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View of Hiko Spring

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**GROUND-WATER RESOURCES – RECONNAISSANCE SERIES
REPORT 21**

**GROUND-WATER APPRAISAL OF PAHRANAGAT AND PAHROC VALLEYS,
LINCOLN AND NYE COUNTIES, NEVADA**

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Annual water-level fluctuations in the other five wells probably are caused largely by evapotranspiration, recharge from spring flow in ditches and irrigated fields, and local recharge from precipitation. In general, ground-water levels in the younger valley fill southward from Hiko Spring has been affected only slightly by pumping from wells in the last 15 years. North of Hiko Spring, where the amount of ground-water pumpage for irrigation was larger, water-level declines resulted from removal of water from storage.

Estimated Average Annual Recharge:

The average annual recharge to the ground-water reservoir is estimated as a percentage of the average annual precipitation within the valley (Eakin and others, 1951, p. 79-81). A brief description of the method follows: Zones in which the average precipitation ranges between specified limits are delineated on a map, and a percentage of the precipitation is assigned to each zone which represents the assumed average recharge from the average precipitation in that zone. The degree of reliability of the estimate so obtained, of course, depends on the degree to which the values approximate the actual precipitation in the several zones and the degree to which the assumed percentages represent the actual proportion of recharge to ground water. Neither of these factors is known precisely enough to assume a high degree of reliability of the recharge estimate for any one valley. However, the method has proved useful for reconnaissance estimates, and experience suggests that in many areas the estimates probably are relatively close to the actual long-term average annual recharge.

The precipitation map of Nevada (Hardman and Mason, 1949, p. 10) has been adjusted (Hardman, oral communication, 1962) to the improved topographic base maps (scale 1:250,000) now available for the whole State. The base map for plate 1 of this report was prepared from the same series of topographic maps. The several zones of precipitation applicable to Pahrnagat and Pahroc Valleys are: The boundary between the zones of less than 8 inches and 8 to 12 inches of precipitation was delineated at the 6,000-foot contour; between 8 to 12 inches and 12 to 15 inches, at the 7,000-foot contour; between 12 to 15 inches and more than 15 inches at the 8,000-foot contour.

The average precipitation used for the respective zones, beginning with the zone of 8 to 12 inches of precipitation, is 10 inches (0.83 foot), 13.5 inches (1.12 feet), and 17.5 inches (1.46 feet).

The percentages of the average precipitation assumed to represent recharge for each zone are: less than 8 inches, 0; 8 to 12 inches, 3 percent; 12 to 15 inches, 7 percent; and 15 to 20 inches, 15 percent.

Table 4 summarizes the computation of recharge for Pahrnagat and Pahroc Valleys. The recharge (column 5) for each zone is obtained by multiplying the figures in columns 2, 3, and 4. Thus, for the zone of 12 to 15 inches of precipitation in Pahrnagat Valley the computed recharge is 10,000 (acres) times 1.12 (feet) times .07 (7 percent), which is about 800 acre-feet.

The estimated total average annual recharge derived from precipitation within the drainage basins is 1,800 acre-feet in Pahrnagat Valley and 2,200 acre-feet in Pahroc Valley.

Table 4. Estimated average annual ground-water recharge from precipitation in:

Pahrnagat Valley

Precipitation zone (inches)	Approximate area of zone (acres)	Average annual precipitation (feet)	Percent recharged	Estimated recharge (acre-feet) ($2 \times 3 \times 4 \div 100$)
15+	500	1.46	15	100
12-15	10,000	1.12	7	800
8-12	37,000	.83	3	900
8-	459,000	--	--	--
507,000 (about 790 sq. mi.)		Estimated average annual recharge (rounded)		1,800

Pahroc Valley

Precipitation zone (inches)	Approximate area of zone (acres)	Average annual precipitation (feet)	Percent recharged	Estimated recharge (acre-feet) ($2 \times 3 \times 4 \div 100$)
15+	600	1.46	15	150
12-15	8,400	1.12	7	650
8-12	56,000	.83	3	1,400
8-	263,000	--	--	--
328,000 (about 510 sq. mi.)		Estimated average annual recharge (rounded)		2,200