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State of Utah

DEPARTMENT OF NATURAL RESOURCES

Division of Water Rights

MICHAEL R. STYLER KENT L. JONES
Executive Director *State Engineer/Division Director*

ORDER OF THE STATE ENGINEER

For Permanent Change Application Number 09-2349 (a37400)

AUG 08 2013

Permanent Change Application Number 09-2349 (a37400), in the name of San Juan Spanish Valley Special Service District (SJSVSSD), was filed on April 27, 2011, to change the points of diversion, place of use, nature of use, and storage of 5,000 acre-feet (af) of water as evidenced by Water Right Number 09-2349. Heretofore, the water was to have been diverted from the following points located: (1) Surface - South 1200 feet and West 1720 feet from the E $\frac{1}{4}$ Corner of Section 33, T40S, R21E, SLB&M (San Juan River); (2) Surface - South 700 feet and East 400 feet from the NW Corner of Section 36, T40S, R21E, SLB&M (San Juan River); (3) Surface - South 1500 feet and West 300 feet from the N $\frac{1}{4}$ Corner of Section 27, T40S, R22E, SLB&M (San Juan River); and (4) Surface - North 2685 feet and West 3485 feet from the NW Corner of Section 30, T40S, R22E, SLB&M (Cottonwood Wash). The water was to have been stored in a reservoir from January 1 to December 31, having a capacity of 25,000 acre-feet, a dam height of 80 feet, and inundating 1,400 acres in all or portion(s) of Sections 13, 19, and 30, T38S, R24E, SLB&M. The water was to have been stored and used for recreation purposes (reservoir evaporation, fishing, boating, water sports and fish culture).

Hereafter, it is proposed to divert 5,000 acre-feet of water from points of diversion changed to:

- (1) Well - South 1000 feet and East 1300 feet from the NW Corner of Section 36, T26S, R22E;
- (2) Well - North 1200 feet and East 400 feet from the SW Corner of Section 31, T26S, R23E;
- (3) Well - North 200 feet and East 800 feet from the SW Corner of Section 31, T26S, R23E;
- (4) Well - North 200 feet and East 2100 feet from the SW Corner of Section 31, T26S, R23E;
- (5) Well - North 1300 feet and West 1050 feet from the SE Corner of Section 25, T27S, R22E;
- (6) Well - North 400 feet and East 200 feet from the SW Corner of Section 25, T27S, R22E;
- (7) Well - North 1217 feet and West 85 feet from the SE Corner of Section 26, T27S, R22E, (existing 10-inch well, 300 feet deep), drilled under water right number 05-2988;
- (8) Well - South 1550 feet and West 1400 feet from the NE Corner of Section 35, T27S, R22E;
- (9) Well - North 500 feet and East 1300 feet from the SW Corner of Section 35, T27S, R22E;
- (10) Well - South 500 feet and West 2400 feet from the NE Corner of Section 6, T27S, R23E;
- (11) Well - South 950 feet and West 2300 feet from the NE Corner of Section 6, T27S, R23E;
- (12) Well - South 2000 feet and East 1700 feet from the NW Corner of Section 6, T27S, R23E;
- (13) Well - North 2300 feet and West 600 feet from the SE Corner of Section 7, T27S, R23E;
- (14) Well - South 1100 feet and West 1500 feet from the NE Corner of Section 8, T27S, R23E;
- (15) Well - South 1200 feet and West 200 feet from the NE Corner of Section 8, T27S, R23E;
- (16) Well - South 1300 feet and East 1100 feet from the NW Corner of Section 8, T27S, R23E;
- (17) Well - South 1400 feet and East 1600 feet from the NW Corner of Section 8, T27S, R23E;
- (18) Well - South 1700 feet and West 2500 feet from the NE Corner of Section 8, T27S, R23E;
- (19) Well - North 2500 feet and West 2200 feet from the SE Corner of Section 8, T27S, R23E;
- (20) Well - North 300 feet and East 1200 feet from the SW Corner of Section 8, T27S, R23E;

(21) Well - North 1700 feet and West 2150 feet from the SE Corner of Section 2, T28S, R22E;
(22) Well - North 2400 feet and West 1100 feet from the SE Corner of Section 2, T28S, R22E;
(23) Well - South 2150 feet and West 400 feet from the NE Corner of Section 2, T28S, R22E;
(24) Surface - North 250 feet and East 810 feet from the W¼ Corner of Section 2, T26S, R21E,
(Colorado River); all locations in SLB&M; all proposed wells 12-inch, 200 – 2,500 feet deep.
The water is to be used for municipal purposes within the service area of San Juan Spanish
Valley Special Service District. Heretofore storage is removed from the application.

