

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

IN THE MATTER OF APPLICATION 65456 AND )  
APPLICATION 66227 FILED TO CHANGE THE )  
POINT OF DIVERSION OF A PORTION OF THE )  
WATERS APPLIED FOR UNDER APPLICATION )  
65456, WITHIN THE MESQUITE VALLEY )  
(SANDY VALLEY) HYDROGRAPHIC BASIN )  
(163), CLARK COUNTY, NEVADA. )

RULING

**#5132**

GENERAL

I.

Application 65456 was filed on August 25, 1999, by Vidler Water Company, Inc. to appropriate 10.0 cubic feet per second (cfs), not to exceed 2,000 acre-feet annually (afa), of underground water from Mesquite (Sandy) Valley, Nevada. The proposed manner and place of use described under Application 65456 is for municipal purposes within the S $\frac{1}{2}$  NW $\frac{1}{4}$  and the SW $\frac{1}{4}$  NE $\frac{1}{4}$  of Section 10, all of Section 9 and those portions of Sections 8, 16, 17, and 21, T.27S., R.59E. M.D.B.&M., lying within Nevada. The proposed point of diversion is described as being located within the NE $\frac{1}{4}$  SW $\frac{1}{4}$  of Section 36, T.25S., R.57E., M.D.B.&M.<sup>1</sup>

II.

Application 66227 was filed on March 30, 2000, by Vidler Water Company, Inc., to change the point of diversion of 7.0 cfs, not to exceed 1,400 afa, of water requested for appropriation under Application 65456. The proposed place of use is the same as Application 65456. The point of diversion is described as being located in the NW $\frac{1}{4}$  NE $\frac{1}{4}$  of Section 14, T.25S., R.57E., M.D.B.&M.<sup>2</sup>

<sup>1</sup> File No. 65456, official records in the Office of the State Engineer.

<sup>2</sup> File No. 66227, official records in the Office of the State Engineer.

III.

Application 66227 was timely protested by the following parties:

Mary E. Bacher	Carole L. Benner
Roxanne R. Collins	Ernest M. Dunajski
John H. Bacher	Melvin O. Benner
Elaine M. Clark	Larry V. Bowles
Katherine Bowles	Joy Hyde Fiore
Glendon and Michelle Hardison	Barbara L. Harman
Loren C. Jeglin	Nancy and Warren Knight
Tom L. Knight	Keith W. and Gerry L. Kram
Richard Kranz	William and Stacy Loucks
David and Barbara Lowe	Albert G. Marquis
Paul H. Muskat	Robert L. and Mary K. Nead
John E. Nostrand	Jo E. Peterson
David C. Plymell	Sandy Valley Volunteer Fire Department
Jean M. Quillen	Kenneth LeRoy Smith
Layne Rosequist	Leonard C. and Patricia R. Smith
Electra Kay Smith	LeRoy D. Wilder

IV.

Protestants Carole L. Benner, Melvin O. Benner, John H. Bacher, Mary E. Bacher, Richard Kranz, David C. Plymell, Kenneth LeRoy Smith and Layne Rosequist protested Application 66227 on the following grounds:<sup>2</sup>

NRS 534.020.1: All underground waters within the boundaries of the state belong to the public, and, subject to all existing rights to the use thereof, are subject to appropriation for beneficial use only...under laws of the state. Contrary to the public good, water resources under this application would be assigned to a publicly traded for-profit corporation whose sole purpose is to resell water to other others for a profit to themselves and their shareholders. The water resources, which are the property of citizens, are being assigned to a private corporation for export from the Mesquite (Sandy) Valley basin without full knowledge of the long term effects to Sandy Valley, the local ranches and farms, and the citizens of Nevada in general. This exploratory well is being drilled in the

Sandy/Mesquite Valley rather than the much larger Ivanpah Valley, which is the point of use. Note: Using the same geological maps as the Vidler Hydrologist, Ivanpah has the same geological features. Also, the well setup and drilling was allowed to begin three to four weeks prior to the final protest filing date of August 8. The Vidler drilling engineers cannot guarantee that the alluvial aquifer water will be blocked by casing off the zone while drilling through to the carbonate unit. They cannot verify or guarantee that they will not violate NRS 534.020.2 regarding water loss, pollution and contamination.

