INTRODUCTION

This atlas presents data on ground-water quality for the Walker Lake 1° x 2° quadrangle. The basic data were compiled as part of the Great Basin Regional Aquifer-Systems Analysis of the U.S. Geological Survey (Harrill and others, 1983).

The data herein were obtained from various sources, including published reports and computerized data files. The computer files accessed for this effort are: (1) WATSTORE, the National Water-Data Storage and Retrieval system maintained by the Water Resources Division of the U.S. Geological Survey; (2) WADS, a system created by the Desert Research Institute, University of Nevada; and (3) RASS, a system maintained by the Geologic Division of the U.S. Geological Survey. Other potential major sources of data are: the National Uranium Resource Evaluation (NURE), a U.S. Department of Energy project; reports of sampling efforts begun in 1980 by the U.S. Bureau of Land Management; and U.S. Geological Survey reports on various hydrographic areas. Only those analyses that pass certain quality-control criteria are included herein. A chemical analysis is excluded if (1) determinations do not exist for all of the principal ions, or (2) the analytical results do not meet the following criterion for electrical balance: total cations and total anions must agree within 10 percent, using the formula:

$$\text{imbalance (in percent)} = \frac{(\text{cations} - \text{anions})}{(\text{cations} + \text{anions})} \times 100 ,$$

where the concentrations are expressed in milliequivalents per liter. This electrical imbalance should be small for comprehensive analyses and it therefore serves as a check on the quality of the analytical results.

Where sample sites are closely spaced, or where more than one analysis is available for a single site, areal averaging is applied to prevent overprinting of information on the map (see side 1). Furthermore, if data for a deep well or for a thermal water are available within an area containing other data (shallow or nonthermal), the other data are not included in the averaging. Finally, if data for both a deep well (1,000 feet or greater) and a thermal water (30 °C or greater) are available, only the deep data are used. The averaging is done over a map area of 0.5 inch by 0.5 inch at a scale of 1:250,000, which is equivalent to about 4 square miles. One consequence of this procedure is that the actual map location corresponding to the sampling site does not necessarily coincide exactly with the computer-plotted location on the map (which is at the center of the 4-square-mile averaging area). Thus, the plotted data for springs may be offset from the spring locations shown on the topograhic base map.

The general chemical character of each water (that is, the relative proportions of principal cations and anions) is shown in the trilinear diagrams (side 1) and indicated by a letter code on the map (see "Explanation"). The characteristics and uses of trilinear diagrams are discussed by Hem (1985, p. 178-180). Both the map and the trilinear diagrams used the same depth-and-temperature symbols. The bar graph (side 1) indicates the relative proportion of major cations and anions for the indicated ranges of dissolved-solids concentration.

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CONVERSION FACTORS AND ABBREVIATIONS

"Inch-pound" units of measure used in this report may be converted to International System (metric) units by using the following factors:

Multiply	*By*	*To obtain*
Feet (ft)	0.3048	Meters (m)
Inch (in.)	25.40	Millimeters (mm)
Square miles (mi^2)	2.590	Square kilometers (km^2)

For temperature, degrees Celsius (°C) can be converted to degrees Fahrenheit (°F) by using the formula °F = [(1.8)(°C)] + 32.

