Attachment to October 2, 2009 Letter- Expanded DOI Bureaus Comments on Agreement for Management of the Snake Valley Groundwater System

Comments on Agreement between Nevada and Utah

Page 1:
The following Agreement language could be contradictory:

> 1.1.b. In the case of Existing Permitted Uses for which the point of diversion is a spring, a reduction in spring flow to an amount less than the Existing Permitted Use, and that can be demonstrated to be *less than* the spring's historical supply. *(Italics added.)*
>
> 2.8 Utah acknowledges that the safe yield doctrine that governs Groundwater appropriation in Utah generally allows for the appropriation of Groundwater in a manner that is sustainable and *results in reasonable amount of drawdown* in the Groundwater aquifer. Such appropriations necessarily impact the existing hydrological system and captures discharge available to phreatophytes, streams, and natural lakes. *(Italics added.)*

Please clarify "historical supply" as it is used in 1.1.b. Specifically, does historical supply apply to instantaneous discharge or to annual volume? We are concerned discharges could be decreased for months at a time, which in turn may cause habitat destruction, but the appurtenant water rights may not be considered injured if the total yearly volume equals total annual historical use.

Page 2:
Please clarify that the water rights appurtenant to Fish Springs National Wildlife Refuge are allotted 20,000 acre-feet per year of the 55,000 acre-feet per year consumptive use of groundwater in Utah, which is what we interpret pursuant to 1.6 of the Agreement and the Sources and Uses spreadsheet posted on the Utah Division of Water Rights web page. Pursuant to 2008 communication from the Utah Division of Water Rights, Fish Springs NWR was allotted 25,000 consumptive acre-feet per year.

Page 3:

Section 2.5 in its discussion of the factors involved in accurately determining "Available Groundwater Supply" inadvertently neglects to include data about groundwater discharge.

Page 4:
Section 3.2 states the best Available Groundwater Supply value is 132,000 acre-feet per year. Section 3.1 states revision of this number may occur based on additional information. Please include in this section the method and procedure for this revision, as additional modeling is being performed by SNWA and United States Department of the Interior contractors. The DOI contractors anticipate initial model construction and simulations to be completed by December 2009. Currently, DOI contractors have some input values different from BARCAS, including estimates of Groundwater Evapotranspiration discharge values.

Section 4.2 allows for 24,000 acre-feet per year to be reserved. Subtraction of the amount reserved, 24,000 acre-feet per year, lowers the Available Groundwater Supply to 108,000 acre-feet per year. However, this value is still up to 28,000 acre-feet per year higher than prior published reports. Thus, we request this section include a discussion on how the value of 24,000 was selected. We have considered that the 24,000 acre-feet per year value may be due to the

large statistical uncertainty associated with the BARCAS estimate of groundwater evapotranspiraiton; however, the value does not appear to correlate to anything we can find in BARCAS.

Also, the reserved water shall not be granted by the State Engineers until it can be reasonably demonstrated that additional groundwater can be safely and sustainably withdrawn from Snake Valley and Allocated and Unallocated uses will not be unreasonably affected. However, the Nevada State Engineer's decision on Spring Valley pumping also orders a similar "ratcheting-up" of withdrawals. Specifically, after 10 years of pumping 40,000 acre-feet per year from Spring Valley, the Nevada State Engineer may allow SNWA to pump an additional 20,000 acre-feet per year from Spring Valley, finally reaching a total of 60,000 acre-feet per year. Thus, we suggest that the Agreement address how the Spring Valley and Snake Valley "ratcheting-up" scenarios are to be integrated. Specifically, if SNWA is allowed to pump up to 60,000 acre-feet per year from Spring Valley, will monitoring under the Spring Valley Stipulation occur for some length of time after this increase before there is any consideration of granting groundwater rights in the Reserved category in Snake Valley?

