CENTER for BIOLOGICAL DIVERSITY Because life is good.

Nevada Division of Water Resources
Attn: Mr. Jason King
901 S. Stewart St., Suite 2002
Carson City, NV 89701

November 30, 2011

Re: Southern Nevada Water Rights Hearing

Dear Mr. King:

I am submitting these comments on behalf of the Center for Biological Diversity ("Center") and our member advocates, staff and people across Nevada and our country, who love all God's creatures large and small and who are very concerned about the potential impacts to the environment from awarding the water rights requested by the Southern Nevada Water Authority ("SNWA").

The Center is a non-profit, public interest environmental organization dedicated to the protection of native species and their habitats through science, policy, and environmental law. The Center has over 340,000 members and on-line activists throughout Nevada and the United States.

The Center filed 130 protests of the initial SNWA refilling of water right applications in April 2010. In 2011, the Center was a formal party to protests filed by the Great Basin Water Network, of which the Center is a part and holds a seat on the board of trustees.

We offer the following observations, comments and suggestions.

Public Trust Doctrine and the Public Interests and "Environmentally Sound" Requirement of the NRS.

In Nevada it is a statutory fact that all sources of water, "whether above or beneath the surface of the ground belong to the public."[1]

Water in Nevada, as in the other Western states, is appropriated in consideration of a need to put it to a "beneficial use". Beneficial uses include domestic consumption, industrial needs, irrigation, grazing, recreation and water needed for wildlife.[2]

Nevada Revised Statutes compel the State Engineer to reject an application for water rights if there is no unappropriated water in the source, where the proposed appropriation conflicts with existing rights, or *if it threatens to prove detrimental to the public interest.*[3]

[1] NRS 533.025.
[2] Davenport, James H. 2003. Nevada Water Law. Published by the Colorado River Commission of Nevada, Las Vegas, NV. Pages 58-60.
[3] NRS 533.370.

In Pyramid Lake Paiute Tribe of Indians v. Washoe County, the district court remanded the case to the State Engineer for development of a definition of public interest, and despite an incomplete evaluation of such definition, the court on a 3-2 vote upheld the engineers 13-point definition.[4]

Perhaps more germane but less clear in its applicability is the notion that government has a public trust to look after scarce resources for the good of the public community. The public trust doctrine has its deepest roots in the precepts and myths of ancient civilizations, such as the story of creation in the Book of Genesis of the Judaeo-Christian Bible. Key to these beliefs was that the earth is not a private possession, but common property. From there the ideal can be traced to Roman laws such as the *Institutes of Justinian* and English common law, and finally to a judicial history in this country beginning with the case, *Illiunois Central Railroad Co. v. Illinois.*[5]

Fundamentally inherent in the public trust doctrine is the notion of responsibility not only to the earth, but to the future generations that will follow and the need to preserve their access to critical resources.

Distinguished public lands attorney Charles Wilkinson noted, "The public trust doctrine is rooted in the precept that some resources are so central to the well-being of the community that they must be protected by distinctive, judge-made principles...The increasing use of trust language in public lands cases indicates an awareness that the special values of the federal lands, like other resources on which the trust has been impressed, have been gradually but indelibly imprinted on our national consciousness."[6]

The public trust doctrine has a firm foundation in abundant federal judicial decisions such as *Illinois Central Railroad Coi. V. Illinois*[7], *Light v. United States*[8], *Sierra Club v. Department of Interior*[9], *and Kleppe v. New Mexico,*[10] as well as in the Supremacy, Property and Commerce Clauses of the U.S. Constitution. Several states have explicitly adopted the principles of public trust in their state statutes. Perhaps nowhere is a state's trust responsibilities more clearly described as in the case, *National Audubon Society v, Superior Court of Alpine County*[11], which relied on the public trust doctrine to preserve lands for ecological study, open space, fish and wildlife habitat and scenic resources.[12]

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[4] Davenport, pages 54-56.
[5] Brady, Timothy Patrick. 1990. "But Most of It Belongs to Those Yet to be Born": The Public Trust Doctrine. NEPA and the Stewardship Ethic. 17 B.C. Envtl. Aff. L. Rev. 621.
[6] Wilkinson, Charles. 1981. The Public Trust Doctrine in Public Land Law. 14 U.C. Davis L. Rev. 315.
[7] 146 U.S. 387 (1892).
[8] Light v. United States, 220 U.S. 523, 537 (1911).
[9] Sierra Club v. Department of Interior: 376 F. Supp. 90 (N.D. Cal. 1974)
398 F. Supp. 284 (N.D. Cal. 1975)
424 F. Supp. 172 (N.D. Cal. 1976).
[10] Kleppe v. New Mexico, 426 U.S. 529 (1976).
[11] 658 P.2d 709 (Cal. 1983), *cert. denied*, 464 U.S. 977 (1983).
[12] Ingram, Helen and Cy R. Oggins.