Site designation[1]	Latitude, longitude (deg-min-sec)[2]		Type of site	Temperature (degrees Celsius)	pH (units)	Specific conductance (microsiemens per centimeter at 25°C)	Calcium (mg/L)	Magnesium (mg/L)	Sodium (mg/L)	Potassium (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Sulfate (mg/L)	Chloride (mg/L)	Fluoride (mg/L)	Silica (mg/L)	Dissolved solids[3] (mg/L)	Cation-anion balance[4]	Sampling date (year-month-day)	Well depth (feet)	Source of data[5]
DECHAMBEAU WELL	380252	1190450	Spring	66	7.7	--	13	2.9	430	8.8	450	0	100	350	4.8	76	1,500	1	--	--	Mariner and others, 1977
SOLO TT	380312	1190348	Spring	54	7.8	2,980	8.0	6.2	520	44	580	29	12	580	--	110	1,600	-5	68-06-21	--	Bliss, 1983
BUCKEYE HOT SPRINGS	381421	1191930	Spring	60	7.3	--	22	4.2	310	10	430	0	340	28	9.2	75	1,200	1	--	--	Mariner and others, 1977
NOT SPECIFIED	381447	1191212	Spring	68	7.3	4,600	74	18	1,100	55	1,760	0	970	210	5.6	88	3,400	-1	77-05-11	--	WATSTORE
NOT SPECIFIED	381645	1180547	Well	9.0	8.8	3,740	8.6	2.1	870	30	260	90	850	490	15	49	2,500	1	59-03-27	--	Van Denburgh and Glancy, 1970
NOT SPECIFIED	381657	1180514	Well	16	9.3	11,000	15	2.2	2,600	70	120	360	1,800	2,100	--	120	7,100	2	59-03-27	--	Van Denburgh and Glancy, 1970
NOT SPECIFIED	382032	1180611	Spring	33	7.9	1,570	43	3.3	320	16	110	0	590	73	8.8	42	1,100	2	77-05-12	--	WATSTORE
SODA SPRINGS	382032	1180611	Spring	35	7.6	1,640	40	3.3	310	16	110	<1	600	87	7.4	46	1,200	-2	--	--	Mariner and others, 1977
FALES HOT SPRINGS	382102	1192401	Spring	60	7.0	2,570	45	7.2	590	41	1,110	0	260	160	4.4	120	1,800	2	55-11-03	--	Bliss, 1983
NOT SPECIFIED	382118	1183630	Well	--	7.7	1,090	110	26	100	5.0	110	0	380	90	0.2	30	790	-1	52-12-11	--	Everett and Rush, 1967
HAW-13 (COTTONWOOD SPR)	382851	1183932	Spring	15	7.9	--	160	28	69	6.0	390	0	180	46	0.7	18	700	8	--	--	Koenig, 1981
HAW-5	382933	1183630	Well	23	7.5	--	130	26	95	6.0	100	0	330	96	0.8	16	740	7	--	--	Koenig, 1981
WELL NO. 3	383024	1183300	Well	34	8.0	1,320	32	6.1	250	10	120	0	370	100	6.8	54	890	3	52-12-11	--	Bliss, 1983
HAW-14	383026	1183813	Well	35	7.4	--	99	13	82	6.0	140	0	270	21	0.2	15	580	7	--	--	Koenig, 1981
HAW-6 (EL CAP)	383026	1183846	Well	97	7.4	--	40	0.1	260	11	95	0	440	85	7.3	41	920	2	--	--	Koenig, 1981
NOT SPECIFIED	383112	1183605	Well	--	7.7	1,430	88	11	210	8.8	130	0	460	98	1.5	59	1,000	1	52-12-11	--	Everett and Rush, 1967
NAD2	383113	1183543	Well	28	7.5	--	82	9.7	190	12	130	0	410	86	1.1	58	910	1	78-08	--	Bohm and Jacobson, 1977
HAW-3	383208	1183805	Well	24	7.3	--	87	18	170	7.0	85	0	370	86	1.6	14	790	8	--	--	Koenig, 1981
HAW-2	383246	1184023	Well	41	7.4	--	43	0.4	280	10	51	0	490	89	7.5	33	970	4	--	--	Koenig, 1981
NAD8	383307	1183820	Well	26	7.4	--	74	8.4	140	7.4	260	0	190	53	2.8	44	640	5	--	--	Koenig, 1981
NOT SPECIFIED	383314	1184020	Well	--	8.0	1,110	53	3.8	180	5.5	52	0	380	60	1.6	32	740	2	52-12-11	--	Everett and Rush, 1967
HAW-1	383323	1184006	Well	51	7.4	--	67	4.3	190	8.0	44	0	380	69	2.0	19	760	7	--	--	Koenig, 1981
NAD7	383359	1183718	Well	21	8.6	--	18	0.3	140	4.4	61	0	200	60	3.3	140	590	2	75-08	--	Bohm and Jacobson, 1977
ARMY SITE H-12 (GS-45)	383457	1184038	Well	14	--	1,750	34	3.2	370	8.5	180	0	570	100	--	49	1,200	2	79-03-22	22	WATSTORE
ARMY SITE H-14 (GS-43)	383507	1184017	Well	14	--	1,420	6.9	1.1	320	7.5	300	0	320	72	--	43	920	3	79-02-15	22	WATSTORE
ARMY SITE H-27B(GS-21B)	383510	1183942	Well	16	--	3,410	91	40	620	44	300	0	1,100	130	--	55	2,200	7	79-04-18	22	WATSTORE