The allocation appears to overlook concerns with the distribution of pumping and associated impacts. More than 80% of water deemed unallocated or reserved has been assigned to Nevada, most of which will likely be withdrawn from the small part of Snake Valley defined by SNWA's proposed points of diversion between Baker and Big Spring. Intense pumping in this area likely will capture most of the recharge from the Snake Range that is the principle source of water for remaining areas of the valley. This seems to be inconsistent with the stated goal in 4.8 (f) that the States will work cooperatively to "manage the hydrologic basin as a whole."

Page 5:
We suggest Section 4.5 be re-written in order to include data which are not necessarily associated with groundwater withdrawals pursuant to water rights, such as monitoring data from springs and other groundwater discharge sites. We suggest:

> The States agree that it is critical to incorporate monitoring data *into a database on a timely basis to facilitate determinations of the Available Groundwater Supply and other work of the Technical Working Group (TWG) described in Appendix C.* Both States agree to cooperate on data gathering and data sharing to better understand the geology and hydrogeology and the Available Groundwater Supply of Snake Valley. *Data made available to the public and members of the TWG through the database should include groundwater level data from monitoring wells, measurements of spring discharge, and other information which may facilitate a better understanding of the geology and hydrogeology and the Available Groundwater Supply of Snake Valley. Included in this database should be information describing groundwater withdrawals and consumptive use (estimates compiled by the State Engineers) for water rights of record in Snake Valley and adjacent basins, or references for the latter*.

Page 7:
Sections 6.3 states SNWA will initially have full authority to determine Adverse Impact to Existing Use and offer mitigation to the permit holder. We suggest there be a means to keep the State Engineer of Utah informed of conflicts immediately as they arise.

Section 6.3 also discusses use of the Interstate Panel to determine degree of harm and mitigation in the case of an Adverse Impact. In the case of federal or tribal real-property rights, however, it may not be appropriate or legally correct to have State representatives determine the outcome of a reduced federal or tribal real-property right.

Sections 6.3.a. and 6.3.b should include "hydrogeology" and "data and information from Spring Valley development, monitoring, and analyses" as information types.

Page 9:
Section 6.4 is silent on whether federal agencies, as holders of "Existing Permitted Uses" would be eligible to receive funds from the mitigation fund established by SNWA when those water rights are impacted. As one of the largest individual holders of water rights in Snake, BLM could potentially be asking for a sizable chunk of those funds. Others in Snake Valley may assume that those funds are intended for distribution to private parties who don't have the resources available to a federal agency to address water supply problems.

Section 6.5 discusses "appropriate mitigation." The paragraph should be expanded to state that the Interstate Panel will solicit input from applicable federal and tribal governments in order to determine what may be required to mitigate Adverse Impacts to federal and tribal trust resources.

Section 6.7 allows for the SNWA applications to be held in abeyance until at least September 1, 2019. We request that the Agreement also require SNWA to file their Changes in Point of Diversion at least 18 months before the hearing in order for us to produce more accurate modeling scenarios.

Comments on Appendix C to Nevada/Utah Agreement

Page 2
Page 2, Section 1 states the purpose of the Agreement is to establish monitoring plans, to define early warning indicators, and to manage responses for any effects SNWA groundwater pumping in Snake Valley may have on hydrologic, biological, or air resources *of the State of Utah*. Likewise, the activities of the Technical Working Group (TWG) and Management Committee are *not* intended to address the potential impacts of SNWA pumping on *Nevada resources* (those of Snake Valley, Nevada, and southern Spring Valley).