While legally and statutorily the question of whether or not the public trust doctrine is imbedded in Nevada law is still officially undecided,[13] you (the State Engineer) have a moral and ethical obligation to honor and protect both the public's interest and sacred trust.

This trust was acknowledge in the Nevada Department of Wildlife's ("NDOW") comments on the pipeline DEIS[14], when NDOW stated:

> "...NDOW still has significant concerns about the project itself and its potential effects on resident wildlife species for which we have the primary trust responsibility to manage those resources for the people of Nevada, and also with some elements of the EIS document analysis and technical content where our previous comments and input may not have been adequately addressed."[15]

Nevada's interbasin water transfer statute currently requires the State Engineer to deny an application for an interbasin transfer of water if he finds that such the proposed transfer would not be "environmentally sound" with regard to the basin from which the water is proposed to be taken.[16]

While the definition of environmentally sound is absent in statute, it seems only reasonable to deem the Water Authority's request as such, given the catastrophic and irreversible impacts that would occur as a result of this groundwater mining, as documented in the DEIS for the pipeline proposal.

Our comments in the following sections will serve to document why the granting of the SNWA water rights is in violation of both the public trust principle and the environmentally sound requirement in NRS.

SNWA has not accurately documented the need for the requested water, nor the justification for why the applications should be granted at this point in time.

The public interest doctrine as defined in the *Pyramid Lake Paiute Tribe v. Washoe County*, requires:

"2. The applicant must demonstrate the amount, source and purpose of the appropriation;

3. If the appropriation is for municipal supply, the applicant must demonstrate the approximate number of persons to be served and the approximate future requirements.

6. In considering extensions of time to apply water to beneficial use, the state engineer must determine the number of parcels and commercial or residential units which are contained or planned in the area to be developed, economic conditions which affect the availability of the developer to complete application of the water to beneficial use, and the period contemplated for

[13] Davenport, pages 57-58.
[14] USDI-Bureau of Land Management. 2011. Clark, Lincoln, and White Pine Counties Groundwater Development Project. DES 11-18.
[15] NDOW. October 11, 2011. Comments on the Clark, Lincoln, and White Pine Counties Groundwater Development Project Draft EIS. Letter sent to the BLM. Page 1.
[16] NRS 533.370(6).

completion in a development project approved by local government or in a planned unit development."[17]

The SNWA has used incomplete and inaccurate information and data to support its requests for water rights.

It is unclear that there is an actual need for the water from this project at this time or into the foreseeable future. The need for the additional instate water resources is based on outdated demographics. The 2008 and prior statistics used do not reflect the current economic reality.

In defining the water needs for southern Nevada, the SNWA in the DEIS errs in using out-of-date information[18] to document the future supply demands. The reason this is important is that the information in the DEIS comes from 2008 data which only begins to reflect the current economic reality of the SNWA service area which is a declining population. Between 2009 and 2010, almost 50,000 left Clark County.[19] The economic turmoil being experienced in Nevada and Clark County are nationally known. Nevada leads the nation in home foreclosures and Clark County leads Nevada and is commonly reported as the "foreclosure capital" of the country.[20] In August of 2011, there were 5279 new notices of default issued, and there were over 62,500 houses in the various stages of the foreclosure process.[21]

The SNWA's projected demand for water was based on a 5.3% annual growth rate when today and into the foreseeable future the rate is near or just above zero percent. The SNWA's Water Resource Plan 09 states that based on 2008 data, the population of Clark County would surge to an estimated 3.65 million by 2035, and uses this figure to justify the need for the instate groundwater development project. However, using information from the State Demographer's Office October 2010 report, the population is forecasted to be between 1,979,045 based on the "low job growth" scenario, or 3,066,872 based on the "high job growth" scenario.[22]

