Title

Water for Nevada (Nevada's Water Resources) Water tables which include the hydrographic region/area, water budget, water yield, and water storage for the ground-water of Nevada.

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Water for Nevada

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NEVADA'S WATER RESOURCES

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TO THE CITIZENS OF THE STATE OF NEVADA

This Planning Report entitled "Nevada's Water Resources" is one of a series of reports being prepared as a part of the development of the State Water Plan. This report was prepared by Bruce R. Scott and Thomas J. Smales of the Division of Water Resources and F. Eugene Rush and A. S. Van Denburgh of the U. S. Geological Survey.

Most of the information presented in the report is a product of the cooperative program between the U. S. Geological Survey and the State of Nevada. Much of the data are from Water Resources Bulletins and Water Resources Reconnaissance Series reports of the Nevada Division of Water Resources, Department of Conservation and Natural Resources.

A hydrologic summary is presented for the State and average annual precipitation, average growing seasons, surface water runoff, ground water recharge, perennial yields, and system yields are given for the 232 hydrographic areas of the state. Also made a part of the report is a map of Nevada which shows estimated amounts of surface and ground water flow between hydrographic areas, both natural and manmade. The map also shows annual runoff, perennial yield and ground water storage in the top 100 feet of saturated deposits.

The larger and better known springs of Nevada are identified in the report and the surface area and capacity of the principal reservoirs and lakes of Nevada are given. Areas known to have poor quality ground water are also shown.

This report constitutes an inventory of the water resources of the State and represents the water supply presently available to Nevada.

Respectfully,

Roland D. Westergard

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State Engineer

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yield. The relationship between these is similar to that between the ground water budget and the water resources budget described above; however, because of the uniqueness of the various hydrologic areas scientific judgment is also a factor in interpreting the relationship between water budget and water yield.

Perennial yield of a ground water reservoir may be defined as the maximum amount of ground water that can be salvaged each year over the long term without depleting the ground water reservoir. Perennial yield is ultimately limited to the maximum amount of natural discharge that can be salvaged for beneficial use. Perennial yield cannot be more than the natural recharge to a ground water basin and in some cases is less. An example of such a condition is Pahrump Valley (162). In Pahrump the average annual recharge is estimated to be 22,000 acre feet, however, because of the difficulty in salvaging the subsurface outflow from the deep carbonate-rock reservoir, the perennial yield is only 12,000 acre feet. Perennial yield is identified by a "C" following the number under the "Yield" column in Table 1.

System yield is defined as the maximum amount of surface and ground water that can be obtained each year from sources within a system for an indefinite period of time. System yield cannot be more than the natural inflow to or outflow from a system. Generally, estimates of system yield are based on the following limitations and assumptions: (1) present beneficial uses represent salvage and are therefore included; (2) most evapotranspiration discharge can be salvaged; (3) half the surface water outflow and ground water outflow can be salvaged (up to all of the surface water if a dam is feasible); and (4) the estimated system yield is within the limits allowed by legal appropriations and decrees. This value is identified by the "d" following the number in the "Yield" column in Table 1.

Ground Water in Storage

The amount of ground water in storage in a valley reservoir is estimated to average about 10 percent of the volume of the saturated valley fill. The quantities of stored ground water listed in Table 1 are for each (one) foot of thickness. Therefore, the storage in the upper 100 feet of saturated alluvium is 100 times this quantity.

Transitional Storage Reserve

Transitional storage reserve is the quantity of water in storage in a particular ground water reservoir that is extracted during the transition period between natural equilibrium conditions and new equilibrium conditions under the perennial-yield concept of ground water development.

In the arid environment of Nevada, the transitional storage reserve of such a reservoir means the amount of stored water which is available for withdrawal by pumping during the non-equilibrium period of development, (i.e., the period of lowering water levels).

In valleys where natural discharge is partly or entirely by sub-surface outflow, the amount that can be salvaged with a dewatering (taken from storage) of 50 feet is estimated to average roughly 50 percent of the outflow. The transitional storage reserve estimates for the regions are based on an average dewatering of 30 to 40 feet of valley-fill reservoir. These values are shown for each region in Table 1-A.

Report References

References to reports, prepared by the U.S. Geological Survey, describing hydrographic areas are: "R" – Nevada Water Resources Reconnaissance Series Reports; "B" – Nevada Water Resources Bulletins; "W" – Water Supply Paper, U.S. Geological Survey; and "P" – Professional Paper, U.S. Geological Survey.

Region, Basin and State Totals

Note that the total ground water, water resources budgets, perennial yields and system yields for each basin, region or the state are not necessarily the sum of the individual areas. This is because quantities of water circulate among hydrographic areas (valleys) within regions, basins and the state, and therefore must be included in two or more area budgets. All other water quantities are generally additive.

footnote from page 3

[1] From the Virginia Evening Chronicle as quoted by Hugh A. Shamberger in the forthcoming U.S.G.S. Professional Paper 779, "The Story of the Water Supply for the Comstock", p 24.