Notice of the application was published in The Times-Independent on May 26 and June 2, 2011,
and protests were received from Grand Water & Sewer Service Agency (GWSSA), City of
Moab, Bureau of Land Management, Division of Wildlife Resources, Bridger Jack Mesa
Property Owners Association, Living Rivers, Nature Conservancy, William E. Love, William
and Judy Smedley, Gary R. and Loretta B. Smith, Marlene R. Huckabay, Ivan L. and Betty B.
Johnson, Kelly and Julie Green, Michael K. and Mary L. Suarez, William and Carolyn Webb,
Grant and Gayle Hansen, Sandra Davey (late protest), Scott Lyon (late protest), Canyonlands
Watershed Council (late protest), and Alan and Laura Margolies (late protest). Hearings were
held on May 9, 2012 and August 8, 2012.

The applicant stated that this application is a segregated portion of Water Right Number 09-438
and represents a portion of that application approved to be used for a 25,000 acre-feet reservoir.
The applicant desires to divert 5,000 acre-feet based on that application and to deplete 2,503
acre-feet of the diversion. The District was created by San Juan County Commission to provide
a safe and reliable supply of water and is an entity that can charge fees, levy taxes, and apply for
loans and grants. The District is also a public water supplier. The applicant believes that the
recharge to Spanish Valley is about 17,330 acre-feet, including 3,300 acre-feet from Ken's Lake.
The estimated ground water withdrawals, based on current water rights, will be about 11,000
acre-feet.

The applicant included 23 well sites in this application to provide flexibility for future
development and acknowledges that some of these locations may not be developed. The wells
will target the Glen Canyon Group bedrock aquifer and will not seek water directly from the
unconsolidated valley fill. It is believed that the distance from existing wells and geologic
barriers will reduce the potential for interference with other wells. Additionally, ground water
monitoring by USGS of wells in the area does not indicate any current decline of water levels.

Many of the protestants to the application referred to the statutory criteria for approval or
rejection of an application contained in Utah Code Ann. §73-3-8(1), provided their views of the
approval criteria, and argued the application should not be approved. The applicant provided
testimony at the hearing arguing that the application meets all criteria for approval. The
protestants and applicant submitted additional written information after the hearing.

Action on an application to appropriate by the State Engineer is governed by the provisions of
Utah Code Ann. §73-3-8(1), which states:

- (1) (a)** *It shall be the duty of the State Engineer to approve an application if:*
- (i) there is unappropriated water in the proposed source;*
 - (ii) the proposed use will not impair existing rights or interfere with the more beneficial use of the water;*
 - (iii) the proposed plan is physically and economically feasible, unless the application is filed by the United States Bureau of Reclamation, and would not prove detrimental to the public welfare;*
 - (iv) the applicant has the financial ability to complete the proposed works; and*
 - (v) the application was filed in good faith and not for purposes of speculation or monopoly.*
- (b)** *(i) If the State Engineer, because of information in the state engineer's possession obtained either by the State Engineer's own investigation or otherwise, has reason to believe that an application to appropriate water will interfere with its more beneficial use for irrigation, domestic or culinary, stock watering, power or mining development, or manufacturing, or will unreasonably affect public recreation or the natural stream environment, or will prove detrimental to the public welfare, it is the State Engineer's duty to withhold approval or rejection of the application until the State Engineer has investigated the matter.*
- (ii) If an application does not meet the requirements of this section, it shall be rejected.*

The State Engineer has reviewed the application, the information provided in the various submittals prepared in support and in protest of the proposed project, the information provided at the hearing, the written testimony submitted after the hearing, and has conducted additional investigation as directed by statute. The standard by which the State Engineer evaluates applications seeking approval is the "reason to believe standard" outlined in *Searle v. Milburn Irrigation Co.*, 2006 UT 16, 133 P.3d 382.

All of these issues along with the State Engineer's analysis are summarized and discussed in the following subsections listed by the individual criterion cited in §73-3-8(1) UCA.

§73-3-8 (1)(a)(i) Unappropriated Water in the Proposed Source

Several of the protests assert that there is insufficient unappropriated water in the proposed source, which is groundwater located within the Colorado River Basin specifically within the Moab-Spanish Valley and Bridger Jack Mesa areas. Protestants contend that the Colorado River Basin is over-appropriated and no new appropriations should be made. The future availability of water was also questioned. Protestants cite the possible negative effects of potential greater climate variability.