The protestants request that the State Engineer deny Application 66227.

#### V.

Protestants Roxanne R. Collins, Elaine M. Clark, Larry V. Bowles, Joy Hyde Fiore, Glendon and Michelle Hardison, Loren C. Jeglin, Nancy and Warren Knight, Tom L. Knight, William and Stacy Loucks, David and Barbara Lowe, Robert L. and Mary K. Nead, John E. Norstrand, Jean M. Quillen, Leonard C. and Patricia R. Smith and Electra Kay Smith protested Application 66227 on the following grounds:<sup>2</sup>

According to Ruling R-2523 Findings of Fact dated March 12, 1980, the Mesquite Valley groundwater reservoir is 2200 acre – feet. Of this, 1,500 acre – feet are estimated to come from precipitation in the nearby mountains, and 700 acre – feet are estimated to come from the Pahrump Valley underflow. In 1980, when the ruling was issued, the existing water rights appropriated accounted fully for the available recharge. Since 1980, the population in Sandy Valley has grown from 327 to close to 2,500 (estimated). Pahrump has grown to nearly 40,000 and is already experiencing a drop in water tables and associated subsidence. Therefore, we can assume that the contribution of 700 acre – feet from the Pahrump underflow had decreased in the past 20 years. The recharge from precipitation is extremely slow in this basin, to the point that this basin has probably not yet experienced the impact from the seven-year drought (approximately 1985 – 92), much less other droughts to come. If precipitation is indeed the main source of recharge, then protection of the water supply must consider interruptions to the recharge source. Exporting water out of a basin where the resources are undoubtedly over subscribed already shouldn't even be considered.

The protestants request that the State Engineer deny Application 66227.

#### VI.

LeRoy D. Wilder protested Application 66227 on the following grounds:<sup>2</sup>

I am a major ground water user of the water resources in Mesquite Valley, where I farm approximately 800 acres of alfalfa. This farm, Two

Hawk Ranch, has been using Mesquite Valley ground water for the past 35 years. The ground water diversion proposed in application 66227 would have a ruinous effect on the very limited water in this valley, and could end up destroying a business in which I have invested millions of dollars.

Mr. Wilder requests that the State Engineer deny Application 66227.

**VII.**

The Sandy Valley Volunteer Fire Department protested Application 66227 on the following grounds:<sup>2</sup>

The fire department relies on 1 small community well and several private wells to refill our water tenders for fire fighting efforts. Any lowering of our water table could severely endanger the community and its residents.

The Sandy Valley Volunteer Fire Department requests that the State Engineer deny Application 66227.

**VIII.**

Paul H. Muskat, Ernest M. Dunajski, Katherine Bowles, Barbara L. Harman, Keith W. and Gerry L. Kram and Jo E. Peterson protested Application 66227 on the following grounds:<sup>2</sup>

In the past few years, the State Water Engineer has denied applications for irrigation appropriations in this basin. Using the same criteria for denial of permits for irrigation water, and considering the existing water usage in the basin (which appears now to exceed the recharge), we believe that the application for municipal allocation of water to be exported from the area be denied. Approval will set a precedent for others to acquire water for export from the basin, leaving the local population bereft of water and putting the ranches and farms out of business. It will be hard for the State Engineers Office to justify denial of recent applications or further applications if this one is approved.

The protestants request that the State Engineer deny Application 66227.

**IX.**

The State Engineer finds that Lamond R. Mills and Associates, L.L.C represented all the protestants heretofore mentioned.

**X.**

Albert G. Marquis protested Application 66227 as follows:<sup>2</sup>

The (sic) would deplete the water table.

Mr. Marquis requests that the State Engineer deny Application 66227.

**XI.**

After all parties of interest were duly noticed by certified mail,<sup>3</sup> a public administrative hearing was held on December 18, 19 and 20, 2001, regarding Application 65456 and protested Application 66227 in Las Vegas, Nevada, before representatives of the Office of the State Engineer.

**FINDINGS OF FACT**

**I.**

The State Engineer finds that the proposed points of diversion under Applications 65456 and 66227 are in Mesquite Valley, Hydrographic Basin, whereas the proposed place of use is in Ivanpah Valley-Northern Part, Hydrographic Basin 164A and the proposed applications constitute an interbasin transfer of groundwater.