138	Grass V.	13,000a	13,000c	16,000	R37
139	Kobeh V.	16,000a	16,000c	27,000	R30
140	Monitor V.				R30
	a) Northern Part	8,000a	8,000c	10,000	R30
	b) Southern Part	13,000a	10,000c	10,000	R30
141	Ralston V.	8,000a	6,000c	27,000	R12, R45
142	Alkali Spring V. (Esmeralda)	5,500a	3,000c	13,000	R45
143	Clayton V.	20,000a	20,000c	13,000	R45
144	Lida V.	700a	350c	15,000	R45
145	Stonewall Flat	100a	100c	8,200	R45
146	Sarcobatus Flat	3,000a	3,000c	24,000	R10, R54
147	Gold Flat	3,800a	1,900c	16,000	R54
148	Cactus Flat	600a	300c	14,000	R54
149	Stone Cabin V.	5,000a	2,000c	22,000	R12, R45
150	Little Fish Lake V.	10,000a	10,000c	8,000	R38
151	Antelope V. (Eureka & Nye)	4,000a	4,000c	12,000	R30
152	Stevens Basin	200a	100c	500	R30
153	Diamond V.	30,000a	30,000c	28,000	R6, B35
154	Newark V.	18,000a	18,000c	15,000	R1
155	Little Smoky V.				R38
	a) Northern Part	6,000a	5,000c	15,000	R38
	b) Central Part	200a	100c	1,000	R38
	c) Southern Part	2,000a	1,000c	9,400	R38
156	Hot Creek V.	6,500a	5,500c	23,000	R38
157	Kawich V.	4,500a	2,200c	9,600	B12, R54
158	Emigrant V.				R54
	a) Groom Lake V.	3,200a	2,800c	16,000	R54
	b) Papoose Lake V.	< 10a	< 10c	Minor	R54
159	Yucca Flat	700a	350c	5,200	R54
160	Frenchman Flat	32,700a	16,000c	7,900	R54
161	Indian Springs V.	32,000a	500c	18,000	R54
162	Pahrump V.	22,000a	12,000c	23,000	W1832
163	Mesquite V. (Sandy V.)	2,200a	2,200c	7,000	R46

Hydrographic Area Number	Hydrographic Area	Water Budget (Acre-Feet Per Year) a-Ground Water Budget b-Water Resources Budget	Water Yield (Acre-Feet Per Year) c-Perennial Yield d-System Yield	Groundwater in Storage (Acre-Feet Per Foot)	Report Reference
200	Eagle V.	1,100a	300c	1,800	R27
201	Spring V.	10,000a	> 1,000c 5,000d	8,000	R27
202	Patterson V.	9,000a	4,500c	18,000	R27
203	Panaca V.	10,000a	9,000c	14,000	R27
204	Clover V.	1,700a	1,000c	6,500	R27
205	Lower Meadow V. Wash	8,400a	5,000c	28,000	R27
206	Kane Springs V.	500a	Minor(c)	4,000	R25, B33
207	White River V.	77,000a	37,000c	49,000	B33
208	Pahroc V.	42,000a	21,000c	13,000	R21, B33
209	Pahranagat V.	60,000a	25,000c	17,000	R21, B33
210	Coyote Spring V.	37,000a	18,000c	18,000	R25, B33
211	Three Lakes V. (Southern Part)	10,700a	5,000c	8,600	R54
212	Las Vegas V.	30,000a	25,000c	34,000	W1780
213	Colorado River V.	200a	Minor(c)	11,000	R36
214	Piute V.	1,100a	600c	12,000	R36
215	Black Mountains Area	12,000b	7,000d	15,000	R50
216	Garnet V.	800a	400c	5,000	R50
217	Hidden V. (North)	400a	200c	1,500	R50
218	California Wash	43,000b	36,000d	10,000	R50
219	Muddy River Springs Area (Upper Moapa V.)	37,000a	37,000c	2,500	B33
220	Lower Moapa V.	35,000b	35,000d	8,000	R50
221	Tule Desert	2,100a	1,000c	5,300	R51
222	Virgin River V.	170,000b	100,000d	29,000	R51
223	Gold Butte Area	1,000a	500c	10,000	R50
224	Greasewood Basin	600a	300c	2,000	R50
BASIN TOTAL		> 340,000a	200,000c	340,000	
		DEATH VALLEY BASIN			
225	Mercury V.	17,000a	8,000c	Minor	R14, R54
226	Rock V.	17,000a	8,000c	1,500	R14, R54

DEATH VALLEY BASIN, *continued*					Table 1 – 12 of 12 Pages
227	Forty Mile Canyon				R14, R54
	a) Jackass Flats	8,000a	4,000c	7,400	R14, R54
	b) Buckboard Mesa	7,000a	3,600c	Minor	R14, R54
228	Oasis V.	3,500a	2,000c	4,000	R10, R54
229	Crater Flat	1,700a	900c	3,500	R14, R54
230	Amargosa Desert	43,000a	34,000c	35,000	R14, R54
231	*Grapevine Canyon*	400a	400c	1,600	R45
232	Oriental Wash	300a	150c	3,700	R45
BASIN TOTAL		62,000a	61,000c	57,000	
STATE TOTAL		2,000,000a	1,700,000c	2,500,000	

TABLE 1-A – TRANSITIONAL STORAGE

Hydrographic Region Number	Hydrographic Region	Transitional Storage Reserve (Acre Feet)
1	Northwest Region	1,000,000
2	Black Rock Desert Region	8,000,000
3	Snake River Basin	500,000
4	*Humboldt River Basin*	10,000,000
5	West Central Region	1,500,000
6	Truckee River Basin	1,600,000
7	Western Region	340,000
8	Carson River Basin	3,800,000
9	Walker River Basin	2,600,000
10	Central Region	45,000,000
11	Great Salt Lake Basin	3,000,000
12	Escalante Desert Basin	70,000
13	Colorado River Basin	5,000,000
14	Death Valley Basin	2,000,000
	TOTAL	84,000,000

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