Protestants are concerned that appropriation of such a large volume of water would exceed the recharge capacity of the local aquifers. This would result in mining of groundwater resources causing an overall decline in the regional groundwater table.

Colorado River Allocation and Climate Variability

The Colorado River is managed and operated under compacts, Federal laws, court decisions and decrees, contracts, and regulatory guidelines collectively known as the "Law of the River." When the Colorado River Compact of 1922 (Compact) was negotiated, the river's average annual flow from 1896 to 1921 at Lee Ferry was thought to be about 17 million acre-feet. Recent evaluations show the river's naturalized flow at Lee Ferry¹ to be about 15.0 million acre-feet over the period 1906-2008.² Utah may deplete 23% of the flow allocated to the Upper Colorado River Basin States. The Compact apportions to the Upper Basin States 7.5 million acre-feet of depletion per year provided that an average of 7.5 million acre-feet per year is available to the Lower Colorado River Basin States, as measured at Lee Ferry, and treaty obligations to Mexico are satisfied. Considering current hydrology, Mexican treaty obligations, and other law of the river issues, the Upper Basin may be left with a dependable supply of approximately 6.0 million acre-feet of which Utah's share of the river is currently estimated to be about 1.4 million acre-feet per year. To date, the Upper Basin States have met all of their downstream obligations under the Compact and Law of the River.

Stream flow estimates for the Colorado River Basin, reconstructed from tree ring records spanning hundreds of years, appear to show greater variability in the hydrologic cycle than what has been documented in the historical record of flow measurements.³ The reconstructed flow record appears to show periods of extreme drought sustained over longer periods of time than any drought documented since the late nineteenth century.

Estimates of long term (1568-1961) mean flow at Lee Ferry, based on the stream flow reconstructions, range from 13.0 million acre-feet to 14.7 million acre-feet. The two most recent reconstructions, Woodhouse et al., published in 2006, (1490-1997) and Meko et al., published in 2007 (762-2005) both arrive at 14.7 million acre-feet as the long term mean flow.⁴ Climate projection models appear to predict a wide range of future climate conditions. Predictions from current models range from a slight increase in Colorado River Basin precipitation to a greater than 30% decrease in annual runoff.⁵

¹ Also sometimes referred to as Lees Ferry or Lee's Ferry. Data for the stream gage at this location from 1921 to present can be obtained from the USGS (the gage is named USGS 09380000 Colorado River at Lees Ferry, AZ).

² U.S. Department of the Interior, Bureau of Reclamation. 2011. *Interim Report No. 1, Colorado River Basin Water Supply and Demand Study, Status Report*. p. SR-2

On the Web at: <http://www.usbr.gov/lc/region/programs/crbstudy/Report1/StatusRpt.pdf>

³ Meko, D.M., C.A. Woodhouse, C.A. Baisan, T. Knight, J.J. Lukas, M.K. Hughes, and M.W. Salzer. 2007. *Medieval Drought in the Upper Colorado River Basin*. *Geophysical Research Letters* 2007 34(5), L10705, doi: 10.1029/2007GL029988.

⁴ Western Water Assessment, *Colorado River Streamflow, A Paleo Perspective*, Comparison of the Lees Ferry Reconstructions: Online, <http://wwa.colorado.edu/treeflow/lees/difference.html>, accessed September 2012.

⁵ Bureau of Reclamation. 2011. *SECURE Water Act, Section 9503(c) – Reclamation Climate Change and Water 2011*. p. 25-36; see also: National Research Council. 2007. *Colorado River Basin Water Management – Evaluating and Adjusting to Hydroclimate Variability*. The National Academies Press. p. 85-91

Sub-Section Conclusions – Colorado River Allocation and Climate Variability

Water right laws in Utah were written specifically to address shortages in water supply and establish a priority system to protect senior rights during times of shortage. In times of physical water shortage, water rights in Utah are regulated according to the Prior Appropriation Doctrine. As stated in statute, “...*the one first in time shall be first in rights.*” §73-3-1(5) Utah Code Ann. The Prior Appropriation Doctrine is the statutory directive used by the State Engineer to address variability in water supply whether it is a seasonal shortage, annual shortage, potential Compact shortage or the potential for reduced water supply due to greater climate variability.

