APPENDIX A. LITHOLOGIC DATA AND GROUND-WATER DATA FOR THE MOJAVE RIVER GROUND-WATER BASIN—OESTE SUBAREA

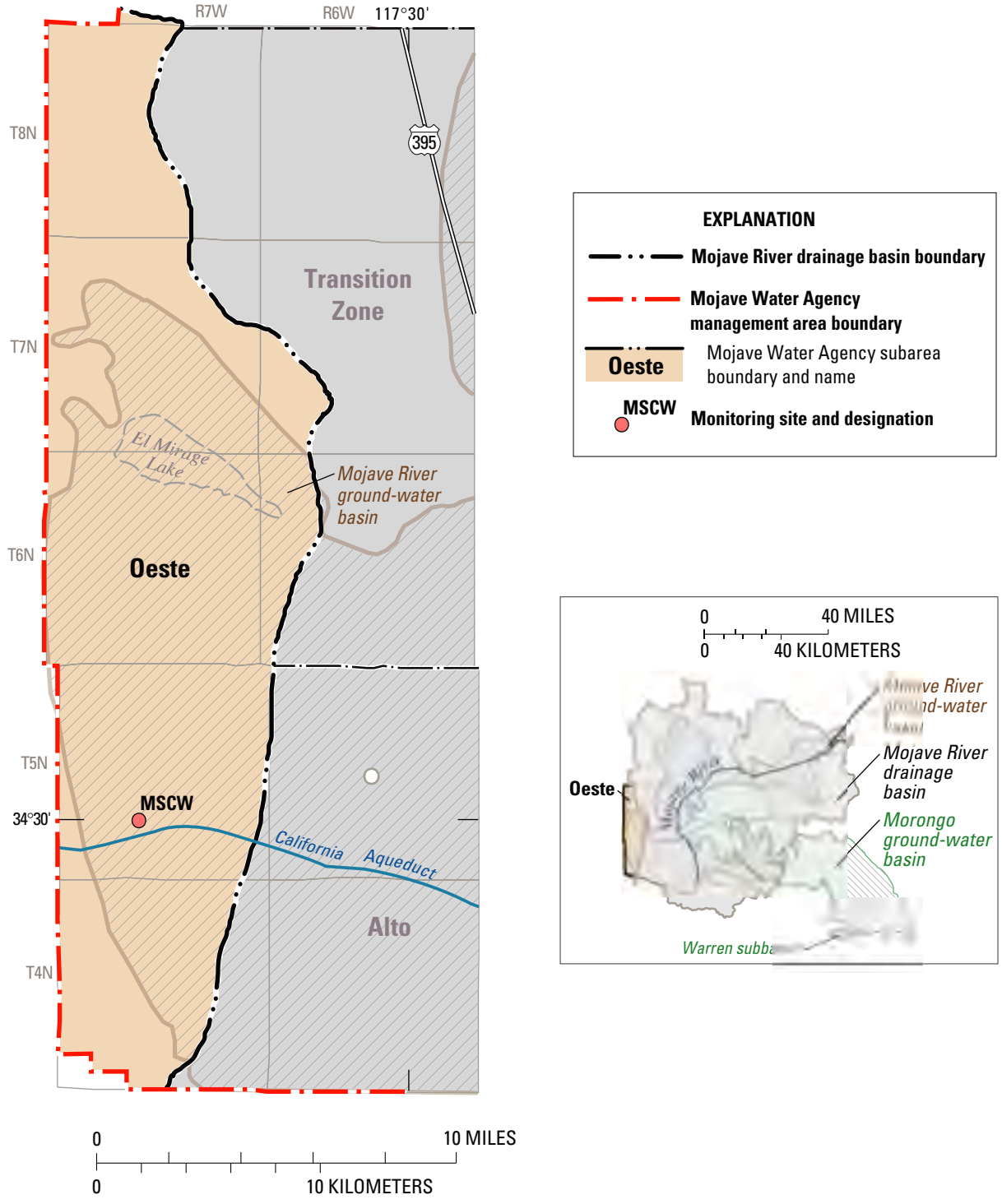


Figure A1. Location of the monitoring site in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California.

