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Susan Joseph-Taylor, Chief Hearing Officer
Office of the State Engineer
901 South Stewart Street, Suite 2002
Carson City, Nevada 89701

Dear Chief Hearing Officer:

I am writing to comment on the water permits sought by the Southern Nevada Water Authority in Spring, Cave, Dry Lake, and Delamar Valleys, the subject of the recent hearings this October and November. I am a citizen of Nevada (Reno) and have followed the development of these water permit applications, have participated in a conservationists' "water tour" of eastern Nevada's Snake Valley and Great Basin National Park, have submitted a protest on 2 of the permits myself, have commented on the recent draft EIS concerning the proposed project, and have followed the recent hearings in Carson City. My comments range over several important issues, as numbered below.

1) Uncertainties in hydrologic models.

I am a scientist who has spent over 40 years in a field (seismology) that has inherent large uncertainties. I have been involved in the determination of subsurface structure for earthquake seismology (Teledyne Geotech and UNR), for oil and gas exploration (Phillips Petroleum Co.), and for geothermal prospects (UNR). The magnitudes and locations of earthquakes, both basic data in our field, contain significant uncertainties. Locations are estimated only by measuring seismic wave arrival times through a heterogeneous and crudely modeled earth. Magnitudes are estimated from sampling at a small number of stations within the total wave-field. Prediction of future earthquake times and locations is still beyond our knowledge base. I am not a professional in hydrology, nor claim any expertise in that field; but I see similar problems and uncertainties.

These uncertainties increase as the size of the study region grows. In earthquake seismology, our resolution of the subsurface is on the scale of km to tens of km. In oil and gas exploration, the scale can be reduced to tens of meters only by the very expensive acquisition of 3-D seismic data. The geological and hydrological models put forth in the hearings are locked to "ground truth" in only a very few places where wells, outcrops, and so forth have been studied, with large spans of uncontrolled model space in between. Predictions of large-scale water resources and water movements at subsurface depths must be viewed with extreme caution and suspicion. An excellent paper on the uncertainty in hydrologic models is that of Konikow and Bredehoeft ("Ground-water models cannot be validated", *Advances in Water Resources*, v. 15, pp. 75-83,

1992). It would seem capricious to accept the hydrological model put forth by SNWA and reject the protesters' model. An orderly approach would be to test the SNWA model in an area which is a small fraction of the whole region in which they seek permits. This may require many years of monitoring, but it could forestall a massive, unintended impact on water supplies and biological resources over the entire region if most or all of the requested permits were approved.

2) Necessity for these water permits.

SNWA has not made a convincing case for the necessity of these water permits. I believe this to be true largely on my reading of the DEIS. There SNWA provided outdated (circa 2008) population projections, numbers which were shown to be grossly overestimated by the actual 2010 census count in southern Nevada. Were the figures provided in testimony in the recent hearings brought into alignment with actual? Moreover, the **trend** in the past 3-4 years for the area served by SNWA has been downward. SNWA cannot use pre-2009 population growth to project into the future. There is no basis for the continuation of that elevated growth rate and in fact a legitimate question of when again Las Vegas will ever reach the population peak just prior to the Great Recession of the past few years.

After adjusting its population projections to fit with current reality, SNWA must also address its conservation program. A request for further water from the eastern Nevada region should only be made after SNWA has done everything possible to lower demand in southern Nevada. They claim that usage is now approximately 240 gallons per day per capita. However, other western cities have already done much better. Tucson, Arizona, for instance, is at approximately 175 gallons per day per capita. It was reported in the news recently that San Antonio, Texas was at 132. This may be anomalous due to the extreme drought there, but it shows what dedicated water conservation can do. The fact that SNWA customers currently use 240 is not a testament to SNWA water conservation programs, but could be more properly taken as evidence of their failure.

3) Scale and impact of these water permits.

The scale of these combined water permit applications is unprecedented in Nevada, and the consequent environmental impact, as rigorously laid out in the DEIS, is widespread and significant. Even the SNWA water model shows that major water drawdowns are likely. An associated societal impact is also enormous. This alone dictates that the NSE should move cautiously, if at all, in granting such permits. What is at stake here far exceeds that of previous cases.

I am especially alarmed by the probable impact of granting water permits to SNWA in the area around Great Basin National Park. Nevada only has one national park, and we should seek to protect its resources in perpetuity. The DEIS shows significant impact on the groundwater levels in parts of the park, and SNWA should be denied permits in this area in order to protect the

scenic and recreational resources of the park and the economic benefits it brings to the surrounding area.

4) Appropriateness of these water permits.

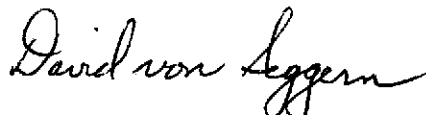
In this unprecedented request for water importation from several basins to the Las Vegas area, the NSE should consider the grave consequences for a western, rural life style, for the small communities, and for the wildlife, all dependent on the small amounts of water available to them on a sustainable basis. In spite of SNWA testimony, I believe it is likely that this region has already neared or surpassed a long-term, sustainable water withdrawal rate. The additional water withdrawals of SNWA will only hasten the time when the human and wildlife communities will be diminished or eliminated.

SNWA has marshaled a host of attorneys, water experts, and local boosters to support their obtaining these water permits. Those opposed to these permits have had meager resources in comparison. This is true now and will be true in the future. When SNWA's pumping causes landowner or tribal entity in eastern Nevada to see his/her water allocation be threatened, will these individuals have the resources to challenge SNWA successfully? Our experience in the Owens Valley shows that it took decades to begin to right the wrongs associated with LADWP's over-pumping of water from the valley, far longer than inhabitants could manage with diminished water supplies. Even court orders could hardly hasten the foot-dragging of LADWP in re-watering Mono Lake and Owens Valley in recent decades. The valley's impairment is still evident today, and those that may have fought it simply moved on or were bought out.

In summary,

I submit that SNWA has no right to appropriate the water from a large region of eastern Nevada and has not established the need to do so. Such usage would entail enormous consequences on the scale of Owens Valley and makes a mockery of the term "beneficial use" in Nevada water law. The question is whether the NSE's office will leave a legacy such as Owens Valley in our state? **The SNWA permit applications should not be approved.**

Respectfully yours,



David von Seggern