The underlying water right associated with this change application is an approved appropriation that has not yet been developed. The diversion of water sought under this change application does not constitute a new appropriation of water within the regional Colorado River Basin system since the appropriation being changed is from a tributary to the Colorado River. It does constitute a new localized diversion demand, both from ground water in the Moab-Spanish Valley and Bridger Jack Mesa areas and upstream on the Colorado River, which are all considered part of that Basin.

Utah has and will continue to meet its Compact obligations on the Colorado River. The approval of this change application does not guarantee the applicant water in the future except as may be available to the applicant under the respective priority of the underlying application. Should curtailment under the Compact be necessary, this application, like all others in the Colorado River Drainage in Utah, is subject to priority distribution under the direction of the State Engineer. Even though under curtailment conditions water rights will be administered based on priority, the potential for rights to be curtailed is not a reason to deny this application.

There are few water rights in Utah with points of diversion located directly on the main stem of the Colorado River particularly downstream from the applicant's proposed point of diversion. Average annual flow in the Colorado River at Moab over the past 20 years is approximately 6,600 cubic feet per second or 4.77 million acre-feet per year. To supply 5,000 acre-feet per year at a constant rate would require a diversion rate of 6.9 cubic feet per second. It is the opinion of the State Engineer that there is unappropriated water in the Colorado River at the proposed point of diversion to serve this application. Issues related to access to the proposed point of diversion are the responsibility of the applicant to resolve.

The State of Utah recognized some time ago the highly variable nature of flow in the Colorado River and has set reasonable expectations as to the total volume of water it may be able to develop. “Subtracting the compact and treaty guaranteed annual apportionments to the Lower Basin of 7.5 million acre-feet and Mexico of 1.5 million acre-feet, and recognizing the impacts of sustained drought periods, the Upper Basin is left with an estimated dependable supply of about 6.0 million acre-feet. As a result, Utah's allocated share is reduced from 1.7 million acre-

feet to approximately 1.4 million acre-feet (Anderson, 2002).”⁶ The State Engineer believes Utah will be able to develop its 23% share of at least 6.0 million acre-feet which is approximately 1.4 million acre-feet. It is estimated that Utah water users currently deplete approximately 1.0 million acre-feet annually, which represents an underutilization of Utah’s share of the Colorado River allocation.

The Bureau of Reclamation completed the “*Colorado River Basin Water Supply and Demand Study*” in December of 2012. The purpose of the study “was to define current and future imbalances in water supply and demand in the Basin...over the next 50 years (through 2060) and to develop and analyze adaptation and mitigation strategies to resolve those imbalances.”⁷ The study did not result in a decision on how these imbalances should be met but provides a technical foundation and a range of solutions that may be considered by water managers throughout the Basin. The study recognized current shortages and imbalances today in that the Upper Basin deals regularly with shortages based on the availability of annual streamflow and that the Lower Division States have a demand for water that is currently above their 7.5 million acre-feet basic apportionment; and it estimates that 60% of the increased demand from 2015 to 2060 will be from the Lower Basin. The study estimates that even under a rapid growth scenario Utah’s demand would grow by only 300,000 acre-feet by 2060.⁸ If the study is correct and Utah continues to grow rapidly over the next 50 years, Utah’s total estimated usage would be 1.3 million acre-feet in 2060, far short of the 1.7 million acre-feet allocated by the Compact and still 100,000 acre-feet short of the 1.4 million acre-feet the State Engineer believes Utah can ultimately utilize. The study indicates that targeted investment in water conservation, reuse and augmentation can improve the reliability and sustainability of the Colorado River system to meet current and future water needs through 2060 and beyond.

Groundwater Resources in Moab-Spanish Valley

A number of hydro-geologic studies have been completed for the Moab-Spanish Valley area. The most recent study was completed in 2007 by the Utah Geologic Survey, Special Study 120. Much of the following information is adopted from that study.