DOI agencies request the Agreement's purpose be expanded to state the purpose of the agreement is to establish monitoring plans, to define early warning indicators, and to manage responses for any effects SNWA groundwater pumping in Snake Valley may have on hydrologic, biological, or air resources *of the State of Utah and of federal and tribal trust resources in Utah and Nevada.*

Page 4
Section 3.2.1 states the Technical Working Group is to be comprised of two representatives from SNWA and three representatives from the State of Utah. In addition, the SNWA and Utah may invite additional staff or consultants. Finally, SNWA and Utah may mutually agree to invite a

representative of the Nevada and Utah Engineers' Offices as well as other non-SNWA and non-Utah entities to assist. We suggest a member of the Nevada Department of Wildlife be added as well and that there be two members from the Utah Division of Wildlife Resources to balance the additional Nevada representative. We suggest this as Page 4, Section 4.4 states "the States agree to *jointly* identify acres of concern including, but not limited to……...wetlands, springs, and other riparian dependent resources that could be affected……" (Italics added.) As the TWG is currently proposed, there is no Nevada State representation for wildlife.

We also suggest the Agreement acknowledge the Monitoring Area (both Tier 1 and Tier 2) includes Key Areas of Biological Concern and resources that are on federal land (BLM, FWS, or NPS managed). Additionally, one of the primary goals of environmental monitoring is to try to prevent the need to list additional species under the Endangered Species Act. Coordination with the federal bureaus is important to ensure that issues with monitoring plan design, data analysis, data interpretation, and appropriateness of specific management and mitigation actions is coordinated early with the federal government, which is the largest landowner in this area. The monitoring and mitigation plans may not adequately address water rights and natural resource issues on federal lands. Representatives from DOI bureaus are involved with similar monitoring efforts in adjacent basins and can help coordinate efforts to ensure consistent approaches are utilized and regional-scale analyses are conducted. The federal bureaus request that they be regular standing members, although non-voting members, in the TWG, and other technical working groups that may be established under the agreement.

Page 5

Page 5, 4.1, Monitoring Area Description refers to the Area of Interest as the Upper Great Salt Lake Desert Flow System. We request the Upper Great Salt Lake Desert Flow System be defined in the agreement, and the Area of Interest include Spring Valley, particularly southern Spring Valley.

Pages 5 and 6

Section 4 discusses Monitoring Objectives. We note the Tier 1 monitoring area includes a large part of Snake Valley that is *within Nevada*, and yet there is *no biological monitoring proposed in Nevada other than what will be incorporated from the Spring Valley Stipulation*, and this only includes monitoring of *extreme southwest Snake Valley along Big Springs Creek.*

Additionally, many of the identified monitoring sites in *Utah* are *not early warning sites* (i.e., monitoring at these sites will document impacts to resources of concern, but will not serve as early warning). One of the primary objectives of the monitoring program is to provide early warning (through the selection of early warning indicators and early warning sites) of potential effects to Key Areas of Biological Concern in Utah. Some early warning may be provided through Spring Valley stipulation monitoring along Big Springs Creek/Lake Creek; however, there are several Points of Diversion that are north of Big Springs and there may be other areas in Nevada that could be monitored to provide early warning of impacts to Utah (e.g., *phreatophytic shrublands/wetland/meadow area in the Baker, Nevada area*). The monitoring program, and the

ability to meet the goal of providing early warning, is potentially incomplete without consideration of *additional monitoring on the Nevada side of Snake Valley.*

We cannot stress enough the importance of a complete and robust early warning monitoring network. Bredehoeft and Durbin, 2009, in *Ground Water Development – The Time to Full Capture Problem*, Ground Water, 2009, discuss the delayed response between the observation of an impact and its maximum effect as well as the long lag time between changing stress on a system (e.g. a reduction in pumping) and seeing an impact at a distant site (the recovery of groundwater levels). We are concerned if monitoring is limited to primarily targets sites of high water-right or species value, then by the time impacts are identified at those sites and suspect pumping is attenuated or ceased, the drawdown perturbations will still continue for some length of time and Adverse Impacts will further intensify.

