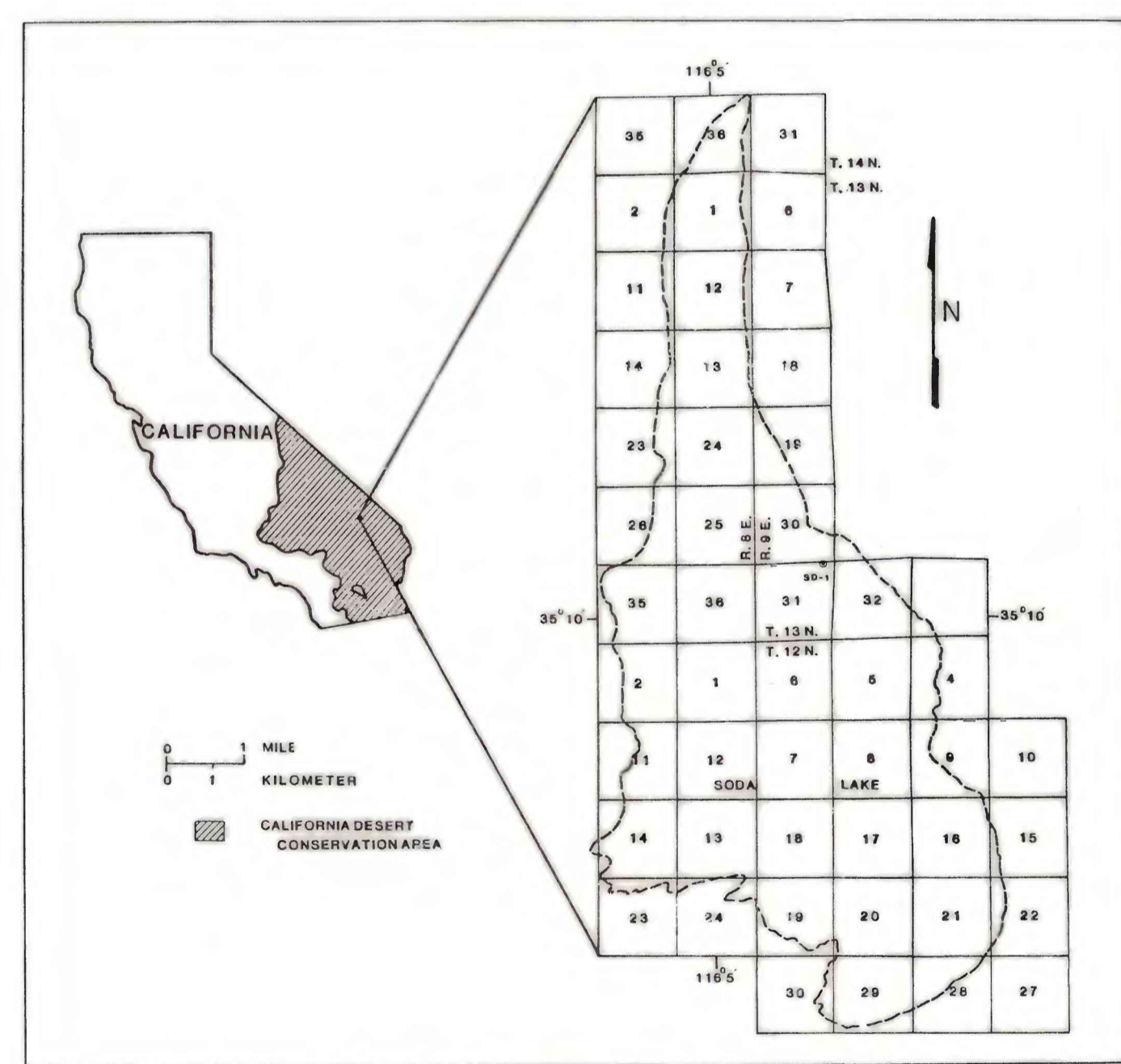
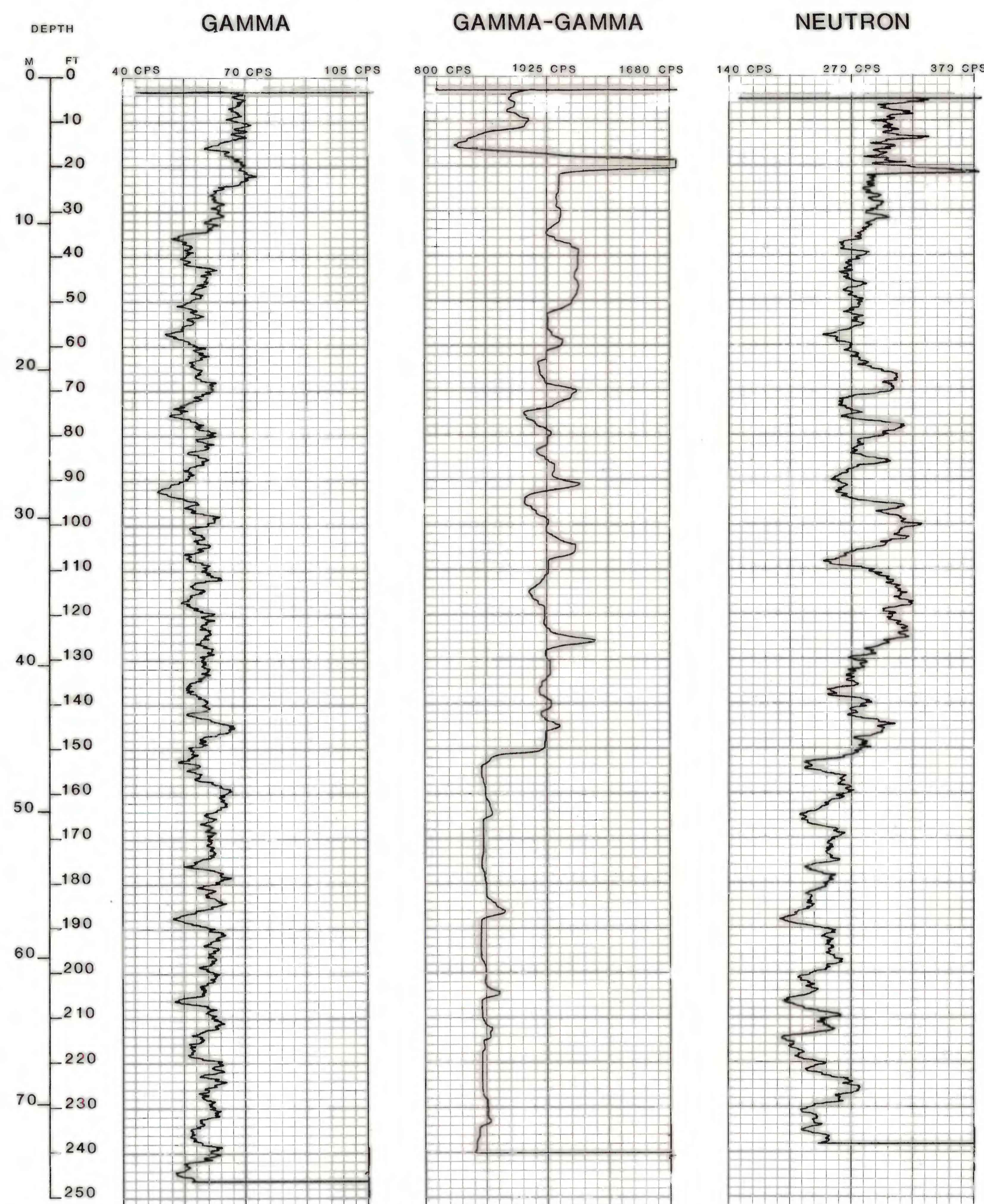