Despite rhetoric by elected officials that the economy is diversifying, facts suggest that tourism remains the primary economic driver by far.[23] According to the Bureau of Labor Statistics, unemployment in the Las Vegas-Paradise census area was 14% in July, 2011.[24] Construction jobs had fallen from 95,000 in January 2008 to just below 40,000 in July 2011 – a 42% decline.[25]

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[17] Davenport, pages 54-55.
[18] CBER, 2008.
[19] Nevada State Demographer's Office. October, 2010. Nevada County Population Projections 2010 to 2030.
[20] See: http://www.lvrj.com/business/nevada-said-to-be-u-s-foreclosure-sales-leader-128451408.html .
[21] See: http://www.foreclosureradar.com/nevada/clark-county-foreclosures .
[22] See Nevada State Demographer's Office. October, 2010.
[23] See: http://www.clarkcountynv.gov/Depts/comprehensive_planning/demographics/Documents/DemographicsBrochure.pdf .
[24] See: http://www.bls.gov/eag/eag.nv_lasvegas_msa.htm#eag_nv_lasvegas_msa.f.P .
[25] See: http://data.bls.gov/timeseries/SMU32298202000000001?data_tool=XGtable .

Applying common sense, it would seem more likely that the 2035 population would be closer to the lower figure than the higher. Even applying an arithmetic mean of 2,522,958, the difference with the projected demand figure used in the DEIS is almost 550,000 people.

In addition, Ms. Patricia Mulroy, General Manager of the SNWA has repeatedly stated that the pipeline and water in it are not currently needed. She stated on the "State of Nevada" public radio program, "We are not planning to build it", in reference to the pipeline. She asserted that the SNWA merely want to have that option on the shelf in case it was needed in the future.[26] In a November 20, 2011 KCSG television story, Mulroy is quoted as saying, "(Mulroy said) the water would not be tapped for many years if the applications are approved. Beyond the hearing process, construction of a pipeline to bring the water to Southern Nevada will take 10 to 15 years, she said."[27]

Further, the SNWA has not proven that the groundwater is even needed as opposed to other less costly and secure long term alternatives.

The SNWA Water Resource Plan has a goal set by the Board overseeing the SNWA of reducing demand to 199 gallons per capita per day ("gpcd"), thereby saving approximately 276,000 acre feet of water per year ("afy") – an amount 100,000 afy more than the proposed action plans to provide via the pipeline.[28] The savings would be achieved through enhanced indoor and outdoor water use efficiencies. What's more, this goal is still significantly above the gpcd of other desert cities such as Albuquerque, Phoenix and Tucson. Peter Gleick and Heather Cooley of the Pacific Institute recently prepared a study that found:

> "Furthermore, combining reductions in both projected population ***and*** per capita demand may completely eliminate the need for the new supplies. If SNWA reduced per capita demand to about 166 gpcd – higher than Los Angeles's *current* rate, and comparable to the *current* delivery rates of Albuquerque and Phoenix – by the year 2035, and population within Clark County grows to 3.13 million people instead of 3.65 million,15 total water demand in SNWA's service area would be about the same as it is now."[29]

Related to this is establishing a program to incentivize the conversion of septic systems, often old and leaking, in the Las Vegas Valley to the municipal sewer system to afford the opportunity to collect and utilize this water usage for additional return flow credits. This author, when the

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[26] KNPR Public Radio, State of Nevada Program, September 29, 2011. Pat Mulroy, Southern Nevada Water Authority. Available at: http://www.knpr.org/son/archive/detail2.cfm?SegmentID=8221&ProgramID=2333 .

[27] Whaley, Sean. 2011. Groundwater Pumping Plan In Hands Of Nevada State Engineer As Marathon Hearing Concludes. See: http://www.kcsg.com/view/full_story/16502871/article-Groundwater-Pumping-Plan-Now-In-Hands-Of-Nevada-State-Engineer-As-Marathon-Hearing-Concludes?instance=home_first_stories .

[28] See: http://www.snwa.com/ws/resource_plan.html .

[29] Gleick, Peter H. and Heather Cooley. August 2011. Rebuttal Report on WaterUse Efficiency in the Las Vegas Area. Available at: http://water.nv.gov/hearings/upcoming/springetal/exhibits/Great%20Basin%20Water%20Network/GBWN_Exh_069%20Gleick%20&%20Cooley%20Report.pdf .