In general, there appears to be *little provision for monitoring of phreatophytic shrublands*. Tier 1 biological monitoring includes sampling of phreatophytic vegetation south of Gandy Salt Marsh, and it is unclear if this means wetlands, meadows, or phreatophytic shrubland. Tier 2 biological monitoring does not specifically mention monitoring of vegetation communities or other habitat components for species of greatest conservation need. These valleys are dominated largely by phreatophytic shrublands. The agreement appears to overlook the potential impact of groundwater diversions on saline and sodic soils. If these soils are dried out, then current vegetation may be lost and it may not be possible to revegetate those soils with other plant communities. The result could be increased air particulate pollution. The agreement could include an objective to map all saline and sodic soils in Snake Valley, and to conduct studies concerning the response of those soils and their attendant vegetation when groundwater levels decline. There are several isolated locations in Snake Valleys where such soils have been dewatered, and these locations could provide study sites. In addition, it would be advisable at this time to install instrumentation on representative saline and sodic soils that can establish a baseline for soil moisture levels and soil chemistry. This is a large omission, especially considering the concern for impacts to air quality that might result by loss of this vegetation community type.

Finally, we request greater clarification as to what constitutes reasonable and unreasonable effects and reasonable and unreasonable mitigation. The Parties acknowledge the perennial yield doctrine that governs groundwater appropriation in Nevada. This doctrine allows for appropriation of groundwater which normally discharges through ET, spring discharge, or underflow to or from other basins. Yet, one of the goals of the Agreement is to establish mechanisms to counter groundwater withdrawal effects by initially avoiding actions leading to the effect, secondly, minimizing effects, and thirdly, mitigating the effects. We are still unclear how these two ideas will mesh. Is the Agreement stating any effect to Utah resources is unreasonable and must be avoided, mimimized, or mitigated? Will the TWG be establishing criteria for what is a reasonable versus an unreasonable effect?

Page 10

Section 7.2 discusses hydrologic data reporting. Whereas SNWA should be responsible for developing and maintaining a shared-data repository and annual data reporting; TWG members, including SNWA members, should jointly or separately provide interpretations of monitoring and

other data, including the contouring of measured groundwater levels, preparation of water-level change maps, and any numerical groundwater flow model simulations or other evaluations of potential impacts or the efficacy of mitigation options. Such joint interpretations will relieve concerns of bias.

Page 11

Section 8.1 discusses regional groundwater flow numerical modeling. Whereas SNWA should be responsible for maintaining and updating at least one regional numerical groundwater flow model for the purposes of integrating and interpreting available information/data, anticipating potential impacts, and evaluating the efficacy of mitigation options, they should not be the sole operators of such a model. That is, the model maintained by SNWA should be readily available to other members of the TWG for use in performing analyses and providing the results of analyses to the Management Committee. Additional provisions should be specified for oversight, peer review, and public comment. Experience with other modeling efforts has shown these items are important in reducing unintended bias and gaining stakeholder confidence in model output. More important, other numerical groundwater flow models which are deemed suitable for analysis by one or more TWG members should also be used to the extent available or developed. Input and output files for these additional models/simulations should also be posted by SNWA on the shared-data exchange site for use by all members. Language to the effect that 'SNWA shall maintain, update, and operate an agreed-upon numerical groundwater flow model (or even several models), in cooperation with the TWG' conveys that modeling will be the sole domain of SNWA and should be amended.

Section 8.2 discusses ecological modeling. The TWG will evaluate the utility of ecological modeling within Snake Valley *during the "Initial Period"* (i.e., prior to start of the baseline period*) based on the success of ecological modeling efforts being conducted in Spring Valley.* However, ecological modeling in Spring Valley has yet to be approved by the management team for the Spring Valley Stipulation and we are unsure when such an effort will occur. If Spring Valley ecological modeling does occur, development and a complete understanding of its utility may not be realized during the "Initial Period" for Snake Valley. Thus, we suggest the wording be changed so that ecological modeling is not contingent upon the Spring Valley modeling.

Also, we suggest wording be added which commits SNWA to fund and maintain an ecological model throughout the entire Operational Period. In addition, SNWA is only committing $500,000 to this effort during the baseline period. This amount of funding may not be sufficient to create a landscape level model that couples to the groundwater flow model nor maintain it over the baseline data-collection period.

