IN THE OFFICE OF THE STATE ENGINEER
OF THE STATE OF NEVADA

IN THE MATTER OF APPLICATION 52663)
FILED TO APPROPRIATE THE PUBLIC)
WATERS OF AN UNDERGROUND SOURCE) **RULING**
WITHIN THE AMARGOSA DESERT)
HYDROGRAPHIC BASIN (230), NYE) **#5771**
COUNTY, NEVADA.)

GENERAL

I.

Application 52663 was filed on October 27, 1988, by James R. Marsh to appropriate 0.25 cubic feet per second (cfs) of underground water for quasi-municipal purposes. The proposed place of use is described as being located within the SW¼ SW¼, SE¼ SW¼ of Section 2, T.18S., R.49E., M.D.B.&M. The proposed point of diversion is described as being located within the SW¼ SW¼ of said Section 2.[1]

FINDINGS OF FACT

I.

State Engineer's Order No. 724, issued May 14, 1979, described and designated the Amargosa Desert Hydrographic Basin as a groundwater basin in need of additional administration under the provisions of NRS § 534.030.[2]

All water right applications, which are filed in the Office of the State Engineer, are subjected to a simple analysis to determine the location of the proposed points of diversion. This determination is a critical part of the initial application review process and establishes which hydrographic basin the proposed points of diversion are located within. The description of the proposed point of diversion found within Application 52663 and its supporting map was used to plot the location of the proposed well site. This location was found to be within the Amargosa Desert Hydrographic Basin.

The State Engineer finds that Application 52663 has a proposed point of diversion that is located within the hydrologic boundaries of the designated Amargosa Desert Hydrographic Basin.

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[1] File No. 52663, official records in the Office of the State Engineer.
[2] State Engineer's Order No. 724, May 14, 1979, official record in the Office of the State Engineer.

II.

An examination of the records of the Office of the State Engineer identified numerous water right applications with proposed points of diversion located within the Amargosa Desert Hydrographic Basin that have been denied, in part, on the basis that existing water rights exceed the annual recharge to the basin.[3] The State Engineer finds that previous applications to appropriate additional water in the Amargosa Desert Hydrographic Basin have been denied.

III.

The Nevada Revised Statutes (NRS) chapters 533 and 534 and the policies developed by the Office of the State Engineer control the appropriation of water within the state of Nevada. Under the provisions found under NRS § 533.370(5), before an application that requests a new appropriation of underground water can be considered for approval it must be determined, amongst other things, that there is unappropriated water available at the targeted source. The answer to the question of what amount of underground water is available for additional appropriation from the Amargosa Desert Hydrographic Basin can be found in an analysis of the basin's recharge-discharge relationship. Central to this equation is the concept of the perennial yield of the Amargosa Desert Hydrographic Basin.

Perennial yield of a groundwater reservoir may be defined as the maximum amount of ground water that can be salvaged each year over the long term without depleting the groundwater reservoir. Perennial yield is ultimately limited to the maximum amount of natural discharge that can be salvaged for beneficial use. If the perennial yield is continually exceeded groundwater levels will decline.[4]

Withdrawals of ground water in excess of the perennial yield contribute to adverse conditions such as water quality degradation, storage depletion, diminishing yield of wells, increase in cost due to increased pumping lifts, land subsidence and possible reversal of groundwater gradients, which could result in significant changes in the recharge-discharge relationship.

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[3] State Engineer's Ruling Nos. 2480, 2793 and 3206, official records in the Office of the State Engineer.

[4] State Engineer's office, *Water for Nevada, State of Nevada Water Planning Report No. 3*, p. 13, Oct. 1971.

The United States Geological Survey (USGS) estimates that the perennial yield of the Amargosa Desert Hydrographic Basin is as follows:[5]

> The physical conditions in Amargosa Desert suggest that the estimate of discharge is the better basis on which to estimate perennial yield in the light of present information. Thus, the tentative perennial yield may be about 24,000 acre-feet per year. Of this, about 17,000 acre-feet can be obtained by full development of the springs in Ash Meadows. The remaining amount would be available for development by wells largely in the area northwest and northeast of the springs. Unused discharge from the springs that is returned to the ground-water reservoir downgradient from the springs toward Death Valley Junction could be withdrawn for use. However, the chemical quality generally becomes progressively poorer by this recycling and the suitability for the intended use should be evaluated carefully.

The Office of the State Engineer has for many years relied upon the USGS' estimates of perennial yield. These estimates are critical in determining the degree of regulation, which must be placed upon a ground-water basin's limited underground water resources. An examination of records on file in the Office of the State Engineer indicates that the Amargosa Desert Hydrographic Basin groundwater recharge from precipitation is 600 acre-feet annually (afa), groundwater inflow from Mercury Valley, Rock Valley, Jackass Flats, and Crater Flat totals 44,000 afa, groundwater evapotranspiration (ET) is 24,000 afa, and subsurface outflow is 19,000 afa to the Death Valley area.[6] The State Engineer finds the perennial yield of the Amargosa Desert Hydrographic Basin is currently estimated by the USGS at 24,000 afa.