Environmental Planning Manager for Clark County proposed such an idea to the SNWA, and based on internal studies, we estimated that an additional 5,000 acre feet of water could be generated through the resultant return flow credits.[30] To date the SNWA has not acted upon our suggestion, but Pat Mulroy on KNPR responded to a caller regarding this option praised it and said it needed to be voiced more so it would pick up the support of local elected officials.[31]

Another reasonable alternative routinely dismissed by the SNWA is that of ocean desalinization.[32] Desalinization is operational around the globe, and most recently is being tied to renewable energy sources to reduce costs and its carbon footprint.[33] Plans for a desal plant at Dana Point in Orange County, California estimate the total annualized cost of capital and operations to be approximately $20 million, producing an acre foot of water for around $1287, while stating that such cost is conservative and is decreasing as new and better technologies become available; it also does not have an associated renewable power source which would further decrease costs.[34] Numerous other examples exist that show desalinization is a technologically feasible and economically viable option. In fact, Ms. Mulroy stated on the previously noted public radio program that the SNWA will one day be a partner in desalinization, most likely with Mexico.[35] Applied to the SNWA need desalinized water could be traded with Mexico and California for Colorado River water over the short term, while solar powered pumping stations could be explored for a pipeline to carry desalinized water to Las Vegas via the most favorable gradient route for the long term – if needed.

Another alternative would consist of a collection pipe in the lower end of the Imperial Irrigation District to collect drain flows which are about 3000 PPM salt and pipe them to a solar powered desalting plant to lower the water to 900 PPM. The fresh water would be piped to the exit of the All American Canal to be delivered to the farms. The water saved from the Saltan Sea would be credited to the SNWA in Lake Meade and delivered its customers. The amount of water would likely be at least 500,000 acre feet and with return flows it may be as much as 750,000 ac feet.

Yet another alternative that the SNWA has publically proposed be studied is the augmentation of Colorado River water with flood flows from the Mississippi River. Mulroy stated on KNPR, "One man's flood water is another man's water supply.[36]

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[30] Author's personal knowledge from previous involvement.
[31] KNPR Public Radio, State of Nevada Program, September 29, 2011. Pat Mulroy, Southern Nevada Water Authority. Available at: http://www.knpr.org/son/archive/detail2.cfm?SegmentID=8221&ProgramID=2333 .
[32] See: http://ga.water.usgs.gov/edu/drinkseawater.html .
[33] See: http://www.smartplanet.com/blog/smart-takes/to-conserve-water-australia-builds-first-utility-scale-solar-plant/18919?tag=nl.e660 ,
and, http://www.sciencedaily.com/releases/2011/08/110804141752.htm .
[34] See: http://www.mwdoc.com/documents/ProjectOverviewDanaPointOceanDesalinationProject-ExecutiveSummary.pdf .
[35] KNPR Public Radio, State of Nevada Program, September 29, 2011. Pat Mulroy, Southern Nevada Water Authority. Available at: http://www.knpr.org/son/archive/detail2.cfm?SegmentID=8221&ProgramID=2333 .
[36] Brean, Henry. July 20, 2011. Mighty Mississippi could help ease drought in West, Mulroy tells chamber. Las Vegas Review Journal. Available at: http://www.lvrj.com/news/mighty-mississippi-could-help-ease-drought-in-west-mulroy-tells-chamber-125924998.html .

The SNWA's water rights applications under consideration are thereby purely speculative in nature, and there is little to validate either the need, nor the immediacy for the applications. Further, there are viable alternatives that are available to the SNWA for meeting southern Nevada' water needs – alternatives which would preserve the public's interest in environmentally critical groundwater supplies and fulfill the state engineer's public trust moral responsibilities.

The SNWA has failed to demonstrate that they can fiscally implement the project.

Item 7 of the Nevada public interest definition states:

"For large appropriations, the State Engineer must consider whether the applicant has the financial capability to develop the water and place it to beneficial use."[37]

It is a matter of public record that the cost of construction will be close to $15.5 billion in terms of 2007 dollars.[38]

It should be noted that given the increasing public hesitancy about this project, it is likely that the interest rates associated with borrowing the needed capital will rise to reflect the increasing risks, inflating the overall cost.