**II.**

The applicant presented evidence and testimony in an attempt to prove that the source of the water under Application 66227 would be solely from the carbonate aquifer, underlying the Mesquite Valley Hydrographic Basin, and thus, would not impact the valley's alluvial aquifer. Under Waiver No. W-2091 issued January 24, 2000, and extended by letter dated March 31, 2000, by the Division of Water Resources, Southern Nevada Branch Office a test well was drilled to a depth of 1,501 feet below land surface. The applicant presented the results of a 72-hour pump test performed on this well. The initial discharge was 550 gallons per minute (gpm) for six hours, and then increased to 730 gpm for six hours and then 1,150 gpm for 12 hours. The discharge for the final 48 hours of the test was held constant at 1,700 gpm. Over the test period, the water level within a monitor well located 54 feet away, drilled to a depth of 341 feet below land surface, was observed using a continuous recorder. The results of the test indicated a 0.2

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<sup>3</sup> Exhibit No. 1 and Transcript, public administrative hearing before the State Engineer, December 18 -20, 2001 (hereafter "Transcript" and "Exhibits").

feet lowering of the water level in the monitoring well over the 72 hours and a drawdown of 122.79 feet in the test well and a specific capacity of 13.8 gpm/ft.<sup>4</sup> The evidence provided did not include any calculations of the hydraulic characteristics of the carbonate or alluvial aquifers, which is generally used to model the long term effects of pumping. Based on the data provided by the applicant, the State Engineer finds that the applicant did not substantially prove that the alluvial and carbonate aquifers are hydraulically separated and the pump test did not provide an analysis of pumpage over an extended period of time and for this reason any determination he makes will be based on the concept of the safe yield of the Mesquite Valley Groundwater Basin.

### III.

The 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 recharge that can be salvaged for beneficial use. If the perennial yield is continually exceeded groundwater levels will decline.<sup>5</sup>

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, increased economic pumping lifts, land subsidence and possible reversal of groundwater gradients which could result in significant changes in the recharge-discharge relationship. The United States Geological Survey estimates that the perennial yield of the Mesquite Valley Groundwater Basin is approximately 2,200 afa.<sup>6</sup> During the administrative hearing, evidence was presented by both parties that indicated the recharge to Mesquite Valley might be greater than originally reported. The State Engineer finds that applicant and protestants did not provide conclusive evidence and testimony that can justify changing the established perennial yield of 2,200 afa.

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<sup>4</sup> Exhibit 13, pp. 74 - 80.

<sup>5</sup> State Engineer's Office, Water for Nevada, State of Nevada Water Planning Report No. 3, p. 13, October. 1971.

<sup>6</sup> Glancy, Patrick A., Water - Resources Appraisal of Mesquite - Ivanpah Valley Area, Nevada and California; Water Resources - Reconnaissance Series Report 46; U.S. Geological Survey, June 1968.

#### IV.

One of the protest issues addressed the underflow of 700 afa coming from Pahrump Valley to recharge Mesquite Valley. The concern was that with the tremendous growth that has occurred in Pahrump over the past 20 years, the 700 afa of underflow has decreased, thereby reducing the perennial yield of Mesquite Valley. The 700 afa represents the underflow of water from the carbonate-rock aquifer being recharged from the Spring Mountains and is difficult to capture by groundwater pumping within the Pahrump Valley. The State Engineer finds that the 700 afa estimated to recharge Mesquite Valley from Pahrump Valley will continue because it is unaffected by groundwater pumpage in the Pahrump Valley alluvial fill aquifer.

#### V.

The State Engineer recognized San Bernardino and Inyo Counties, California, as interested persons as defined by Nevada Administrative Code § 533.040. Neither county filed a protest to Applications 65456 and 66227, but because Mesquite Valley is located in portions of San Bernardino and Inyo Counties, which is where the majority of all pumping occurs, the State Engineer determined that it was prudent to hear testimony from both entities in regards to the potential impacts on the valley as a whole and to address the policies implemented by the counties that speak to groundwater withdrawals in Mesquite Valley by large water users.

John Goss and Greg James represented San Bernardino and Inyo Counties, respectively. During the testimony of both parties, it was determined that neither county was either in favor of or opposed to Vidler Water Company's project, but that they wanted the State Engineer to consider the impacts that the project might have on the groundwater basin as a whole, not just on the Nevada side of the state line.