The Moab-Spanish valley is approximately 14 miles long and averages 1.25 miles wide with an area of about 18 square miles and has a northwest-southeast trending axis. The entire drainage basin is 144 square-miles and encompasses the western flank of the La Sal Mountains. Mill and Pack creeks flow west and northwest from the La Sal Mountains into the valley. The Colorado River cuts through the northwestern most end of the valley. The valley is part of a regionally extensive, collapsed salt anticline and is underlain by the Pennsylvanian Paradox Formation. High-angle normal fault systems that developed as a result of the collapse of the salt diaper are

⁶ Anderson, D.L., *Utah’s Perspective, The Colorado River*. Utah Division of Water Resources, 2nd Edition, May 2002, p. 5

⁷ *Colorado River Basin Water Supply and Demand Study*, U.S. Department of the Interior, Bureau of Reclamation, December 2012, p. ES-2

⁸ *Colorado River Basin Water Supply and Demand Study, Technical Report C – Water Demand Assessment*, U.S. Department of the Interior, Bureau of Reclamation, December 2012, p. C-26

present along both margins of the valley. The Glen Canyon Group of sandstones (Wingate, Kayenta and Navajo) directly underlies unconsolidated valley fill beneath the southeast end of the valley and pinches out near the northwest center of the valley. The Glen Canyon Group is assumed to be more than 1,300 feet thick beneath the southeastern end of the valley. Valley fill in the northwestern end of the valley is approximately 400 feet thick and rests directly on the insoluble cap rock of the Paradox Formation. Valley fill thins to approximately 150 feet toward the southeastern end of the valley.

Groundwater in the Moab-Spanish Valley originates from one of two aquifer systems. The lower bedrock system consists of the Glen Canyon Group of sandstones (Wingate, Kayenta and Navajo) and is separated into two structural compartments by the Moab fault which lies directly beneath the valley floor. Maximum offset across the Moab fault beneath the valley is estimated at 1000 feet. The Navajo Sandstone is the shallowest and most permeable formation and the target for most bedrock wells drilled in the valley. Most of the public water supply is from the Glen Canyon Group aquifer. Estimated transmissivity values for the Navajo range from 0, where it pinches out in the east, to almost 700 square feet per day in the southwest where the sandstone is relatively unfractured and up to 6,000 square feet per day in areas where it is highly fractured. The Glen Canyon aquifer generally yields groundwater of Class IA Pristine quality with TDS concentrations predominantly below 500 mg/L.

The upper aquifer system is comprised of unconsolidated valley fill consisting primarily of stream alluvium deposits of sand and gravel. The average thickness of saturated sediments is about 70 feet. The average transmissivity for the valley fill aquifer is approximately 10,000 square feet per day with an estimated storage volume of 200,000 acre-feet of recoverable water. The valley fill aquifer is now primarily used for the domestic requirements of individual homes scattered around the valley and for agricultural purposes. Groundwater in the valley fill aquifer is classified as 13% Class IA Pristine quality and 87% Class II Drinking Water quality.

Primary recharge areas for these aquifers include the valley floor and surrounding bedrock upland exposures of the Glen Canyon Group. Recharge occurs primarily through infiltration of precipitation and stream flows. Flow occurs predominately through fractures in the rock. Snow accumulation during winter months in the La Sal Mountains provides the greatest source of this recharge. Ken's Lake provides a significant artificial recharge source for the valley fill aquifer. The Glen Canyon aquifer also provides significant subsurface recharge to the valley fill aquifer. Discharge occurs as outflow to the Colorado River, spring discharge within the valley, evapotranspiration by phreatophytes and hydrophytes and consumptive use of groundwater for irrigation, municipal, domestic and livestock.

Previous estimates of total groundwater recharge to these aquifers range between 13,000 and 17,000 acre-feet per year. These estimates were arrived at by calculating discharge to the Colorado River, evapotranspiration and discharge to wells and springs and then making the assumption that recharge to the valley equaled the sum of the calculated discharge. Subsequent studies have questioned some of the assumptions used in calculating the discharge specifically the estimated saturated thicknesses used in the Darcy calculations. Estimates reported in the

Administrative Report 2012, "*Review of the Hydrogeology of the Spanish Valley Area, and the Effects on Water Levels from Proposed Groundwater Withdrawals at Bureau of Land Management Water Right Sites*", prepared by the U.S. Geological Survey for groundwater discharge to the Colorado River from Moab-Spanish Valley, range between 110 and 9,500 acre feet per year.

A review of water right records compared with aerial coverage showing irrigation use and reported domestic and municipal uses yield an estimate of between 3,900 and 5,700 acre-feet per year of actual depletions from groundwater sources.

Two major public water supply systems exist in the valley, Moab City and Grand Water and Sewer Service Agency (GWSSA). Moab City has perfected or approved water rights, many of which are unevaluated, which may yield a maximum total allowable depletion of approximately 8,800 acre-feet from groundwater sources and GWSSA has approved water rights totaling approximately 4,700 acre-feet of allowable depletion from groundwater sources. The most recent 3 year reported water use average shows Moab City diverting 2,334 acre-feet and GWSSA diverting 910 acre-feet for a total of 3,244 acre-feet diverted with some portion of this volume returning to the hydrologic system via waste water discharge from the treatment plant.

