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MX SITING INVESTIGATION
WATER RESOURCES PROGRAM

TECHNICAL SUMMARY REPORT

VOLUME II

The Earth Technology Corporation

1980). Present surface-water use is estimated at 1013 acre-ft/yr (1.2 hm^3/yr) which includes 11 acre-ft/yr (0.01 hm^3/yr) for stock watering, 2 acre-ft/yr (0.002 hm^3/yr) for domestic use, and 1000 acre-ft/yr (1.2 hm^3/yr) for irrigation. Certificates and proofs for surface-water rights total 2643 acre-ft/yr (3.3 hm^3/yr) which include 32 acre-ft/yr (0.04 hm^3/yr) for domestic use, 497 acre-ft/yr (0.6 hm^3/yr) for stock watering, and 2114 acre-ft/yr (2.6 hm^3/yr) for irrigation (DRI, 1980).

Considering only approved appropriations, the quantity of ground water available for MX use is 1969 acre-ft/yr (2.4 hm^3/yr). The estimated peak annual requirement of 916 acre-feet (1.1 hm^3) is well below the available perennial yield for Cave Valley.

2.5.3.2 Source Capabilities

Cave Valley Spring, in the northern part of the valley (9N/64E-16bad), has a variable discharge of about 650 acre-ft/yr (0.8 hm^3/yr). The spring is the only reliable surface-water source and could be a partial source of water for the construction and operational phases of the MX project.

An aquifer test was performed on the Air Force valley-fill test well at 7N/63E-14ab2. A sustained discharge of 225 gpm (14 l/s) was obtained. Analysis of the data obtained from the test indicated a transmissivity of 2400 ft^2/day (222 m^2/day) for this area of the valley. This indicates that the valley-fill aquifer in this area is capable of supplying water in the necessary amounts and at sufficient rates to meet MX requirements.

Present ground-water use is estimated to be 7 acre-ft/yr (0.009 hm^3/yr) for stock watering. Certificated rights for ground water in Delamar Valley total 16 acre-ft/yr (0.02 hm^3/yr). There are no permitted rights or pending ground-water applications in the valley (Woodburn and others, 1981).

The quantity of ground water available for MX use totals 2993 acre-ft/yr (3.7 hm^3/yr) when considering present use and 2984 acre-ft/yr (3.7 hm^3/yr) when considering certificated water rights. The peak MX demand of 679 acre-feet (0.8 hm^3) for ground water will not exceed the perennial yield.

2.7.3.2 Source Capabilities

Because of limited and variable discharge, springs or streams in Delamar Valley would not be a reliable source of water for the MX Project.

An Air Force valley-fill aquifer test well was installed in Delamar Valley 6S/63E-12ada1. During testing, the well sustained a discharge rate of 85 gpm (5 l/s) with 85 feet (26 m) of drawdown. The static water level was in excess of 800 feet (244 m). Mechanical difficulties during the initial portion of the test made the early data unreliable and an estimate of storativity impractical. Analysis of the data collected from the observation well indicated a transmissivity of 1100 ft^2/day (102 m^2/day). In general, results of testing indicate that the aquifer has limited well-yield potential.

The carbonate aquifer in Delamar Valley is estimated to have a moderate potential for development. Thick sequences of

identified high aquifer potential carbonate rocks do not occur in the valley, however, there are areas of high density faulting present in the carbonate rocks and the valley is in a known regional ground-water flow regime.

2.7.3.3 Water Quality

Four samples were collected for water-quality analyses in the northern half of Delamar Valley. Three of the samples were from local springs in the mountains and one was from the Air Force test well completed in the valley-fill aquifer. Chemical analyses indicate that all the samples are within water-quality criteria for construction-water use (Appendix E1-1) and all but the water from the test well meet Primary and Secondary Drinking Water Standards for the State of Nevada (Appendix E1-2) for the constituents analyzed. Water from the test well (6S/63E-12adal) had an iron concentration of 0.37 mg/l. This exceeds the recommended limit of 0.3 mg/l but does not exceed the maximum limit of 0.6 mg/l. Water-quality data for Delamar Valley are listed in Appendix F1-7.

Water-quality trends cannot be quantitatively extrapolated to the southern half of the valley. It is expected, however, that the ground water should be generally suitable for construction and drinking water purposes.

2.7.4 Water-Supply Alternatives

2.7.4.1 Lease or Purchase of Existing Water Rights

Certificated ground-water rights in Delamar Valley total 16 acre-ft/yr (0.02 hm^3/yr). It will not be possible to lease

2.8.3.2 Source Capabilities

Surface water in Dry Lake Valley is limited to ephemeral streamflow and scattered small spring discharges. Consequently, surface water in Dry Lake Valley is not a dependable source of water for the MX project.

An Air Force valley-fill aquifer test well was installed in the southern part of the valley (3S/64E-12ac2). Test results indicate a transmissivity and storativity for the valley-fill aquifer of 3400 ft^2/day (315 m^2/day) and 0.013, respectively. These aquifer characteristics suggest that the valley-fill aquifer is capable of yielding water in sufficient quantities and rates to meet MX needs.

An Air Force carbonate aquifer test well was drilled in the northern part of the valley (3N/63E-27ca). Test results show an estimated transmissivity for the carbonate aquifer of about 13,400 ft^2/day (1242 m^2/day) and a specific capacity of 50 gpm/ft (10 l/s/m). These results suggest a significant water-supply capability for the carbonate aquifer. However, the depth to water (853 feet [260 m]) negates some of the benefits of the potential high well yield.

2.8.3.3 Water Quality

Water-quality data for Dry Lake Valley are shown in Appendix F1-8. Chemical analyses of water samples from the two test wells, one existing well, and six springs indicate that, for the constituents analyzed, water quality is within criteria for construction water use (Appendix E1-1). All sample sites