Table A1. Well-construction data for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California

[Depth of well, sand-pack interval, seal interval, and perforated interval in feet below land surface. Altitude of land-surface datum in feet above sea level]

Common name	State well No.	Type of well	Depth of well	Sand-pack interval	Seal interval	Type of seal	Perforated interval	Altitude of land-surface datum	Date drilled
					Site MSCW				
MSCW	5N/7W-28L1	Single	626		0–5	Cement grout	606–626	3,505	04-03-96

Table A2. Lithologic log for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California

[Altitude of land surface, approximately 3,505 ft. Depth is in feet below land surface. Soil and rock color notation (on dry cuttings) from Munsell Color (1994). Drilled by U.S. Geological Survey using under-reamer method to 400 ft, air rotary to 660 ft; March–April 1996. Total depth drilled 660 ft. Screened interval: 606–626 ft]

Depth (ft)		Description
From	To	
0	2	Sand, very fine to very coarse, skewed toward fine, some gravel granules and minor pebbles; moderately sorted; angular to subangular; dark olive gray (5Y 3/2)
2	6	Sand, very fine to very coarse, skewed toward medium; moderately sorted; angular to subangular; grayish green (10G 4/2)
6	8	Gravelly sand, very fine to very coarse, abundant gravel granules and pebbles; poorly sorted; angular to subangular; grayish green (10G 4/2)
8	9	Sand, some gravel granules, minor gravel pebbles; poorly sorted; angular to subangular; grayish green (10G 4/2)
9	12	Sand, very fine to very coarse, skewed toward fine, trace gravel granules and pebbles; moderately sorted; angular to subangular; grayish green (10G 4/2)
12	14	Silty sand, very fine to very coarse, skewed toward fine, minor gravel granules; moderately sorted; angular to subrounded; grayish olive (10Y 4/2)
14	15	Sand, very fine to very coarse, skewed toward medium, minor gravel granules; moderately sorted; angular to subrounded; dusky green (5G 3/2)
15	16	Sand, very fine to very coarse, skewed toward coarse, minor gravel granules and pebbles; moderately sorted; angular to subangular; dusky green (5G 3/2)
16	22	Sand, very fine to very coarse, minor gravel granules; poorly sorted; angular to subangular; grayish green (10G 4/2)
22	26	Gravelly sand, very fine to very coarse; poorly sorted; angular to subangular; grayish green (10G 4/2)
26	27	Silty sand, very fine to medium, skewed toward fine; well-sorted; angular to subrounded; dusky yellow green (5GY 5/2)
27	29	Sand, very fine to very coarse, skewed toward medium, minor gravel granules; moderately sorted; angular to subangular; grayish green (10G 4/2)
29	31	Gravelly sand, very fine to very coarse; poorly sorted; angular to subangular; grayish green (5GY 5/2)
31	34	Silty sand, very fine to very coarse, skewed toward fine, minor gravel granules and pebbles; well-sorted; angular to subangular; dusky yellow green (5G 5/2)
34	35	Sand, very fine to very coarse, some gravel granules and minor pebbles; poorly sorted; angular to subangular; grayish green (10G 4/2)
35	36	Sand, some silt, some gravel granules; poorly sorted; angular to subangular; grayish green (10G 4/2)
36	37	Sand, very fine to very coarse, some gravel granules and pebbles; poorly sorted; angular to subangular; grayish green (10G 4/2)
37	38	Silty sand, very fine to medium, skewed toward fine; well-sorted; angular to subangular; dusky yellow green (5GY 5/2)
38	39	Gravelly sand, very fine to very coarse; poorly sorted; angular to subangular; grayish green (5G 5/2)
39	40	Silty sand, skewed toward fine, minor gravel granules and pebbles; moderately sorted; angular to subrounded; grayish olive green (5GY 3/2)
40	41	Sand, very fine to very coarse, some gravel granules, minor pebbles; poorly sorted; angular to subrounded; dusky green (5G 3/2)

Table A2. Lithologic log for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California—Continued