There are approximately 900 acres of irrigation in the valley with an estimated diversion of 5,400 acre-feet and an estimated depletion of 2,800 acre-feet per year. The majority of irrigation in the valley is from surface sources, Mill Creek and Pack Creek, with associated storage use from Ken's Lake Reservoir. An estimated 25% of irrigation is from underground sources which would result in a depletion of around 700 acre-feet per year. Additional other uses from numerous small water right filings in the valley have been estimated at around 400 acre-feet per year of depletion from groundwater sources. The valley is currently open to new small appropriations and it is assumed that additional development will continue to occur under these small applications.

Groundwater Resources on Bridger Jack Mesa

Geology in the Bridger Jack Mesa area is significantly different than Moab-Spanish Valley proper. A review of well logs drilled on the mesa shows very little soil overburden. Borings encounter the Morrison Formation at near surface depths followed by the Entrada Sandstone Formation which is underlain by the formations of the Glen Canyon Group namely the Navajo, Wingate and Kayenta Sandstones. It appears that most wells are being completed in the Navajo Sandstone at depths of between 400 and 700 feet below surface.

Sub-Section Conclusions - Ground Water Resources

Statutes related to groundwater development direct the State Engineer to develop plans that limit groundwater withdrawals to safe yield. Safe yield is defined as the amount of groundwater that can be withdrawn from an aquifer without exceeding the long-term recharge of the basin or unreasonably affecting the basin's physical and chemical integrity. Although the Moab-Spanish

Valley is heavily developed with a number of wells tapping both the Glen Canyon and Valley Fill aquifers, the studies reviewed by the State Engineer for this application generally report a substantial discharge of groundwater to the Colorado River. While there are occasional reports of localized interference issues with individual wells located in the valley, the State Engineer is unaware of any studies that show an overall decline in the regional groundwater table.

On paper, the total volume of water rights approved or perfected for the Moab-Spanish Valley area is over 19,000 acre-feet of depletions from groundwater sources. However, current estimates show less than 25% of the approved depletion is in use. It is assumed that many of these rights have been abandoned or reduced for various reasons. Additionally, the development trend in the valley is such that agricultural acreage has been and continues to be transitioned to municipal development. The current Colorado River Policy on water appropriation adopted by the State Engineer on March 7, 1990 and revised February 25, 2009, prohibits new large filings within the Colorado River Basin. This limits additional development in the valley to existing approved rights or new small domestic filings. It is anticipated that new development will occur primarily under the existing municipal rights and on new small domestic filings. It is likely that additional restrictions to new small appropriations will occur in the future as municipalities are able to extend services to more and more valley residents.

The current status and policy of the State Engineer is that the Moab/Spanish Valley is open to new appropriations and the State Engineer is of the opinion that there remains a limited volume of water available for appropriation. The State Engineer does not believe that current withdrawals from these aquifers have exceeded the safe yield of the aquifers.

Very little development has occurred to date on Bridger Jack Mesa. Given the very low levels of current development, the State Engineer is of the opinion that the safe yield of the aquifer has not been exceeded in this area. However, based on a review of logs of wells drilled on the mesa there appears to be a much more limited opportunity for water development in this area.

The State Engineer does not have sufficient information, either from the applicant or from the studies reviewed to date, to determine whether the development of an additional 5,000 acre-feet of water from the aquifers in Moab-Spanish Valley or on Bridger Jack Mesa would exceed the safe yield of the target aquifers. In order for full development of this application to occur, a much more rigorous hydrologic study must be completed to determine the availability of additional water sought for development.

However, the State Engineer is of the opinion that San Juan County should have the opportunity to develop the groundwater resources in its portion of the valley and on the mesa in an orderly manner. The State Engineer believes there is some volume of water available for development by the applicant that will not exceed the safe yield of the target aquifers even with the future full development of the existing approved municipal uses for Moab City and Grand County. The manner in which the State Engineer has dealt with this uncertainty in water supply in past decisions for this valley has been to limit the approved volume of water that would provide for some level of development and subsequently require the applicant to establish a monitoring plan

that would detect any negative effects. If a more comprehensive study is completed defining a larger safe yield volume for the valley or the applicant is able to place to beneficial use the first block of approved water without any negative effects, an additional block of water may be considered for approval.