It is further a matter of the public record that this estimate does not include operation and maintenance costs, the costs of distributed pumping, or the costs of monitoring and mitigation.[39]

As a matter of comparison, the Los Angeles Department of Water and Power's fiscal year 2011-12 projects spending around $86 million associated with regulatory compliance mandates associated with Owens Lake, and another $285 million associated with water quality issues.[40]

Promises for monitoring and mitigation being proposed by the SMWA and BLM in the DEIS could easily eclipse these costs.

Public interest and trust demand that the state engineer require the SNWA to evaluate and document the costs associated with other viable alternatives, and also to provide further proof of their ability to financially implement, operate and maintain the project.

Granting the SNWA's water rights applications would jeopardize the viability and survival of native plant and animal species.

KNPR Public Radio, State of Nevada Program, September 29, 2011. Pat Mulroy, Southern Nevada Water Authority. Available at: http://www.knpr.org/son/archive/detail2.cfm?SegmentID=8221&ProgramID=2333 .

[37] Davenport, page 55.

[38] Hobbs, Ong and Associates. June 27, 2011. Ability to Finance Report to the Southern Nevada Water Authority. 123 pages.

[39] Testimony of Richard Holmes, SNWA, Deputy General Manager Engineering/Operations. Before the Nevada State Engineer, September 27, 2011.

[40] LADWP. 2011. 2100-2012 LADWP Fiscal Year Basic Needs Budget Presentation.

While the DEIS analysis also includes the Snake Valley, a basin not included in these hearing and deliberations, it none-the-less serves to demonstrate the far-reaching, severe and irreversible impacts to Nevada's natural heritage.

Declines in groundwater elevations will in some areas exceed 200-feet, resulting in subsidence of an area over 3,000 square miles. This subsidence, besides threatening local water supplies and causing extensive infrastructure damage, will dry up over 192,000 acres of iconic Great Basin shrubland, over 8,000 acres of wetlands, and adversely impact over 310 springs and 125miles of perennial streams. As a result of the loss of native vegetation and aquatic flows, hundreds of native species of plants and animals will be faced with extirpation or even in some cases extinction.

Some species specific examples follow.

Aquatic Biological Resources

Species that live in or around water such as amphibians, fish and invertebrates, and their habitats, are considered to be aquatic biological resources in the DEIS.[41] In Chapter 3.3, the BLM discloses that 307 springs could be adversely impacted by the ground water mining over the course of the 200 year study period. However, of these only 59 have been inventoried and documented.[42] The same table discloses that 112 miles of perennial streams could be adversely impacted.

A concern about these figures, that will also be discussed in another section of these comments, is that the DEIS only shows the impacts for ground water pumping where the model indicated greater than a 10-foor drawdown. There was no disclosure of the impacts for areas with lesser drawdown, not any convincing discussion provided on why the less than 10-foot drawdown impacts were not important to species and ecosystems that could be adversely impacted. Depending upon the hydro-geologic characteristics of the specific aquifer, a 1-10-foot drawdown could conceivably impact hundreds of square miles and untold springs and streams, even to the point that they dry or suffer significant adverse impacts. Hence, the impacts on aquatic species and ecosystems will likely be greater than analyzed and disclosed in the DEIS.

The NDOW expressed similar concerns in its comments on the DEIS, stating:

> "Descriptions regarding the modeling of impacts have not provided NDOW with confidence that the model is sufficient to predict or adequately address the full range of impacts anticipated by the project. Assumptions including (;) groundwater drawdown only affecting valley aquifers and not likely to affect upland waters, that impacts of less than a 10-foot draw down are not anticipated to be significant or included in the analysis and impacts to intermittent waters are not anticipated to be significant, seem to greatly under anticipate project impacts. In addition, there are references to (;) a lack of reliable data for analysis, an inaccuracy in the number of springs and seeps inventoried and

[41] DEIS Chapter 3, page 3.7-1.
[42] DEIS, Table 3.3.2-6.

analyzed, that site specific impacts are not possible to be accurately predicted and a general downplay of the risk associated with an anticipated increase in annual invasive plants all contributing to our discomfort with the analysis…it is our opinion that, in general, the project's impacts under any Action alternative will be greater than those estimated in the EIS based upon years of observing changing terrestrial and aquatic ecosystem conditions."[43]

The NDOW also specifically raised concerns regarding impacts in Cave Valley, Pahranagat Valley and the White River flow system and specifically on the Flag Spring system and the Kirch Wildlife Management Area.[44]

Springsnails

Springsnails are an umbrella species for the conservation of other wildlife, meaning that by protecting the ecosystem conditions on which springsnails depend, habitat would be simultaneously protected for other species. Protecting the springsnails will protect the springflow which sustains not only the snails but also myriad other wildlife species which would be negatively affected by spring desiccation due to groundwater pumping and spring diversion.