Both parties indicated that neither county had policies that would restrict overlying uses of the groundwater within the California portion of Mesquite Valley. Inyo County has an ordinance in place that requires potential exporters of ground water to model the effects of the proposed extraction to the groundwater basin.

San Bernardino County is in the process of developing an ordinance that would require large users of ground water to develop management plans to monitor groundwater

withdrawals. The ordinance would not limit groundwater pumpage, however, if an overdraft condition developed, the plan itself would be the tool that regulated the amount of pumping.<sup>7</sup>

The State Engineer finds that San Bernardino and Inyo Counties are unable to regulate or restrict any in basin uses of ground water in their respective portions of Mesquite Valley. The State Engineer further finds that both agencies have concerns about the impacts that additional pumping would have on the economic welfare of the farmers in Mesquite Valley, the majority of whom are located on the California side of the valley. The State Engineer also has concerns about the welfare of Mesquite Valley and all valleys that are divided by the California – Nevada State Line, but he has not been empowered to develop regulations and administer water use in California.

It has been estimated that pumpage on the California side of the basin exceeds 8,000 afa.<sup>8</sup> This estimate is based on the number of acres irrigated at a duty of 5 acre-feet per acre. Considering the large amount of groundwater pumpage that has occurred on the California side of the valley during the last 45 years, it is not unreasonable to expect a lowering of the groundwater levels. The State Engineer finds the pumpage of underground water for irrigation purposes within the California portion of Mesquite Valley has contributed to the decline of water levels in Mesquite Valley.

## VI.

The State Engineer finds that Nevada Revised Statute § 533.370(4), which is specific to interbasin transfers, requires that he consider the following criteria:

- (a) Whether the applicant has justified the need to import the water from another basin;
- (b) If the state engineer determines that a plan for conservation of the water is advisable for the basin into which the water is to be imported, whether the applicant has demonstrated that such a plan has been adopted and is being effectively carried out;
- (c) Whether the proposed action is environmentally sound as it relates to the basin from which the water is exported;

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<sup>7</sup> Transcript, p. 25.

<sup>8</sup> Transcript, testimony by Thomas Buquo, Transcript pp. 551 and 635.

- (d) Whether the proposed action is an appropriate long term use which will not unduly limit the future growth and development in the basin from which the water is being exported; and
- (e) Any other factor the state engineer determines to be relevant.

## VII.

During the administrative hearing, Douglas Clemetson, Vice President of Primm South Real Estate Company, testified as to the need for water resources in Primm, Nevada. In Mr. Clementon's testimony, he indicated that he approached Vidler Water Company to act as agent to obtain water rights for use in Primm, Nevada. Mr. Clemetson also described the existing facilities being served from water rights held in the name of the Primadonna Corporation in Ivanpah Valley, Northern and Southern Parts.

Primadonna Corporation holds permits to appropriate groundwater that allow for a total of 751 afa of consumptive use, though with recharge credits are allowed to pump a maximum of 1,734 afa. Mr. Clemetson testified that it was his understanding that approximately 300 acre-feet of the 751 afa remains uncommitted. Based on the pumpage data submitted to the State Engineer for the years 1999, 2000 and 2001, an average of 834 afa has been pumped, under the Primadonna Corporation's permits.<sup>9</sup> For the calendar year 2001, the Primadonna Corporation reported the consumptive uses for all facilities, including the construction of the Reliant Energy Bighorn Generating Facility, at 463.96 afa,<sup>10</sup> which represents approximately 62% of the total consumptive use under the terms of the permits.

Further testimony by Mr. Clemetson described future developments. Some of the projects described by Mr. Clemetson included employee housing, the Reliant Power Generating facility, expansion of the existing mall, an industrial park, theme park and other amenities.<sup>11</sup> Water appropriations in Ivanpah Valley – Northern have exceeded the perennial yield, making it necessary for the State Engineer to curtail the issuance of any new appropriations not in the public's interest.<sup>12</sup> The State Engineer finds that evidence

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<sup>9</sup> Official records in the Office of the State Engineer.

<sup>10</sup> Whiskey Pete's Pumpage Inventory, official record in the office of the State Engineer.