§73-3-8 (1)(a)(ii) Not Impair Existing Rights or Interfere with the More Beneficial Use of Water

Protestants expressed the concern that the proposed water withdrawal under this application would likely harm existing water users including dewatering of nearby springs and impairment of nearby groundwater wells with established water rights.

Previous pump tests in the valley have shown that high volume pumping from a well can interfere locally with nearby established wells and springs. One of the conditions of approval for this application will be that no new or existing high volume (>50 gallons per minute) well development will be allowed closer than 1,000 feet from any existing well or spring and no new or existing high volume well development will be allowed within 3000 feet from any existing well or spring without a pump test to identify whether or not there are interference issues that may have to be addressed by the applicant. If there is evidence of interference resulting from the applicant's activities, the applicant will be required to mitigate the impacts of the interference, provide replacement water for the uses being impaired or discontinue use of the well.

The applicant is responsible for complying with all regulations related to protecting groundwater quality, whether associated with the source protection plans for Moab City and GWSSA or other regulations, in conjunction with activities performed under this application.

GWSSA requested in their protest that the remaining volume of water on Permanent Change Application a26150 be approved prior to action being taken on this application. This is a separate issue. The approval of a26150 was granted in part and conditioned primarily on concerns of localized interference with surrounding wells. The remaining volume of water on a26150 may be approved for use if GWSSA complies with the conditions in the approval order and shows, similar to what SJSVSSD is being asked to do, that there are no localized interference issues with use of the water already approved.

§73-3-8 (1)(a)(iii-v) Physically and Economically Feasible; Financial Ability to Complete the Proposed Works; Filed in Good Faith, Not for Speculation or Monopoly

Some of the protests revolve around the physical and economic feasibility of the proposed project and whether or not the applicant has the financial ability to complete the proposed works.

The applicant has been formed as a special service district under the laws of the State of Utah for the purpose of providing water to its constituents within the District's boundaries. It has taxing authority and the ability to develop projects based on the taxes it receives as well as funding from federal and state sources in the form of grants and loans for water infrastructure

development. It is the opinion of the State Engineer that SJSVSSD, as a public water supplier and special service district, has the ability to incrementally develop water infrastructure projects as needed to serve its customer base.

§73-3-8 (1)(b)(i) Public Welfare / Recreation / Natural Stream Environment

Some protests raised the concern that withdrawal of such a large volume of water could exceed the safe yield of the aquifer and result in groundwater mining which in turn may lead to ground subsidence and cracking among other concerns. The State Engineer is aware of additional concerns related to dam safety and reservoir operations at Ken's Lake and concerns related to the Colorado River Endangered Fish Recovery Program.

The State Engineer is charged in statute to limit groundwater withdrawals to the safe yield of the aquifer. By definition, this means there must be no negative effects from new groundwater withdrawals in order for this application to be approved. This concern is addressed above (in Section §73-3-8 (1)(a)(i) Unappropriated Water in the Proposed Source of this decision) and certain conditions will be placed on the applicant to prevent overdraft of the underground aquifer system.

Ken's Lake Reservoir has had problems in the past with sinkholes developing in the reservoir basin. The reservoir and dam are inspected for issues pertaining to safety and observations made annually for additional signs of sinkhole development. No new or existing high volume (>50 gallons per minute) well development will be allowed within 3000 feet of the dam or reservoir basin in order to mitigate concerns related to dam safety and reservoir operations.

Prior to development of any water from the Colorado River, a Section 7 consultation will be required and will be conducted by U.S. Fish and Wildlife Service (USFWS). USFWS will prepare a Biological Opinion, which determines if the actions of the Endangered Fish Recovery Program provide the reasonable and prudent alternative for the impacts of this project. If the probable success of the Recovery Program is compromised as a result of this specific project, the Biological Opinion will include additional conservation actions to be completed to avoid jeopardy. USFWS will notify the Recovery Program Implementation and Management Committees when a situation may result in the Recovery Implementation Plan not serving as a reasonable and prudent alternative. The Recovery Program Implementation Committee will then decide whether or not the Recovery Program will undertake the additional activities required. If the Recovery Program decides to not implement the additional actions then the project proponent will be required to provide the reasonable and prudent alternatives for the impacts independent of the Recovery Program before the impacts of the project may occur.

Design of surface diversion structures and intake screens must insure that endangered fish are not adversely affected and that the structures are not a hazard to rafters and boaters.