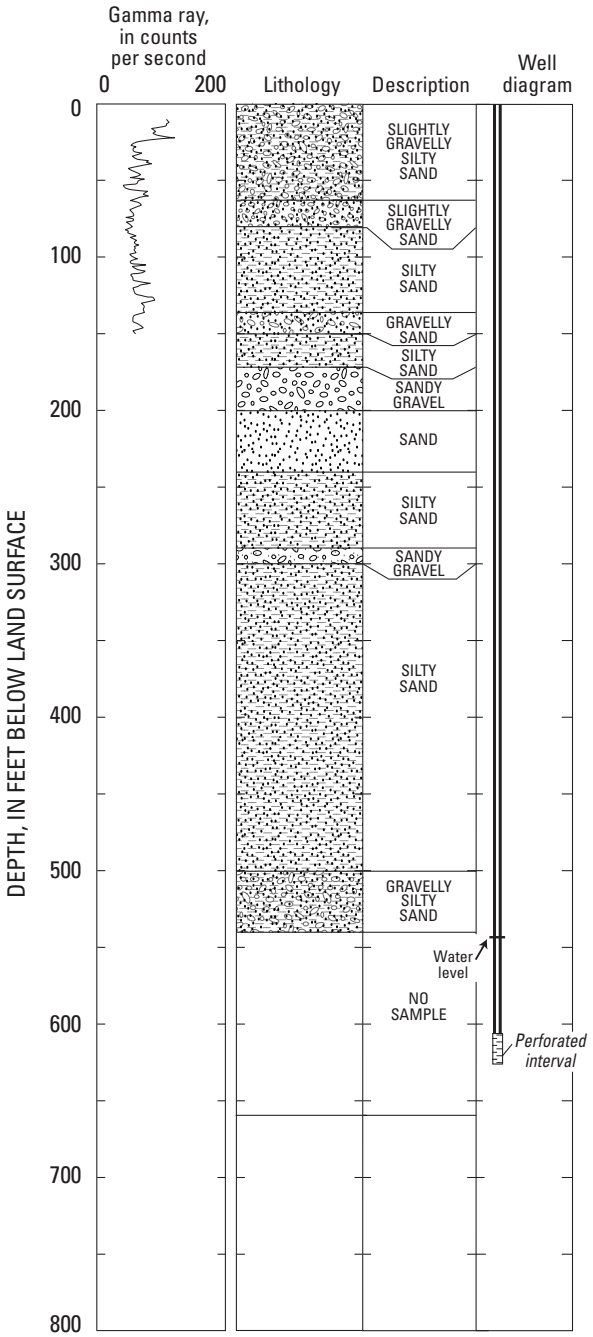
Depth (ft)		Description
From	To	
41	42	Sand, very fine to very coarse, skewed toward medium, some gravel granules, minor pebbles; moderately sorted; angular to subangular; grayish olive green (5GY 3/2)
42	45	Sand, very fine to very coarse, skewed toward fine, some pebbles and granules, some silt; moderately sorted; angular to subangular; grayish olive green (5GY 3/2)
45	46	Sand, very fine to very coarse, some gravel granules and pebbles, minor silt; poorly sorted; angular to subangular; grayish olive green (5GY 3/2)
46	50	Gravelly sand, very fine to very coarse, skewed toward coarse; moderately sorted; angular to subrounded; grayish green (10G 4/2)
50	51	Sand, very fine to very coarse, skewed toward medium, minor gravel granules; well-sorted; angular to subangular; grayish olive green (5GY 3/2)
51	52	Silty sand, very fine to fine; very well-sorted; angular; dusky yellow green (5GY 5/2)
52	60	Silty sand, skewed toward fine, minor gravel granules and pebbles; well-sorted; angular to subrounded; dusky yellow green (5GY 5/2)
60	62	Silty sand, very fine to very coarse, skewed toward fine; well-sorted; angular; dusky yellow green (5GY 5/2)
62	63	Silty sand, some gravel granules and pebbles; poorly sorted; angular to subrounded; grayish olive green (5GY 3/2)
63	64	Sand, skewed toward coarse, some gravel granules and pebbles; moderately sorted; angular to subrounded; dark greenish gray (5GY 4/1)
64	73	Sand, very fine to very coarse, skewed toward fine, some silt; very well sorted; angular to subangular; dusky yellow green (5GY 5/2)
73	75	Gravelly sand, very fine to very coarse; poorly sorted; angular to subangular; dark greenish gray (5GY 4/1)
75	76	Sand, very fine to very coarse, skewed toward medium, minor gravel granules; well-sorted; angular to subangular; dark greenish gray (5GY 4/1)
76	80	Sand, very fine to very coarse, skewed toward fine, some silt, minor gravel granules and pebbles; well-sorted; angular to subangular; grayish olive green (5GY 3/2)
80	82	Silty sand, very fine to very coarse, skewed toward fine, trace gravel granules and pebbles; well-sorted; angular; grayish olive green (5GY 3/2)
82	85	Sand, skewed toward fine, some silt, some gravel granules and pebbles; well-sorted; angular to subangular; dusky yellow green (5GY 5/2)
85	88	Silty sand, very fine to very coarse, skewed toward fine; well-sorted; angular; dusky yellow green (5GY 5/2)
88	91	Silty sand, very fine to very coarse, skewed toward fine, minor gravel granules and pebbles; well-sorted; angular to subrounded; grayish olive green (5GY 3/2)
91	92	Silty sand, very fine to medium, skewed toward fine; very well sorted; angular; grayish olive green (5GY 3/2)
92	94	Sand, very fine to very coarse, skewed toward medium, minor gravel granules; moderately sorted; angular to subangular; dusky yellow green (5GY 5/2)