<sup>11</sup> Transcript, testimony of Douglas Clemetson, Transcript pp. 262 - 290.

<sup>12</sup> State Engineer Ruling No. 4326, dated April 18, 1996.

and testimony presented justified the need to import water to Ivanpah Valley for existing and proposed uses.

### VIII.

Nevada Revised Statute § 533.370(4)(b) requires that a water conservation plan be implemented in the basin where the water is to be imported. Mr. Clemetson testified to the fact that Clark County requires a conservation plan for new and existing facilities and that such plans are in place and are being put into practice at Primm. The State Engineer finds that a conservation plan is in place and has demonstrated that the plan is being implemented for the existing facilities located in Ivanpah Valley.

NRS 533.470(4)(c) and (d) require the State Engineer to consider whether the proposed action is environmentally sound and would not unduly limit the future growth and development of the basin from which the water is being exported. The State Engineer finds that no evidence or testimony was presented as to a detrimental environmental impact to Mesquite Valley from the project. The future growth and development of Mesquite Valley will continue through the issuance of water rights for small commercial and industrial projects and through the conversion of existing irrigation water rights to new uses for larger projects, such as new subdivisions and resorts.

### IX.

To determine the water demand for existing and future growth in Mesquite Valley various data sources were used. One of the key elements to be determined was the projected population of Mesquite Valley. A population of 5,000 was used in the analysis of the water demand for the year 2020, this population represents the average of the population projections provided by the protestants and the Clark County Demographer, which were 4,351<sup>13</sup> and 5,500<sup>14</sup>, respectively.

The per capita water demand for existing uses in Mesquite Valley was determined by taking the domestic well use at 0.50 afa per domestic well<sup>15</sup> and dividing that by 2.53 persons per household.<sup>16</sup> This value came out to be approximately 180 gallons per day

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<sup>13</sup> Exhibit 36, Table 3-3, p. 35.

<sup>14</sup> Electronic Communication dated April 26, 2002, with the Clark County Demographer.

<sup>15</sup> Official records within the Office of the State Engineer, *Groundwater Pumpage Inventory Mesquite Valley (Sandy)*, 163, 2000.

<sup>16</sup> Electronic Communication dated May 10, 2002, with the Clark County Demographer.

(gpd) per capita. To verify this per capita consumption the Carson City Utilities Department was contacted. Tom Hoffert, Utilities Manager for Carson City Utilities, indicated that the per capita use in Carson City and Lyon and Douglas Counties has been estimated to be between 0.20 and 0.22 afa or 180 gpd and 200 gpd.<sup>17</sup> To be conservative a demand of 200 gpd was used in the analysis of future water demands by domestic wells in Mesquite Valley.

Existing water use by domestic wells within Mesquite Valley has been determined to be 352 afa for the year 2000, by the Division of Water Resources, Southern Nevada Branch Office.<sup>15</sup>

Joy Fiore presented testimony that there were 1,179 undeveloped parcels within Mesquite Valley.<sup>18</sup> Using the 1,179 undeveloped parcels with a per capita use of 200 gpd at 2.53 people per household the future demand for domestic use would be 672 afa.

Other factors considered in this analysis included the return flow from septic systems and irrigation applications. The factors used were 40 percent and 30 percent, for septic and irrigation return flows, respectively. The percentage of septic return flows is based on a United States Geological Survey report which reported that 200 gpd of domestic use returns to the groundwater system.<sup>19</sup> By taking a demand of 200 gpd per person multiplied by 2.53 persons per household corresponds to approximately 500 gpd per household. Forty percent of the domestic water used returns to the groundwater system as secondary recharge. Summing the existing and proposed domestic demand equals 1,024 afa, so 40 percent of the total demand equates to 410 afa of return flows from septic systems.

In this analysis of water demand, the State Engineer used a figure of 30 percent for secondary recharge from irrigation applications. This figure was derived by taking a consumptive use value of 3.5 acre-feet per acre at an application rate of 5.0 acre-feet per acre, which corresponds to the 30 percent return flow. The consumptive use value is based on the Alpine Decree, which uses a consumptive use value of 2.5 acre-feet per acre

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<sup>17</sup> Oral communication with Tom Hoffert, Carson Utilities, May 10, 2002.