The State Engineer believes that continued development of Utah's share of the Colorado River can be achieved along with recovery of the endangered fish species native to the Colorado River system. The State Engineer is of the opinion that the natural stream environment, recreational opportunities, and endangered fish habitat through this stretch of the river will not unreasonably be impacted by this application.

Other Concerns - May Not Enlarge the Right

Some protestants question the quantification of Water Right Number 09-2349 and are concerned that this change application enlarges the original appropriation. The parent right 09-439 was originally approved in 1967 for the diversion of 25,000 acre-feet of water for 2,500 acres of irrigation, and storage in a 25,000 acre-feet reservoir with associated evaporation losses. Other non-depletive uses such as recreation were also listed as part of the application. Reservoir evaporation losses were defined from a projected surface area of 1,400 acres. Using an evaporation factor, taken from Dr. Robert W. Hill's report, "*Consumptive Use of Irrigated Crops in Utah*", of 3.5758 acre-feet per acre (Bluff Station) the resulting evaporative loss would equal 5,006.17 acre-feet. The applicant has represented that this application represents one half of the evaporative portion of approved application 09-439 with the remaining amount being diverted for use but not consumed. The State Engineer believes the applicant's quantification is reasonable and does not represent an enlargement of the right.

It is the opinion of the State Engineer that this change application can be approved without adversely affecting existing rights. The applicant is put on notice that diligence must be shown in pursuing the development of this application which can be demonstrated by the completion of the project as proposed in the change application.

It is, therefore, **ORDERED** and Permanent Change Application Number 09-2349 (a37400) is hereby **APPROVED** subject to prior rights and the following conditions:

- 1) The potential annual diversion and depletion of water under this application is 5,000 acre-feet and 2,503 acre-feet respectively. The amount of water approved to be diverted based on this decision is 500 acre-feet of groundwater in Moab-Spanish Valley and 100 acre-feet of groundwater on Bridger Jack Mesa. A groundwater monitoring plan must be submitted and approved by the State Engineer before any groundwater is diverted under this application. After implementation of the groundwater monitoring plan, additional blocks of water may be approved to be diverted (up to 5,000 acre-feet) if monitoring data show no impairment of existing water rights, no impact to the regional groundwater table, no contamination issues, and no adverse effects to the natural environment including at the Matheson Wetlands Preserve.

- 2) The total rate of diversion directly from the Colorado River may not exceed 7 cubic feet per second or a total volume of water from the wells and surface diversion of 5,000 acre-feet annually. If the applicant desires to use surface water to recharge the ground water and utilize the wells to divert the recharged water, a separate application should be filed to comply with the Groundwater Recharge and Recovery Act under Utah Code Ann. §73-3b.
- 3) A comprehensive study of groundwater recharge and discharge for the purpose of establishing of a safe yield volume must be completed before approval of more than 1,000 acre-feet of groundwater under this application. In the event that the study finds groundwater withdrawal rates exceed the safe yield volume, the applicant will be required to enter into a groundwater management plan to reduce uses to safe yield volumes.
- 4) No new or existing high volume (>50 gallons per minute) well development will be allowed closer than 1,000 feet from any existing well or spring and no new or existing high volume well development will be allowed within 3,000 feet from any existing well or spring without a pump test to identify whether or not there are interference issues that may have to be addressed by the applicant. If there is evidence of interference resulting from the applicant's activities, the applicant will be required to mitigate the impacts of the interference, provide replacement water for the uses being impaired or discontinue use of the well.
- 5) No new or existing high volume (>50 gallons per minute) well development will be allowed within 3,000 feet of Ken's Lake dam or reservoir basin in order to mitigate concerns related to dam safety and reservoir operations.
- 6) The priority of Water Right Number 09-2349 is July 22, 1966. The priority of Change Application Number 09-2349 (a37400) is April 27, 2011. The 50 year period from the date of approval of the water right ends on August 31, 2017. The applicant should be aware that under current statutes, the holding of a water right by a public entity for 50 years from the date of approval is considered reasonable and due diligence in obtaining extensions of time to file proof pursuant to Utah Code Ann. §73-3-12. After this date, additional extensions of time to submit proof may be obtained only by filing a 40 year plan as outlined in §73-1-4(2)(f) or otherwise complying with the requirements of the statutes. Inasmuch as the works and infrastructure necessary to place water to beneficial use have not been constructed, the applicant is strongly encouraged to proceed expeditiously in order to retain this right.