Springsnails have narrow environmental preferences, and their presence indicates stable ecological conditions over time, which gives them high biogeographical significance. Springsnails exhibit habitat specificity and low dispersal ability, and endemism is prevalent. Because many springsnail species in the western United States are found at only one to a few isolated springs, they are at considerable risk of extinction. Endemic populations are particularly vulnerable to disturbance, and many organisms unique to the Great Basin have experienced declines in distribution and abundance, including 16 taxa which have already gone extinct.[45]

On February 17, 2009, the Center for Biological Diversity ("Center") petitioned the U.S. Fish and Wildlife Service through the Department of Interior to seek protections for 42 species of springsnails found in the Great Basin of Nevada and Utah under the Endangered Species Act.[46] Twenty-five of the petitioned species are found in the area potentially impacted by the proposed action.[47] On September 13, 2011, the FWS published a positive 90-day finding in the Federal Register for 35 of the species – all of which are found in the DEIS to some degree, Table F3.7-13C being the most comprehensive location.[48] The Camp Valley pyrg was the only springsnail

[43] NDOW, page 1-2.
[44] NDOW, pages 4-5.
[45] Sada, D.W. and G.L. Vinyard. 2002. Anthropogenic changes in biogeography of Great Basin aquatic biota. Smithsonian Contributions to the Earth Sciences 33:277–293.
[46] Center for Biological Diversity. 2009. PETITION TO LIST 42 SPECIES OF GREAT BASIN SPRINGSNAILS FROM NEVADA, UTAH, AND CALIFORNIA AS THREATENED OR ENDANGERED UNDER THE ENDANGERED SPECIES ACT. Available at: http://www.biologicaldiversity.org/species/invertebrates/Great_Basin_spring_snails/pdfs/Great-Basin-Springsnail-Petition.pdf .
[47] See Table F3.7-13C.
[48] Federal Register. Sept 13, 2001. 76:177, pages 56608-56630.

species included on the table which did not receive a positive 90-day finding, and will be further discussed later in this section.

In addition, the Nevada BLM State Director has designated six of the potentially affected springnails as sensitive species protected under BLM Manual 6840.2.[49] All these species have been petitioned for protections under the ESA and are included in the 25 species mentioned above.

There are at least a dozen other species of springsnails not yet petitioned for protection under the ESA or BLM Manual 6840.2 that if adversely affected could rise to the level of concern that such protections would be initiated.

According to groundwater modeling done by the proponent, six of the petitioned species' habitats would experience changes in spring flow ranging from 17 to 100% of normal. Four others would experience reductions ranging from 1 to 3%, and for the other 15, there is not adequate data and information to form an estimate.[50] These impacts are based on habitats within the 10-foot drawdown area and do not take into account impacts resulting from less drawdown, which is a speculative and unsupported assumption.

To further document the destruction, the DEIS discloses that, "Flow reductions in Big Springs Creek and Lake Creek could result in substantial loss of habitat and aquatic species", and that, "Substantial flow reductions in Butterfield, Flag and Wambolt springs could result in the loss of Butterfield, Flag and Lake Valley pyrg populations due to their limited occurrence (one spring/one basin)".[51] By "loss" is meant extinction. Another example of the dire impacts that would be suffered by springsnails is the example of the Longitudinal gland pyrg who's habitat at Big Springs, which currently flows at 4289 gallons per minute, will be completely dry by 75-years after full build out and who's other three spring habitats would be adversely impacted, but data does not exist to ascertain to what degree.[52]

As previously mentioned, the Camp Valley pyrg was the only springsnail petitioned in the pipeline pumping study area to not receive a positive 90-day finding.[53] The Center believes this was due to the fact that the DEIS falsely asserted that there would be no impacts from the ground water mining on this species.[54] Careful inspection of Figure 3.3.3-5 however, reveals that at the 200-year mark, when cumulative effects are considered, the spring home to this species along Camp Valley Creek in Spring Valley Basin 201 is likely to be impacted by a 10 to 50-foot drawdown.[55] The resolution and scale of the map provided does not allow for a more precise statement. The Center is also concerned that by failing to disclose drawdown impacts less than 10-feet, the BLM has been less than forthcoming regarding the potential impacts on this species.