<sup>18</sup> Transcript, testimony of Joy Fiore, p. 641 and Exhibit No. 36, p. 36.

<sup>19</sup> Seiler, Ralph L., U.S. Geological Survey Open-File Report 96-461, *Methods for Identifying Sources of Nitrogen Contamination of Groundwater in Valleys in Washoe County, Nevada*, p. 4., 1996

with an application rate of 4.0 acre-feet per acre.<sup>20</sup> In the southern townships, the State Engineer attributes the additional acre-foot of consumptive use to the longer growing season and higher temperatures on average. This value was checked by determining the moisture requirement for alfalfa, which is the primary crop grown in Mesquite Valley confirming the use of 3.5 acre-feet per acre.<sup>21</sup> In Mesquite Valley, the State Engineer has issued permits and certificates totaling 1,064 afa for irrigation purposes.<sup>22</sup> Based on a return of 30 percent for secondary recharge, and a maximum usage of 1,064 afa, there would be a total of 319 afa returned to the groundwater system from irrigation.

Based on the above factors, the following values were used in determining the safe yield<sup>23</sup> of Mesquite Valley:

Perennial Yield	2,200 afa
Secondary recharge from septic systems	410 afa
Secondary recharge from irrigation	<u>319 afa</u>
<b>Total</b>	<b>2,929 afa</b>

The following figures represent the existing demands and future domestic demands on the groundwater system:

Existing domestic well use	352 afa
Existing permitted and certificated water rights	1,490 afa <sup>22</sup>
Future domestic demand	<u>672 afa</u>
<b>Total</b>	<b>2,514 afa</b>

Based on the above analysis, the State Engineer finds that there are 415 afa available for appropriation, after taking into account future domestic demands within the basin, before the safe yield of Mesquite Valley is exceeded.

X.

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<sup>20</sup> Final Decree, U.S. v. Alpine Land and Reservoir Co., Civil No. D-183 (D. Nev. 1980).

<sup>21</sup> Ames Irrigation Handbook, W.R. Ames Company, Table III - 1, p. CR-4, 1967.

<sup>22</sup> Special Hydrologic Basin Abstract, Water Rights Database, Basin 163, March 27, 2002, official records the Office of the State Engineer.

<sup>23</sup> Safe Yield is defined as the rate at which water can be withdrawn from supply, source, or an aquifer over a period of years without causing eventual depletion or contamination of the supply, *Waters Dictionary, A Compilation of Technical Water, Water Quality, Environmental, and Water-Related Terms with Related Appendices*, Seventh Edition, June 1996, Nevada Division of Water Planning.

The committed groundwater resources in the form of permits and certificates issued to appropriate underground water from the Mesquite Valley Groundwater Basin is currently 1,490 afa.<sup>22</sup> The State Engineer finds that existing groundwater rights in the Mesquite (Sandy) Valley Groundwater Basin do not exceed the perennial yield of the groundwater basin.

#### XI.

Groundwater level data was provided by the protestants (Exhibit 36), which indicated that the greatest water level decline recorded in the Mesquite Valley Hydrographic Basin has been 33.6 feet (1955 to 2000). Other cases show that the water levels have risen from two to eight feet (1979 to 2001). The wells that show the greatest water level declines are located on the California side of the basin and in a heavily irrigated area and the wells indicating an increase in elevation are located in Nevada, northwest of the proposed Vidler production well. The data as presented did not indicate the month of the measurements or if the well was being or had been recently pumped so it is not possible to determine if these changes in water level are due to seasonal fluctuations in the water table, a long-term trend or if the well had been pumped recently.

During the administrative hearing, the applicants were questioned about the monitoring of domestic wells within Mesquite Valley. Gary Small of HydroSystems, Inc., representing Vidler Water Company indicated that very few well owners allowed them to sample and monitor water levels. During the 72-hour pump test, HydroSystems, Inc., measured water levels at three domestic wells, all at a distance of approximately 9,000 feet from the test well<sup>24</sup>, none of the wells showed any response to the pumping.<sup>25</sup>

During the course of Mr. Small's testimony, he was asked if any of the hydraulic characteristics, such as the transmissivity and storativity, of the carbonate-rock aquifer had been determined. His response was that no they did not because the data from the pump test did not lend itself to that type of analysis, because the drawdown curve flattened out too rapidly.<sup>26</sup> By not determining these factors, they did not attempt to

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<sup>24</sup> Exhibit 13, Figure 2.