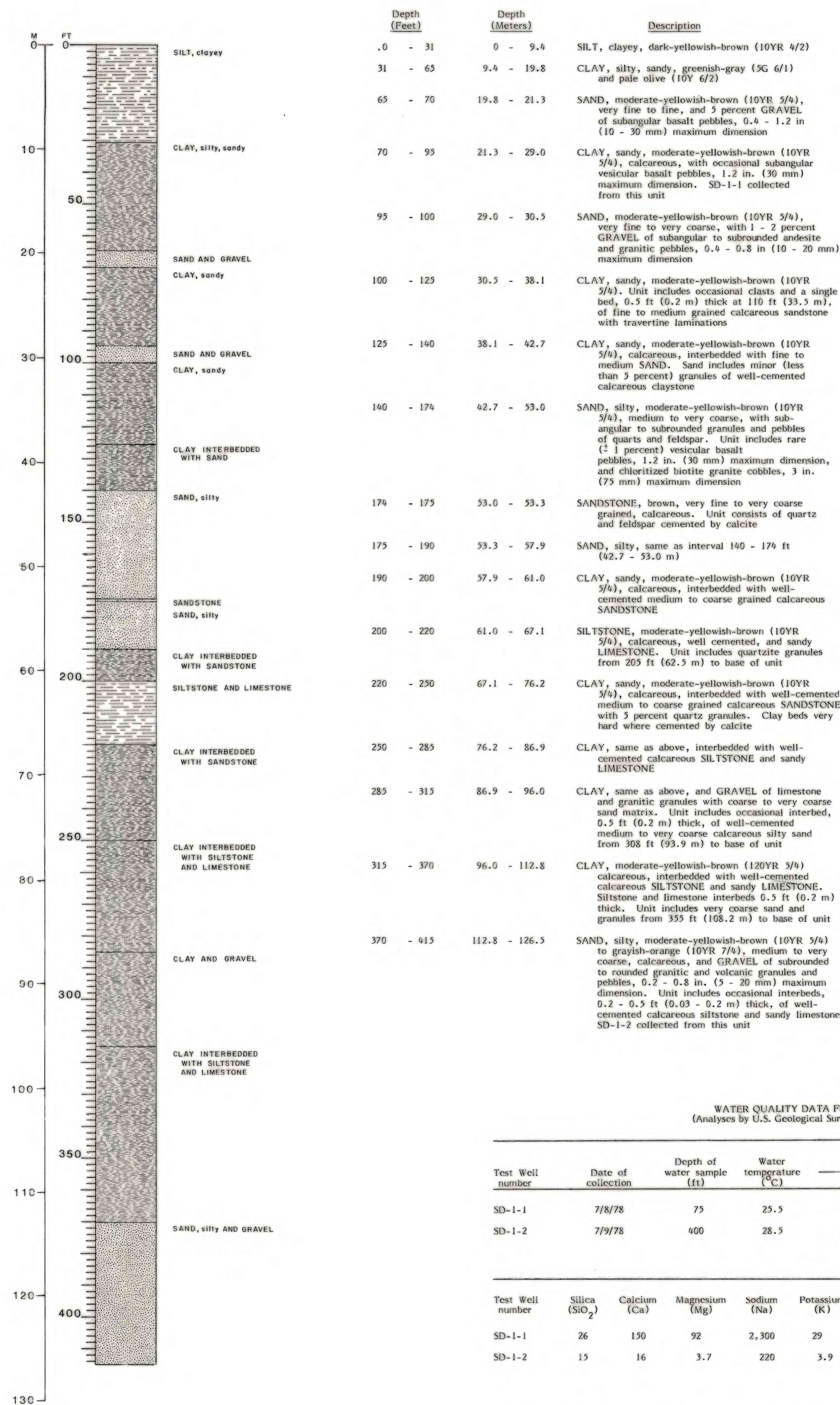