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[49] DEIS Chapter 3, page 3.7-45.
[50] DEIS Appendix F3.7, pages 43 to 46.
[51] DEIS Chapter 3, page 3.7-50.
[52] Ibid.
[53] Federal Register. Sept 13, 2011. 76:177, page 56610.
[54] DEIS, Table F3.7-13C, page F3.7-45.
[55] DEIS, page 3.3-197.

A review of the DEIS, makes it is very clear that imperiled and seemingly protected species of springsnails will be highly vulnerable to impacts from the proposed pipeline that may well lead to their extinction.

Amphibians

As mentioned in the DEIS, there are four special status amphibian species located within the area potentially impacted by the ground water pumping – Northern leopard frog, Columbia spotted frog, relict leopard frog and the Arizona toad.

The Relict leopard frog is currently a federal candidate species warranted for listing under the ESA, but precluded for lack of available resources. It is protected as "critically imperiled" by the state of Nevada.[56] So dire is the status of this species that it was once feared extinct, but was rediscovered along the Colorado River in the Lake Mead National Recreation Area. Some of its key habitat is the terminal outflow areas of the White River Carbonate Flow System at Blue Point, Rogers and Gnatcatcher Springs, which is the same formation proposed for ground water mining by the SNWA as part of this proposal. The DEIS discounts this connection by simply saying in Chapter 3.7 that. "Pumping would not affect relict leopard frog habitat in the Black Mountain area."[57]

The Northern leopard frog is a species petitioned for listing under the ESA and has received a 90-day finding that a 12-month status review is warranted. It is protected by the state of Nevada and is considered to be "imperiled".[58] Crucial areas of its habitat such as Keegan, North Millick and South Millick Springs and the Shoshone Ponds area will be completely or nearly completely dried by the proposed action, leading to destruction of habitat and extirpation of the species.[59] Other habitat could be equally impacted, but no hard data exists to quantify the threat.[60] It is a species to be provided protections under a conservation agreement, and is a BLM sensitive species.

The Columbia spotted frog is a species of concern in the states of Utah and Nevada, and is considered by both to be "imperiled".[61] It is covered by an interagency conservation agreement which is to provide protections to preclude the need for further protections under the ESA.

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[56] Nevada Natural Heritage Program. November 2010. Animal and Plant At-Risk Tracking List. Available at: http://heritage.nv.gov/lists/track.pdf .

[57] DEIS, page 3.7-45

[58] Nevada Natural Heritage Program. November 2010. Animal and Plant At-Risk Tracking List. Available at: http://heritage.nv.gov/lists/track.pdf .

[59] DEIS, Appendix F3.7, page F3.7-42.

[60] Ibid.

[61] NatureServe, at: http://www.natureserve.org/explorer/servlet/NatureServe?sourceTemplate=tabular_report.wmt&loadTemplate=species_RptComprehensive.wmt&selectedReport=RptComprehensive.wmt&summaryView=tabular_report.wmt&elKey=102625&paging=home&save=true&startIndex=1&nextStartIndex=1&reset=false&offPageSelectedElKey=105087&offPageSelectedElType=species&offPageYesNo=true&post_processes=&radiobutton=radiobutton&selectedIndexes=105087&selectedIndexes=102214&selectedIndexes=102625&selectedIndexes=104064 .

Insufficient data exists to assess the level of threat from the proposed action, but because they habitat is down gradient from Snake Valley basin, it can be expected to be impacted by any pumping that occurs there.

The Arizona toad is a species protected by the state of Nevada as "imperiled". It is found in the Lower Meadow Valley Wash, as well as other areas of Clark and Lincoln Counties not yet described or known. For unexplained reasons, the DEIS does not describe the impacts and threats to the toad either in Chapter 3 or Appendix F3.7.

A review of the DEIS, makes it is very clear that imperiled and seemingly protected species of amphibians will be highly vulnerable to impacts from the proposed pipeline that may well lead to their extinction.

Fish

At least fourteen special status desert fish species are at potential risk from the proposed ground water mining. The Moapa dace, White River spinedace, Pahranagat roundtail chub, White River springfish, Hiko White River springfish and Pahrump poolfish are protected as endangered under the ESA, and the Big Springs spinedace is protected as threatened. Several other species are "critically imperiled", and protected by the state of Nevada, including the White River desert sucker, Virgin River chub, and the Moapa speckled dace, while the White river speckled dace and the Moapa White River springfish are state protected as "imperiled".