<sup>25</sup> Exhibit 13, Table 5, Summary of Water Level Data for Domestic and Source Wells.

<sup>26</sup> Transcript, testimony of Gary Small, Transcript pp. 128 - 163.

determine the long-term impacts on water levels within the vicinity of the Vidler production well.

The protestants' expert witness, Thomas Buqo, used the pump test data developed by the applicant and performed a hypothetical pumping scenario using the standard Cooper-Jacob Method for determining drawdown. In using the Cooper-Jacob Method, the analysis predicted a drawdown of 9 to 34 feet at a point 1000 feet from the pumping well over 1,000 days of pumping. During Mr. Buqo's testimony, no values for the transmissivity or the discharge rate were given. He did indicate that he used a range of storativity values between 0.1 to  $1 \times 10^{-8}$  in his analysis. Mr. Buqo further determined that at a distance of 12,000 feet from the production well, drawdowns of between 2 and 26 feet would occur.

Attempting to duplicate the results of the analysis for the 1,000 days of pumping and same storativity values, the State Engineer determined the transmissivity to be 11,000 square feet per day and at a diversion rate equivalent to 2,000 afa, the drawdowns ranged from 10 feet to 37 feet at a distance of 1,000 feet and between 2 feet and 29 feet at 12,000 feet from the production well, which are not exactly the same as Mr. Buqo's results but are reasonably close. Performing the same analysis as above and reducing the pumping rate to 400 afa the State Engineer determined the drawdowns ranged from 2 feet to 8 feet at 1,000 feet and between zero and 6 feet at 12,000 feet away from the production well. Knowing that the Cooper-Jacob Method assumes that the aquifer is homogeneous, that no recharge is occurring during the test and that no boundary conditions are present, these results represent relative values of drawdown, not absolute values. The closest permitted water right, Permit 17741, Certificate 5928, is located approximately 9,000 feet from the proposed well under Application 66227. The State Engineer finds that the groundwater system within Mesquite Valley is much more complicated than assumed in the Cooper-Jacob Method for determining drawdowns from pumping wells, but based on the incomplete data collected during the pump test and the drawdowns predicted in the above analyses there is no conclusive evidence as to any potential impacts to wells within the general area of the application. However, limiting the withdrawal to 400 afa and storativity of  $1 \times 10^{-8}$ , resulted in a worst-case scenario that had negligible impact on existing wells.

## CONCLUSIONS

### I.

The State Engineer has jurisdiction over the parties and the subject matter of this action and determination.<sup>27</sup>

### II.

The State Engineer is prohibited by law from granting an application to appropriate or change the public waters where:<sup>28</sup>

- 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.

Applications 65456 and 66227 were filed to export underground water from the Mesquite Valley to the Invanpah Valley, more specifically to Primm, Nevada. The State Engineer concludes that Applications 65456 and 66227 as filed constitute an interbasin transfer of water from an underground source and must meet the criteria established under NRS § 533.370(4).

### IV.

Primm, Nevada, is continuing to grow and with the anticipated expansion of the retail mall, industrial park, power plant and other amenities the applicant has demonstrated a need for additional water. The State Engineer concludes that the applicant has shown a need for an increased water supply and has meet the standards as set forth in NRS § 533.370(4).

### V.

Data from a 72-hour pump test performed by the applicant attempted to prove that the alluvial and carbonate aquifers of the Mesquite groundwater basin were not hydraulically connected, even though the source of the recharge water was the same, and thus, would not impact existing water rights. The applicant monitored the effect of the 72-hour pump test on three domestic wells within 9,000 feet of the proposed point of diversion under Application 66227. Testimony presented by the applicant stated that it

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<sup>27</sup> NRS chapters 533 & 534.

<sup>28</sup> NRS § 533.370(3).

had requested access to other domestic wells within the area, but were denied permission by the owners. The water level measurements of these three domestic wells showed no water level declines, except for those times when it was noted that the domestic well being monitored had been or was being pumped at the time of the measurement. The State Engineer concludes that the applicant made an effort to sample additional wells in the vicinity of their proposed diversion but was denied the opportunity to do so. The State Engineer further concludes that the limited duration of the pump test and the inability to better define the aquifer characteristics was not sufficient to assess the impacts on domestic wells at a distance of 9,000 feet away and are inconclusive as to any potential impacts from sustained pumping over an extended period of time.