GEOPHYSICAL LOGS FROM SODA DRY LAKE TEST WELL NO. 1



TEST WELL LOCATION
SD-1
Latitude: 35°10' 36"
Longitude: 116°07' 30"
NEK&NS Sec. 31, T. 13 N., R. 9 E.
San Bernardino Meridian

LITHOLOGIC LOGS FROM SODA DRY LAKE TEST WELL NO. 1



WATER QUALITY DATA FROM SODA DRY LAKE TEST WELL NO. 1
(Analyses by U.S. Geological Survey, Water Resource Division, Denver Colorado)

Test Well number	Date of collection	Depth of water sample (ft)	Water temperature (°C)	pH		Specific gravity	Specific conductance (microhm/cm at 25°C)	Percent sodium	SAR (sodium absorption rate)
				lab	field				
SD-1-1	7/8/78	75	25.5	7.6	7.6	1.010	12,000	86	36
SD-1-2	7/9/78	400	28.5	8.0	8.4	1.002	1,027	39	13

Test Well number	Results in mg/L										
	Silica (SiO ₂)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Phosphorus (P)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Total Nitrate (NO ₂ +NO ₃)	Iodide (I)
SD-1-1	26	150	92	2,300	29	0.00	31	4,000	6.7	0.14	0.36
SD-1-2	15	16	3.7	220	3.9	0.00	160	180	7.6	2.8	0.07