Table A2. Lithologic log for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California—Continued

Depth (ft)		Description
From	To	
94	105	Silty sand, very fine to coarse, skewed toward fine, minor to trace clay; well-sorted; angular; dusky yellow green (5GY 5/2)
105	108	Silty sand, minor gravel granules and pebbles; poorly sorted; angular to subangular; dusky yellow green (5GY 5/2)
108	118	Sand, very fine to very coarse, skewed toward coarse, some gravel granules and pebbles, minor to trace silt; moderately sorted; angular to subangular; grayish olive green (5GY 3/2)
118	120	Silty sand, very fine to coarse, skewed toward fine; well-sorted; angular; grayish olive green (5GY 3/2)
120	122	Silty sand, very fine to very coarse, skewed toward fine, some clay, trace gravel granules and pebbles; well-sorted; angular to subangular; moderate yellowish brown (10YR 5/4)
122	128	Silty sand, very fine to fine; very well sorted; angular; grayish olive green (5GY 3/2)
128	136	Silty sand, fine, trace granules and pebbles; well-sorted; angular to subrounded; grayish olive green (5GY 3/2)
136	140	Gravelly sand, very fine to very coarse, skewed toward coarse; well-sorted; angular to subrounded; greenish black (5GY 2/1)
140	144	Silty sand, very fine to medium, skewed toward fine; very well sorted; angular; grayish olive green (5GY 3/2)
144	148	Sand, very fine to very coarse, some gravel granules and pebbles; poorly sorted; angular; greenish black (5GY 2/1)
148	150	Gravelly sand, very fine to very coarse, skewed toward coarse; moderately sorted; angular to subrounded; greenish black (5GY 2/1)
150	152	Silty sand, very fine to very coarse, skewed toward fine; well-sorted; angular to subangular; grayish olive green (5GY 3/2)
152	154	Sand, very fine to very coarse, skewed toward coarse, minor gravel granules; moderately sorted; angular to subangular; olive gray (5Y 3/2)
154	158	Silty sand, very fine to coarse, skewed toward fine; well-sorted; angular; dusky yellow green (5GY 5/2)
158	160	Sand, very fine to very coarse, skewed toward medium, some silt; moderately sorted; angular; grayish olive green (5GY 3/2)
160	164	Silty sand, very fine to coarse, skewed toward fine, trace gravel granules; well-sorted; angular; grayish olive green (5GY 3/2)
164	166	Sand, some silt, minor gravel granules and small pebbles; poorly sorted; angular; grayish olive green (5GY 3/2)
166	168	Silty sand, very fine to fine, some clay; very well-sorted; angular; dusky yellow green (5GY 5/2)
168	170	Sand, very fine to very coarse, minor gravel granules; poorly sorted; angular to subrounded; grayish olive green (5GY 3/2)
170	172	Sand, fine to very coarse, skewed toward coarse; well-sorted; angular to subrounded; grayish olive green (5GY 3/2)
172	176	Sandy gravel, granules and pebbles, very fine to very coarse sand; poorly sorted; angular to subrounded; grayish olive green (5GY 3/2)
176	180	No sample collected
180	190	Sand, very fine to very coarse

Table A2. Lithologic log for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California—Continued

Depth (ft)		Description
From	To	
190	200	Sandy silty gravel, granules to coarse pebbles
200	215	Sand, very fine to medium; well-sorted; gray (10Y 5/1)
215	235	Sand, very fine to medium; well-sorted; greenish gray (10Y 5/2)
235	240	Sand, very fine to medium; well-sorted; greenish gray (10Y 5/2), increase in coarse sand
240	250	Silty sand, fine to medium; well-sorted; olive gray (5Y 4/2)
250	260	Silty sand, increase of very coarse sand and gravel
260	265	Sand, very coarse
265	280	Silty sand, fine to medium; well-sorted; light olive gray (5Y 5/2)
280	290	Silty sand; moderate yellowish brown (10YR 5/4)
290	300	Sandy gravel, very coarse
300	315	Silty sand, very fine to medium; well-sorted; light olive gray (5Y 5/2)
315	320	Silty sand, some gravel
320		CORE: Silty sand, very fine to very coarse, minor granules to pebbles; moderately sorted; angular to subangular; greenish gray (10Y 6/1)
320	325	Silty sand, very fine to medium; well-sorted
325	340	Silty sand, very fine to coarse; poorly sorted; greenish gray (5GY 6/2)
340	370	Silty sand, very fine to very coarse, skewed toward fine; well-sorted; angular to subangular; trace gravel; olive (5Y 5/3)
370	380	Silty sand, very fine to very coarse, skewed toward fine; well-sorted; angular to subangular; increase in coarse sand and minor gravel granule; olive (5Y 5/3)
380	385	Color change to moderate yellowish brown (10YR 5/4)
385	395	Color change to olive (5Y 5/3)
395	400	Increase in coarse sand
400		CORE: Sand, very fine to very coarse, some granules; poorly sorted; angular to subangular; greenish gray (5GY 5/1)
400	440	Silty sand, fine to coarse; moderately sorted
440	500	Silty sand, very fine to fine; well-sorted
500	540	Silty sand, very fine to very coarse, abundant granules
540	660	No sample collected