## VI.

The protestants, through their consultant, presented the result of a hypothetical pumping scenario using the standard Cooper-Jacob Method for determining drawdowns. The analysis predicted a drawdown of between 9 and 34 feet and between 2 and 26 feet at a distance of 1,000 feet and 12,000 feet from the well, respectively, for a range of storativity values between 0.1 and  $1 \times 10^{-8}$  for 1,000 days of pumping. Performing the same analysis but with a reduced rate of discharge the State Engineer determined that in the worst case scenario, drawdowns would range from 2 feet to 8 feet at 1,000 feet and between zero and 6 feet at 12,000 feet away from the production well.

Nevada Revised Statutes provides that the right of each appropriator of ground water must allow for a reasonable lowering of the static water level at the appropriator's point of diversion.<sup>29</sup> Nevada law does not prevent the granting of permits to appropriate ground water to applicants later in time on the grounds that the diversions under the proposed later appropriations may cause the water-level to be lowered at the point of diversion of a prior appropriator, so long as the water rights of holders of existing appropriations can be satisfied.<sup>30</sup> The closest permitted well is approximately 9,000 feet from the proposed well under Application 66227, and is considered to be at the limit of its influence. The State Engineer concludes that the pumping of 400 afa will not adversely impact existing water rights within Mesquite Valley.

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<sup>29</sup> NRS § 534.110(4).

<sup>30</sup> NRS § 534.110(5).

## VII.

The State Engineer has determined that the nearest domestic well is located approximately 6,000 feet from the proposed well under Application 66227. In the worst case scenario, based on the pumping of 400 afa, there is a negligible impact on the water levels within the immediate area of influence of the proposed point of diversion. The State Engineer concludes that protectible interest in existing domestic wells will be safe guarded and that any permit issued under this application will set forth the terms and conditions for mitigation, if needed, of any domestic wells impacted from the pumping of the proposed well under Application 66227, at the cost of the applicant or its successor in interest.

## VIII.

Upon review of the limited water level data provided in Exhibit 36, there was no sign of a severe lowering of the water table, considering the large agricultural uses on the California side of the basin, and in some instances showed an increase in water levels on the Nevada side of the basin. The State Engineer has issued permits and certificates totaling 1,490 afa, of which 1,064 afa are for irrigation purposes. In the determination of whether there is unappropriated water, the State Engineer includes any return to the ground water system from individual septic systems and irrigation uses, which has been estimated to be 40 percent and 30 percent, respectively. The perennial yield of Mesquite Valley as determined by Rush and Glancy, is 2,200 afa. During the administrative hearing there was testimony presented, by both parties, that with new data collection methods and analytical techniques the recharge to Mesquite Valley may be greater than originally determined. Based on the evidence and testimony and the records available in his office, the State Engineer concludes that there is a limited amount of unappropriated water at the source, which included taking into consideration the future needs of the undeveloped parcels in Mesquite Valley.

RULING

Application 65456 will be approved in the amount of 2.0 cubic feet per second, not to exceed 415 acre-feet annually and subject to:

- Submittal of the statutory permit fee and
- Existing rights.

Application 66227 will be subject to:

- The submittal of the statutory permit fee;
- Existing rights;
- Submittal of a monitoring plan approved by the State Engineer prior to the diversion of any water permitted under this application; and
- If impacts to any existing domestic wells and water rights are demonstrated on the Nevada side of Mesquite Valley, the applicant or any assignee will be required to mitigate the same.

With the issuance of Permit 66227, Permit 65456 will be deemed totally abrogated. The State Engineer reserves the right to evaluate and amend the requirements for monitoring, as he deems necessary to protect the health of the water resources of Mesquite Valley, Nevada.

Any water under this permit that is cancelled, withdrawn or otherwise not placed to beneficial use shall revert back to the groundwater source within Mesquite Valley.

Respectfully Submitted,



HUGH RICCI, P.E.  
State Engineer

HR/KH/jm

Dated this 12<sup>th</sup> day of  
June, 2002.