Test Well number	Results in mg/L										
	Bicarbonate (HCO ₃)	Manganese (Mn)	Iron (FE)	Boron (B)	Lithium (Li)	Strontium (Sr)	Uranium (U)	Solids, residue on evaporation at 180°C (TDS)	Total Alkalinity Calcium Carbonate (CaCO ₃)	Total hardness	Percent Difference
SD-1-1	109	0.490	0.060	1.600	0.350	11.000		7,520	89	770	0.14
SD-1-2	134	0.010	0.050	0.560	0.080	0.830	0.0023	670	110	56	-0.08

* SAR Water Classification
10 Excellent
10-18 Good
18-26 Fair
26 Poor
+ Calculated.

INTRODUCTION

Geophysical, lithologic, and water quality data from Soda Dry Lake, California, were obtained in July, 1978. These data provide feasible mineral resource input to the Bureau of Land Management's comprehensive long-range plan, authorized by the Federal Land Policy and Management Act of October 21, 1976 (Public Law 94-579), for the management, use, development, and protection of public lands within the California Desert Conservation Area (index map).

DRILLING AND LITHOLOGIC LOGGING TECHNIQUES

The test well was completed by the reverse circulation drilling technique. Drilling fluids, either air or water or both, are pumped down the outer annulus of dual-wall drill pipe to an open-throat button bit. The drilling fluids and cuttings then are forced up the inner annulus of the drill pipe to the surface. This technique assures recovery of uncontaminated sediment and water samples. In situ ground water is used as a drilling fluid as much as possible; otherwise a fine mist of imported fresh water and air is used.

Lithologic characteristics of the samples of the drill cuttings are described in the field. Field descriptions are later supplemented by laboratory examination. The rock color chart (Goddard and others, 1969) is used to color classify damp to wet samples. Sediment names are described by Wentworth (1922). Percentage of lithologic constituents listed in the lithologic description are approximate. "No Recovery" is used where samples are not collected.

WATER QUALITY

Water samples are collected at the first aquifer with significant flow and at total depth (T.D.) by stopping drill rotation and pumping air through the drill string. The aquifer is allowed to flow for several minutes before a water sample is collected. The water temperature, pH, and specific gravity of raw and filtered untreated samples are measured in the field.

GEOPHYSICAL LOGGING TECHNIQUES

Radioactive geophysical logs, including gamma, gamma-gamma, and neutron logs, are obtained from the land surface to a depth of 75.0 m (246 ft). Radioactive logs are run through the drill pipe because the playa sediments would squeeze in and heat the test well before conventional electric logs could be completed in an open test well. Total thickness of the dual-wall drill pipe is 15.88 mm (0.63 in.). The radioactive source of the gamma-gamma log is Cesium (Cs¹³⁷), Americium-Beryllium (Am²⁴¹-Be) source is used for the neutron log.

GEOPHYSICAL LOGGING PARAMETERS

	Natural Gamma	Gamma-Gamma	Neutron
Scale switch (CPS)	0-50	0-500	0-100
Time constant (seconds)	4	4	4
Position potential (dial division)	10.0	4.0	7.9
Sensitivity potential (span: dial division)	10.0	6.0	7.1
Input pulse (volts)	1.2	1.2	1.2
Polarity (N = Negative, P = Positive)	N	N	N
Logging speed (ft/min)	17	17	17
Tool length (ft)	2.8	2.8	6.5
Source spacing (in.)		16	6

ACKNOWLEDGMENTS

G. Thomas Server provided laboratory lithologic descriptions. Geophysical logging was performed by James Cathcart of the Office of Energy Resources, U.S. Geological Survey, Denver, Colorado.

REFERENCES

Goddard, E.N., chn, and others, 1969, Rock-color chart: National Research Council; reprinted by Geological Society of America, 1991, 1963, 1970, 6 p.
Wentworth, C.K., 1922, A scale of grade and class terms for clastic sediments: Journal of Geology, v. 30, p. 377 - 392.

GEOPHYSICAL, LITHOLOGIC, AND WATER QUALITY DATA FROM SODA DRY LAKE, SAN BERNARDINO COUNTY, CALIFORNIA

BY
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