ARMY SITE H-27D(GS-21D)	383510	1183942	Well	18	--	3,800	44	15	800	24	340	0	1,200	160	--	47	2,500	5	79-04-24	34	WATSTORE
ARMY SITE H-16 (GS-41)	383514	1184008	Well	16	--	2,290	18	7.2	500	17	330	0	690	120	--	55	1,600	1	79-02-07	26	WATSTORE
ARMY SITE H-18 (GS-39)	383523	1184002	Well	16	--	4,020	26	8.9	830	25	410	0	1,300	180	--	44	2,600	0	79-02-28	24	WATSTORE
ARMY SITE H-7 (GS-60)	383530	1184026	Well	15	--	4,080	21	12	950	28	800	0	1,200	150	--	49	2,800	2	79-04-26	22	WATSTORE
ARMY SITE H-21 (GS-55)	383541	1183953	Well	16	--	2,920	88	16	600	22	300	0	1,000	150	--	54	2,100	4	79-01-25	26	WATSTORE
UNNAMED SPRINGS NEAR TOPAZ	383742	1193018	Spring	--	8.7	570	6.7	0.4	110	2.8	83	9	53	77	7.0	52	370	3	55-10-12	--	Bliss, 1983
UNNAMED SPRING	384050	1181520	Spring	--	7.3	--	60	13	46	1.1	230	0	55	45	0.2	20	350	-1	74-08-12	--	WATSTORE
RIORDAN LOT 32	384123	1193247	Well	18	8.2	--	32	9.0	22	4.0	130	12	17	2.0	0.2	14	180	7	76-05-20	146	WATSTORE
TOPAZ LODGE	384142	1193249	Well	15	7.8	--	28	8.0	10	4.0	130	0	13	3.0	0.1	13	140	2	76-05-20	318	WATSTORE
GROVERS HOT SPRINGS	384154	1195042	Spring	56	7.0	1,980	34	2.2	430	11	760	0	160	180	4.2	96	1,300	0	60-06-02	--	Bliss, 1983
SP ELSNERS LINE CAMP	384160	1181650	Spring	--	7.3	1,630	190	42	80	2.9	150	0	570	110	0.5	54	1,100	-3	74-08-12	--	WATSTORE
BROWN, D., #2	384205	1193236	Well	16	7.8	--	39	5.0	17	<0.1	130	0	14	10	0.2	13	160	7	76-05-20	140	WATSTORE
BROWN, D., #2	384205	1193236	Well	14	7.5	350	42	5.0	23	<0.1	160	0	16	21	0.2	12	200	-1	76-10-26	140	WATSTORE
NOT SPECIFIED	384308	1191909	Well	12	7.5	198	20	7.0	9.5	2.9	100	0	9.2	2.0	0.1	43	140	4	73-08-27	--	Rush and Schroer, 1976
NOT SPECIFIED	384441	1191715	Well	14	8.2	171	14	7.0	9.4	2.3	93	0	8.6	1.0	--	39	130	0	73-08-27	--	Rush and Schroer, 1976
NOT SPECIFIED	384454	1191821	Well	14	7.9	375	35	13	23	6.0	200	0	16	4.0	0.4	56	250	3	72-07-05	--	Rush and Schroer, 1976
NOT SPECIFIED	384547	1191805	Well	18	7.9	400	35	13	24	8.6	130	0	51	16	0.4	66	280	6	72-07-03	--	Rush and Schroer, 1976
NOT SPECIFIED	384600	1191856	Well	14	7.6	235	23	8.0	11	5.1	120	0	11	4.0	0.3	56	180	2	72-07-03	--	Rush and Schroer, 1976
NOT SPECIFIED	384626	1191856	Well	14	7.5	425	41	14	21	5.9	160	0	41	20	0.4	59	280	3	72-07-03	--	Rush and Schroer, 1976
NOT SPECIFIED	384823	1192247	Well	17	8.1	222	21	4.0	17	5.3	120	0	13	1.0	0.3	59	180	0	73-08-29	--	Rush and Schroer, 1976
NOT SPECIFIED	384912	1192137	Well	16	8.1	217	22	3.0	16	10	120	0	9.0	2.0	0.4	57	180	2	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	384957	1192325	Well	15	8.2	342	38	9.0	18	2.4	180	0	17	6.0	0.4	21	200	0	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385004	1192137	Well	14	8.3	554	58	13	45	4.6	200	0	62	36	0.4	32	350	4	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385007	1192247	Well	17	8.2	233	26	3.0	19	2.7	130	0	13	2.0	0.5	26	150	0	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385017	1192324	Well	14	8.0	368	48	10	15	2.8	190	0	24	6.0	0.3	22	220	2	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385043	1192154	Well	17	8.2	242	25	3.0	21	3.7	130	0	15	3.0	0.5	40	170	-1	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385056	1192251	Well	14	8.2	497	62	16	15	3.9	290	0	19	5.0	0.3	28	290	-1	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385113	1192108	Well	18	8.0	215	21	3.0	19	6.0	120	0	9.6	2.0	0.6	59	180	1	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385152	1192019	Well	26	8.2	204	17	2.0	20	7.6	110	0	13	2.0	0.4	67	180	-1	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385152	1192337	Well	18	8.2	246	29	2.0	23	2.6	88	0	40	4.0	0.4	20	160	6	72-06-30	--	Rush and Schroer, 1976