Note: Some lithologic units may have been combined for presentation in this figure and the lithologic description may not correspond exactly to the description in the lithologic log shown in table.

Note: Refer. John A. Izbicki and others (Open-File Report 00-262) for more detailed information on well instrumentation.

Figure A2. Geophysical log, lithology, and well diagram for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California.

Table A3. Water-level data for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California

[Measurement method (column M): V, calibrated electric tape

State well number 005N007W28L001S
Site identification number 342923117370601
Common name MSCW at 626
Southwest of Phelan in Sheep Creek Wash. Drilled observation well. Diameter 2 inches, depth 626 feet, perforated 606–626 feet. Altitude of land-surface datum 3,505 feet. Water-level records available since 1996.

WATER LEVELS IN FEET BELOW LAND-SURFACE DATUM

DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS	DATE	WATER LEVEL	MS
Apr 10, 1996	543.85	V	Sep 18, 1996	545.05	V	May 16, 1997	545.53	V	Jan 08, 1998	545.25	V
May 29	543.98	V	Feb 19, 1997	544.88	V	Jun 12	545.35	V	Jan 27	545.29	V
Jun 13	544.76	V	Apr 09	545.05	V	Jul 16	545.61	V	Apr 16	545.66	V
Jul 11	544.97	V	Apr 16	545.21	V	Dec 20	545.23	V	Jul 28	546.06	V
Aug 19	544.82	V									

HIGHEST	543.85	Apr 10, 1996
LOWEST	546.06	Jul 28, 1998

Table A4. Water-quality data for monitoring site MSCW (well 5N/7W-28L1) in the Oeste subarea of the Mojave River ground-water basin, San Bernardino County, California

[All data were analyzed at U.S. Geological Survey laboratories. Location of site shown in figure A1. Numbering systems for sites are explained in text; µS/cm, microsiemens per centimeter; °C, degrees Celsius; mg/L, milligrams per liter; µg/L, micrograms per liter. —, no data; <, actual value is less than value shown]

Common name	State well No.	Site identification number	Date	Time	Temperature water (˚C)	Temperature air (˚C)
MSCW	005N007W28L001S	342923117370601	07-18-96	2145	23.7	35.0

Common name	Specific conductance (µS/CM)	pH water whole field (standard units)	Alkalinity wat dis fix end field $CaCO_3$ (mg/L)	Calcium dissolved (mg/L as Ca)	Magnesium, dissolved (mg/L as Mg)
MSCW	546	7.7	690	48	18

Common name	Sodium, dissolved (mg/L as Na	Potassium, dissolved (mg/L as K)	Chloride, dissolved (mg/L as Cl)	Sulfate dissolved (mg/L as SO_4)	Fluoride, dissolved (mg/L as F)
MSCW	28	6.2	3.9	130	0.20

Common name	Silica, dissolved (mg/L as SiO_2)	Solids, residue at 180˚C dissolved (mg/L)	Arsenic dissolved (µg/L as As)	Barium, dissolved (µg/L as Ba)	Boron, dissolved (µg/L as B)
MSCW	<0.10	344	<1	46	23

Common name	Iron, dissolved (µg/L as Fe)	Manganese, dissolved (µg/L as Mn)	Strontium, dissolved (µg/L as Sr)	Lithium, dissolved (µg/L as Li)	Iodide, dissolved (mg/L as I)
MSCW	7.0	180	890	5	<0.001

Common name	Bromide, dissolved (mg/L as Br)	$^{2}H/^{1}H$ stable isotope (ratio per mil)	$^{18}O/^{16}O$ stable isotope (ratio per mil)	$^{13}C/^{12}C$ stable isotope (ratio per mil)	Carbon-14 water fltrd (percent)	Carbon-14 cnt err water fltrd (percent)
MSCW	0.030	-83.5	-11.75	-13.40	61.50	0.500