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DATA MEASURED ON WATER COLLECTED FROM EASTERN MOJAVE DESERT, CALIFORNIA

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In March of 2000 field collection of water from the Eastern Mojave Desert resulted in the measurement of stable isotope, radiocarbon, tritium, and limited dissolved noble gases. This work was follow-on to previous studies on similar systems in southern Nevada associated with the Nevada Test Site (Davisson et al., 1999; Rose and Davisson, 2003). The data for groundwater from wells and springs was never formally published and is therefore tabulated in Table 1 in order to be recorded in public record. In addition 4 years of remote precipitation data was collected for stable isotopes and is included in Table 2. These studies, along with many parallel and subsequent ones using isotopes and elemental concentrations, are all related to the general research area of tracing sources and quantifying transport times of natural and man-made materials in the environment. This type of research has direct relevance in characterizing environmental contamination, understanding resource development and protection, designing early detection in WMD related terrorism, and application in forensics analysis.

References

Davisson, M.L., Smith, D.K., Kenneally, J., Rose, T.P., 1999, Isotope hydrology of southern Nevada groundwater: stable isotopes and radiocarbon. *Water Resources Research* 35, 279-294.

Rose, T.P. and Davisson, M.L., 2003, Delineating Pleistocene- versus Holocene-age groundwater in the Great Basin using environmental isotopes. In *Paleoenvironments and Paleohydrology of the Mojave and Southern Great Basin Deserts*, Y. Enzel, S.G. Wells, N. Lancaster (eds.). Geological Society of America Special Paper 368.

Location	Sample Date	Latitude	Longitude	Elevation (m)	Depth (m)	Discharge (m^3/s)
PW-1 0.1 mg C	2/2/2000	34.5128	-115.4694		250	
Bonanza spring	2/2/2000	34.6853	-115.4047			0.003
OX Ranch well 0.08 mg C	2/3/2000	35.2260	-115.2994	1678	107	
Govt Hole Well	2/3/2000	35.1479	-115.3581	1536		
Dripping Spring	3/15/2000	34.5595	-115.2092			<0.001
Cooks Well	3/15/2000	34.9427	-115.5028	1189		
Crystal Spring	3/15/2000	34.9423	-115.5217			<0.001
Granite Cove Spring	3/16/2000	34.7869	-115.6569			
Black Canyon Rd well above Holliman Well	8/7/2000	35.1397	-115.4033			
CI-1	2/25/1999					
CI-2	2/25/1999					
CI-3	2/25/1999					
MW-7	2/25/1999					
HA-Blk 0.11 mg C						

* Measured radiocarbon and in parentheses is the blank corrected value

Location	T°C	Conductivity (uS)	pH	DIC mg/L as HCO_3	Cl mg/L	Br ug/L
PW-1 0.1 mg C	33.1	472	7.68	132.1	33.8	0.192
Bonanza spring	26.5	598	7.84	205.2		
OX Ranch well 0.08 mg C	15.5	439	7.32	181.3	8.6	0.095
Govt Hole Well	15	860	7.53	438.7	34.5	0.314
Dripping Spring	17.5	2340	7.14			
Cooks Well	24	842	7.09			
Crystal Spring	12.5	240	6.93			
Granite Cove Spring	17.5	347	7.22			
Black Canyon Rd well above Holliman Well	18	841	7.29			
CI-1				147		
CI-2				168		
CI-3				159		
MW-7				170		
HA-Blk 0.11 mg C						

* Measured radiocarbon and in

Location	I ug/L	$\delta^{13}C_{DIC}$	δD	$\delta^{18}O$	^{3}H pCi/L	$^{14}C_{DIC}$
PW-1 0.1 mg C	0.032	-8.4	-80	-10.87		18.3
Bonanza spring		-9.2	-83.1	-10.65	0.1	15.1
OX Ranch well 0.08 mg C	0.007	-11.1	-81.7	-11.92	18.2	83.7
Govt Hole Well	0.043	-10.9	-78.5	-10.38	16.7	113
Dripping Spring				-9.93		
Cooks Well				-9.67	0.26	
Crystal Spring				-11.36		
Granite Cove Spring				-10.82	17.2	
Black Canyon Rd well above Holliman Well						
CI-1		-7.8	-79	-10.9	<1	19
CI-2		-8.4	-78	-10.8	<1	18
CI-3		-9.4	-80	-10.8	<3	24
MW-7		-10.0	-79	-10.6	<1	25
HA-Blk 0.11 mg C						

* Measured radiocarbon and in

Location	$^{14}C_{DOC}$*	$\delta^{13}C_{DOC}$	^{4}He (atoms/g)	^{3}He (atoms/g)	Ne (atoms/g)	Ar (atoms/g)
PW-1 0.1 mg C	70.8 (61)	-24.3	3.98E+12	3.45E+06	8.21E+12	1.00E+16
Bonanza spring						
OX Ranch well 0.08 mg C	91.1 (86)	-17.3				
Govt Hole Well						
Dripping Spring						
Cooks Well						
Crystal Spring						
Granite Cove Spring						
Black Canyon Rd well above Holliman Well						
CI-1						
CI-2						
CI-3						
MW-7						
HA-Blk 0.11 mg C	20.4					

* Measured radiocarbon and in

Location	**^{4}Herad (atoms/g)**
PW-1 0.1 mg C	1.91E+12
Bonanza spring	
OX Ranch well 0.08 mg C	
Govt Hole Well	
Dripping Spring	
Cooks Well	
Crystal Spring	
Granite Cove Spring	
Black Canyon Rd well above Holliman Well	
CI-1	
CI-2	
CI-3	
MW-7	
HA-Blk 0.11 mg C	

* Measured radiocarbon and in

			Caruthers Canyon						
	Winter	$\delta^{18}O$	δD	Summer	$\delta^{18}O$	δD			
	Oct - Apr	Oct - Apr	Oct - Apr	Apr - Oct	Apr - Oct	Apr - Oct			
Lat Long	35.25500	-115.29667							
							Yearly total in	Yearly avg	Volumetric avg
2001	8.74	-16.6	-121.7	1.53	-4.6	-29.3	10.3	-14.82	-2.66
2002	1.19	-13.0	-96.5	2.38	-8.0	-56.7	3.6	-9.65	-0.60
2003	7.70	-14.2	-101.6	2.50	-6.2	-38.7	10.2	-12.22	
2004	8.94	-14.0	-102.3	2.77	-9.3	-63.8	11.7	-12.91	-2.64
2005	21.42	-12.2	-83.8	NA			21.4	-12.18	-4.56
						sum	**57.2**		**-10.47**

			Clipper Mountains						
	Winter	$\delta^{18}O$	δD	Summer	$\delta^{18}O$	δD			
	Oct - Apr	Oct - Apr	Oct - Apr	Apr - Oct	Apr - Oct	Apr - Oct			
Lat Long	34.68892	-115.40611							
							Yearly total in	Yearly avg	Volumetric avg
2001	3.16	-12.6	-91.0	0.39	-0.2	-10.1	3.55	-11.25	-1.95
2002	0.29	-7.2	-59.3	0.23	9.3	5.3	0.52	0.12	0.00
2003	NA			0.49	-1.8	-17.0			
2004	4.47	-10.7	-79.7	0.68	-3.0	-25.6	5.15	-9.69	-2.43
2005	8.28	-10.2	-71.7	2.99	-7.2	-51.0	11.27	-9.41	-5.18
						sum	**20.49**		**-9.56**