IV.

Application 52663 requests a new appropriation of ground water from the Amargosa Hydrographic Basin. The amount of water requested is not shown on the application; only a diversion rate of 0.25 cfs is indicated. Although there is only a diversion rate specified,

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[5] Walker, G.E. and Eakin, T.E., *Ground-Water Resources – Reconnaissance Series Report 14, Geology and Groundwater of Amargosa Desert, Nevada-California,* Department of Conservation and Natural Resources in Cooperation with the U.S. Geological Survey, p. 29, (1963).

[6] State Engineer's office, *Water for Nevada, State of Nevada Water Planning Report No. 3*, p. 50, Oct. 1971.

additional information contained in the application file indicates that the Applicant is requesting a duty of water equal to 35.0 afa.[7]

Under NRS § 533.370(5), the first criteria that must be considered in the issuance of any new water appropriation is a determination of whether water is available at the source. A review of records on file in the Office of the State Engineer, show that the committed water resources for all active water rights in the Amargosa Desert Hydrographic Basin total over 62,000 afa. Within that amount, the committed ground-water resources are approximately 24,078 afa excluding existing domestic wells.[8]

The issue of existing domestic wells must be addressed when considering the committed groundwater resources in the Amargosa Desert Hydrographic Basin. A review of well driller reports (well logs) shows 476 domestic wells in the Amargosa Desert Hydrographic Basin.[9] Under Nevada water law, a domestic well may use up to 1,800 gallons per day (2.02 afa) for domestic purposes without the benefit of a water right permit.[10] This equates to a potential of 961.52 afa being pumped from existing domestic wells (476 wells * 2.02 afa = 961.52 afa).

An imbalance exists between committed resources and available perennial yield within the Amargosa Desert Hydrographic Basin. The committed ground-water resources, existing water rights (24,078 afa) and domestic wells (961.52 afa), exceeds 25,000 afa. In addition, 17,000 afa, discharged by springs in Ash Meadows, are committed under the certificated rights of the United States Fish and Wildlife Service. The perennial yield, as estimated by the USGS, is 24,000 afa, consisting of 17,000 afa that can be obtained by full development of the springs in Ash Meadows and 7,000 afa that would be available for development by wells largely in the area northwest and northeast of the springs.[11]

The State Engineer finds that existing water rights in the Amargosa Desert Hydrographic Basin exceeds the perennial yield of the basin.

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[7] See, Correspondence, August 13, 1999, File No. 52663, official record in the Office of the State Engineer.

[8] Nevada Division of Water Resource's Water Rights Database, Hydrographic Abstract of the Amargosa Desert Hydrographic Basin, November 13, 2006.

[9] Nevada Division of Water Resource's Well Log Database, November 13, 2006.

[10] NRS § 534.180.

[11] Walker G.E. and Eakin T.E., *Ground-Water Resources – Reconnaissance Series Report 14, Geology and Groundwater of Amargosa Desert, Nevada-California.* Department of Conservation and Natural Resources in Cooperation with the U.S. Geological Survey, Foreword and p. 29, (1963).

CONCLUSIONS

I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.[12]

II.

The State Engineer is prohibited by law from granting an application to appropriate the public waters where:[13]

A. there is no unappropriated water at the proposed source;
B. the proposed use or change conflicts with existing rights;
C. the proposed use or change conflicts with protectible interests in existing domestic wells as set forth in NRS § 533.024; or
D. the proposed use or change threatens to prove detrimental to the public interest.

III.

The State Engineer concludes that previous applications to appropriate have been denied in the Amargosa Desert Hydrographic Basin; therefore, Application 52663 may be considered for denial.

IV.

The State Engineer concludes that the best estimate of the perennial yield of the Amargosa Desert Hydrographic Basin is 24,000 acre-feet annually.

V.

The committed groundwater resources of the Amargosa Desert Hydrographic Basin currently exceed the groundwater basin's estimated perennial yield. The State Engineer concludes that the approval of the subject application would result in the withdrawal of ground water in excess of the perennial yield of the Amargosa Desert Hydrographic Basin and therefore, would adversely affect existing rights and would threaten to prove detrimental to the public interest.

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[12] NRS chapters 533 and 534.
[13] NRS § 533.370(5).

RULING

Application 52663 is hereby denied on the grounds that its approval would conflict with existing rights and would threaten to prove detrimental to the public interest.

Respectfully submitted,

TRACY TAYLOR, P.E.
State Engineer

TT/TW/jm

Dated this 5th day of

September, 2007.