NOT SPECIFIED	385155	1192202	Well	15	8.1	405	53	12	14	7.0	200	0	41	4.0	0.4	43	270	2	72-06-30	--	Rush and Schroer, 1976
NEVADA HOT SPRINGS	385356	1192437	Spring	61	8.6	509	4.5	0.0	100	2.5	54	7	170	17	3.1	52	380	-5	--	--	Mariner and others, 1974
NEVADA HOT SPRINGS	385359	1192438	Spring	61	9.0	520	4.5	<0.1	99	2.2	42	18	140	14	3.6	53	350	0	77-05-10	--	WATSTORE
NOT SPECIFIED	385415	1194146	Well	12	7.3	485	58	14	24	3.0	250	0	21	10	0.1	33	290	3	65-01-04	--	Van Denburgh and Glancy, 1970
NOT SPECIFIED	385416	1192158	Well	13	8.0	581	51	18	42	7.3	280	0	47	16	0.1	52	370	0	73-08-31	--	Rush and Schroer, 1976
NOT SPECIFIED	385442	1191914	Well	15	8.4	240	10	1.0	39	6.1	120	1	15	3.0	0.4	61	200	1	73-08-31	--	Rush and Schroer, 1976
JOHN OLESNOWICH	385458	1184509	Well	12	8.9	900	1.7	0.3	200	4.3	280	28	99	55	0.7	50	580	-1	78-01-12	--	Schaefer, 1980
LOUIE WILLIAMS	385503	1184544	Well	7.0	6.9	820	56	17	120	7.5	410	0	82	38	0.8	52	570	1	78-01-12	--	Schaefer, 1980
JOHN BERRY	385510	1184513	Well	6.0	8.6	1,210	5.9	0.5	290	7.1	550	21	100	43	1.5	43	780	0	78-01-12	--	Schaefer, 1980
WARREN EMM	385515	1184533	Well	11	8.0	250	15	3.1	35	7.1	110	0	23	6.6	0.4	54	200	5	78-01-12	--	Schaefer, 1980
RODGER WILLIAMS	385520	1184608	Well	8.5	7.4	1,380	91	27	160	12	230	0	290	160	0.5	44	900	-1	78-01-12	--	Schaefer, 1980
REYNOLD SAMMARIP	385612	1184722	Well	12	7.3	975	97	27	81	10	310	0	200	59	0.3	43	670	0	78-01-12	--	Schaefer, 1980
N12 E28 02A	385619	1184836	Well	13	-	--	21	1.4	48	3.3	110	0	49	8.7	1.1	46	230	4	78-04-17	--	Schaefer, 1980
WALKER RIVER INDIANS	385637	1184635	Well	12	8.1	210	17	3.5	25	4.8	100	0	21	5.8	0.4	56	180	2	78-01-12	--	Schaefer, 1980
CITY OF MINDEN WELL	385711	1194603	Well	12	8.1	216	22	5.6	13	2.4	100	0	16	4.9	0.1	34	150	1	--	--	Trexler and others, 1980
NOT SPECIFIED	385732	1192125	Well	26	8.4	309	2.0	1.0	64	2.2	140	2	26	5.0	0.9	82	250	0	73-08-31	--	Rush and Schroer, 1976
NOT SPECIFIED	385732	1192141	Well	28	8.5	305	2.0	0.2	69	3.4	150	4	23	6.2	1.0	36	220	-1	55-04-06	--	Rush and Schroer, 1976
NOT SPECIFIED	385745	1192003	Well	24	8.5	315	8.0	1.0	60	3.2	150	5	21	6.0	1.1	61	240	-1	73-08-31	--	Rush and Schroer, 1976
WALKER RIVER TRIBE	385755	1184127	Well	14	-	--	1.5	1.0	670	12	860	0	330	300	9.3	37	1,800	0	78-02-06	--	Schaefer, 1980
WALLEYS HOT SPRINGS	385847	1194953	Spring	58	9.1	778	9.8	0.0	130	4.0	1.9	43	210	46	4.7	72	510	-6	--	--	Trexler and others, 1980
WALLEYS HOT SPRING	385852	1194957	Spring	63	9.1	730	9.6	0.5	140	2.9	12	24	200	46	5.0	61	500	2	59-11-10	--	Bliss, 1983
NOT SPECIFIED	385924	1185834	Spring	53	8.5	1,090	26	0.1	200	2.2	38	0	380	49	8.4	34	710	1	77-05-11	--	WATSTORE

[1] Sample-site designations having format N12 E28 02A indicate township, range, and section, respectively; letter following section number indicates quarter section, as follows: A, northeast; B, northwest; C, southwest; D, southeast. Townships and ranges are referenced to Mount Diablo base line and meridian.

[2] Data are listed in order of increasing latitude and, for identical latitudes, increasing longitude.

[3] Computed sum (with bicarbonate multiplied by 0.492 to make results comparable with residue-on-evaporation values).

[4] Computed as described in introductory text. Negative value indicates that anions exceed cations.

[5] WATSTORE is U.S. Geological Survey's National Water Data Storage and Retrieval System. Citations for other sources are listed under "References Cited."