Also, as in the case of data interpretation and the groundwater numerical model, SNWA should be responsible for maintaining any ecological model(s) on a shared-data exchange site, but they should not be the sole operators of such models.

Finally, please provide a definition for the Section 8.2 reference to a "sufficiently resolved hydrologic model."

USFWS comments appurtenant to Appendix 1

Page 2

Section 1.2 and its description of Tier 1 biological monitoring is confusing. It only mentions monitoring phreatophytic plant communities at one site (Gandy Salt Marsh), but vegetation could be monitored, if it is selected as a Key Ecological Attribute, to track habitat condition relative to SNWA groundwater development in other areas. It needs to be made clear that vegetation monitoring at other sites will occur (springs, wetlands, meadows), as this is *more likely to be an early warning indicator than the monitoring of vertebrate species*, and is more easily tied to impacts from groundwater withdrawal than population fluctuations in some vertebrate species, such as amphibians.

Also, Table 1.1 states that the California floater in Pruess Lake is being monitored as part of the Spring Valley Stipulation. This is not true. If it is important to monitor this species at Pruess Lake, it should be added in to the Snake Valley plan. In fact, there is no monitoring of any kind proposed for Pruess Lake under the Spring Valley Stipulation biological monitoring plan.

USFWS comments appurtenant to Appendix 2:

Page 1

The Tier I Monitoring Area should be expanded to include southern Spring Valley and the Interbasin Monitoring Zone of Hamlin Valley, which are upgradient of and may be affected sooner by SNWA pumping than some more distant portions of the Tier I/Snake Valley Monitoring Area. Whereas hydrologic data collection in the Interbasin Monitoring Zone of Hamlin Valley and southern Spring Valley is already provided for under the SNWA-DOI Spring Valley Stipulation, these data should be considered part of the Tier I dataset under this agreement and incorporated in interpretations. That is, these data will be collected in addition to that described in Section 1.1.1.2. Data within this expanded Tier I Monitoring Area should be interpreted by the TWG to implement the agreement.

The hydrologic monitoring plan may not adequately address water rights and natural resources on Federal lands. For instance, BLM holds water rights on springs (such as Kane Spring (Utah water right 18-406) and Needlepoint Spring (Utah water right 18-571)) that are in close proximity to proposed points of diversion. Such springs should be included in the monitoring plan. Including representatives of DOI bureaus on technical working groups and/or provisions for formal review of the monitoring plan designs by DOI bureaus would help ensure proposed monitoring adequately address issues on federal lands.

Page 4

Page 4, Section 1.1.2.1 refers to installing up to three monitoring wells in each of the Tier II hydrographic areas. For clarification, it would be helpful to state the areas are the northern portion of Snake Valley, Fish Springs Flat, Tule Valley, Wah Wah Valley, and Pine Valley.

USFWS comment appurtenant to Appendices 1 and 2

We request Appendices 1 and 2 add discussion regarding how the Snake Valley monitoring program will integrate with the Spring Valley monitoring program established under the DOI-

SNWA Spring Valley Stipulation. It is unclear how the monitoring being done under the Snake Valley agreement will ultimately integrate with the monitoring effort being undertaken for Spring Valley under the DOI-SNWA agreement. The Spring Valley Stipulation was not intended to cover Snake Valley withdrawals. Now that progress is being made to withdraw Snake Valley water, we feel there is a need for a more integrated, holistic approach to monitoring of the Upper GSLDFS inclusive of Spring Valley as there is groundwater moving from southern Spring Valley to southern Snake Valley via Hamlin Valley.

Also, Big Springs Creek/Lake Creek is identified as a conservation target under the Spring Valley stipulation. Any recommendations for management actions under the Agreement that has ramifications for this area should be coordinated with the technical working groups established under the Spring Valley Stipulation.