same as above clay nests	SS	Pyrite	MS-50	
3150	3150	gr. mud chips, feldspar pebbles	SS	Pyrite	MS-50	
3155	3155	gr. mud chips, feldspar pebbles	SS	Pyrite	MS-50	
3160	3160	80-57-3043 G				
3165	3165	NO RECOVERY				
3170	3170	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3175	3175	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3180	3180	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3185	3185	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3190	3190	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3195	3195	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3200	3200	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3205	3205	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3210	3210	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3215	3215	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3220	3220	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3225	3225	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3230	3230	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3235	3235	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3240	3240	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3245	3245	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3250	3250	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3255	3255	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3260	3260	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3265	3265	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3270	3270	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3275	3275	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3280	3280	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3285	3285	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3290	3290	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3295	3295	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3300	3300	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3305	3305	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3310	3310	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3315	3315	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3320	3320	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3325	3325	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3330	3330	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3335	3335	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3340	3340	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3345	3345	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3350	3350	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3355	3355	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3360	3360	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3365	3365	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3370	3370	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3375	3375	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3380	3380	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3385	3385	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3390	3390	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3395	3395	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3400	3400	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3405	3405	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3410	3410	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3415	3415	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3420	3420	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3425	3425	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3430	3430	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3435	3435	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3440	3440	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3445	3445	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3450	3450	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3455	3455	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3460	3460	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3465	3465	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3470	3470	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3475	3475	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3480	3480	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3485	3485	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3490	3490	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3495	3495	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3500	3500	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3505	3505	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3510	3510	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3515	3515	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3520	3520	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3525	3525	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3530	3530	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3535	3535	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3540	3540	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3545	3545	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3550	3550	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3555	3555	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3560	3560	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3565	3565	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3570	3570	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3575	3575	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3580	3580	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3585	3585	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3590	3590	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3595	3595	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3600	3600	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3605	3605	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3610	3610	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3615	3615	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3620	3620	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3625	3625	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3630	3630	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3635	3635	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3640	3640	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3645	3645	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3650	3650	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3655	3655	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3660	3660	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3665	3665	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3670	3670	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3675	3675	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3680	3680	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3685	3685	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3690	3690	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3695	3695	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3700	3700	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3705	3705	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3710	3710	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3715	3715	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3720	3720	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3725	3725	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3730	3730	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3735	3735	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3740	3740	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3745	3745	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3750	3750	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3755	3755	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3760	3760	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3765	3765	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3770	3770	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3775	3775	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3780	3780	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3785	3785	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3790	3790	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3795	3795	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3800	3800	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3805	3805	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3810	3810	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3815	3815	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3820	3820	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3825	3825	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3830	3830	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3835	3835	you have sm. gr. clay chips, hematite and gr. gns.	SS	Pyrite	MS-50	
3840	3840	you have sm. gr. clay				

ARK/DSF/KH/WNA
.....] 4 of 8

LOCATION S-7 Sec. 31 T. 19N R. 12W
STATE New Mexico COUNTY McKinley
U.S.G.S. CORE LIBRARY NUMBER _____ API WELL NUMBER _____



LOCATION S-7 Sec. 31 T. 19N R. 12W
STATE New Mexico COUNTY McKinley
U.S.G.S. CORE LIBRARY NUMBER _____ API WELL NUMBER _____

Core No.	Depth (m)	Core Description	Grain Size	Color	Notes
3143	70	dk. gn. black qtz	9	n. calc.	Fluvial
3150	56	dk. red. bl. clay	5	n. calc.	
3160	56	dk. red. bl. clay	6-7	n. calc.	
3170	56	dk. red. bl. clay	8-9	n. calc.	
3180	56	dk. red. bl. clay	4-5	n. calc.	
3190	56	dk. red. bl. clay	7-8	n. calc.	
3200	56	dk. red. bl. clay	8-9	n. calc.	
3210	56	dk. red. bl. clay	7	n. calc.	
3220	56	dk. red. bl. clay	7	n. calc.	

Table 2 Descriptions of core from Mariano Lake - Lake valley Drilling Project Hole No. 7, New Mexico

[illegible]

Table 2 Descriptions of core from Mariano Lake - Lake Valley
Drilling Project Hole No. 7, New Mexico

AR/LC4/BLT 7 of 8		LOCATION 5-7		Sec. 31	T. 19N	R. 12W	STATE New Mexico	COUNTY McKinley	U.S.G.S. CORE LIBRARY NUMBER	API WELL NUMBER
3303	65	514/1	MS=10	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=10	NO RECOVERY	MS=10	MS=10	MS=10	MS=10
3310	65	514/2	MS=20	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=20	NO RECOVERY	MS=20	MS=20	MS=20	MS=20
3320	65	514/3	MS=60	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=60	NO RECOVERY	MS=60	MS=60	MS=60	MS=60
3330	65	514/4	MS=90	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=90	NO RECOVERY	MS=90	MS=90	MS=90	MS=90
3340	65	514/5	MS=100	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=100	NO RECOVERY	MS=100	MS=100	MS=100	MS=100
3350	65	514/6	MS=150	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=150	NO RECOVERY	MS=150	MS=150	MS=150	MS=150
3360	65	514/7	MS=200	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=200	NO RECOVERY	MS=200	MS=200	MS=200	MS=200
3370	65	514/8	MS=300	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=300	NO RECOVERY	MS=300	MS=300	MS=300	MS=300
3380	65	514/9	MS=400	Very friable unit, thin bedded, pyritic, silty, clay chips throughout, base of unit is clay chips, calc. nodules, some on top of thin, red, in middle with concretions, very clayey	MS=400	NO RECOVERY	MS=400	MS=400	MS=400	MS=400

Table 2 Descriptions of core from Mariano Lake - Lake Valley

Drilling Project Hole No. 7, New Mexico

Depth (ft)	Core Description	Grain Size	Structure	Color	Notes	MS
3380						
3390						
3400						
3410						
3420						
3430						
3440						

LOCATION S-7 Sec. 31 T. 17N R. 12W
 STATE New Mexico COUNTY Mckinley
 U.S.G.S. CORE LIBRARY NUMBER _____ API WELL NUMBER _____

LCG/BLT/AMK/gmk
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