The least chub is a species that has been petitioned for listing under the ESA by the Center and others, and is currently included in a settlement agreement between the Center and FWS which mandates a listing determination not later than 2014.[62] It is also to be protected under an interagency conservation agreement and strategy, and is a Utah special concern species considered to be "critically imperiled".[63]

The Bonneville cutthroat trout is states of Nevada and Utah protected as "critically imperiled", a BLM and Forest Service sensitive species and to be protected under an interagency conservation agreement and strategy.

In their DEIS comment letter the NDOW expressed the following concern:

> "Chapter 3.7 indicates that four of 14 current conservation populations of Bonneville cutthroat trout (BCT) in Nevada would be at risk for reductions in flow, depending on the Action Alternative selected. This represents 29% of all BCT population in the state. This would pose an *enormous threat* to BCT restoration and conservation activities that have

[62] See: http://www.biologicaldiversity.org/programs/biodiversity/species_agreement/pdfs/proposed_settlement_agreement.pdf .
[63] http://www.biologicaldiversity.org/species/fish/least_chub/index.html

been accomplished in Nevada over the course of the past 20+ years. *This possible outcome is unacceptable.*"[64] (emphasis added).

The NDOW also expressed concern over the loss of sportfishing streams, an important recreational pursuit to Nevadans, and a widely recognized beneficial use and trust responsibility:

> "The loss of significant stream miles in recreational sportfishing streams as described in Appendix 3.7 is very concerning. Substantial stream miles (and resulting sportfish populations and angling opportunity) will be diminished in Lehman, Silver, Bastian, McCoy, Meadow, Negro, Shingle, Willard, and Geyser creeks under certain Project alternatives. These streams are important for recreational angling and those losses are unacceptable."[65]

In addition to these named species in DEIS Chapter 3.7, there are other species of desert fish equally or more threatened by the ground water mining, but not mentioned in the DEIS, although some are listed in Appendix Table F3.7-13A. These species include:[66]

- Meadow Valley Wash desert sucker – State of Nevada "imperiled" and a BLM sensitive species.
- Flannelmouth sucker – "critically imperiled and a BLM sensitive species (not in Appendix F3.7).
- White River sculpin – "critically imperiled".
- Preston White River springfish – "critically imperiled" and a BLM sensitive species.
- Moorman White River springfish – "critically imperiled" and a BLM sensitive species.
- Clover Valley speckled dace – "critically imperiled" and a BLM sensitive species (not in Appendix F3.7).
- Pahranagat speckled dace – "critically imperiled" and a BLM sensitive species.
- Relict dace – "imperiled" and a BLM sensitive species.
- Meadow Valley speckled dace – "imperiled" and a BLM sensitive species (not in Appendix F3.7).
- Utah sucker – "critically imperiled".

By excluding the flannelmouth sucker, Clover Valley speckled dace, and Meadow Valley speckled dace from analysis and disclosure, the BLM has failed to meet its requirements under NEPA.

For those species which had impacts analyzed and disclosed, the results were stunningly horrific. As disclosed in the DEIS, fish suffered many consequences of flow reductions in their habitat, such as those that would occur at springs and streams in the areas impacted by the ground water mining. Fish diversity of species present, abundance, behavior, growth rates and other

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[64] NDOW, page 6.
[65] Ibid.
[66] Nevada Natural Heritage Program. November 2010. Animal and Plant At-Risk Tracking List. Available at: http://heritage.nv.gov/lists/track.pdf .

physiological traits declined, while parasites and invasive species increased.[67] Fish inhabiting springs are especially sensitive to changes in volume and flow as such parameters define the limits of their suitable habitat.

From the disclosure in Chapter 3.7, it is quite clear that local extirpations will occur if not outright extinctions. Flows to Big, Keegan, and North and South Millick Springs will essentially go dry, wiping out relict dace, speckled dace, mottled sculpin, Utah chub, northern leopard frogs, and petitioned springsnails.[68] Other springs such as Butterfield and Flag will experience habitat degrading flow reductions of nearly 20%, impacting the critical habitat for the endangered White River spinedace, White Rive sculpin, White River desert sucker, White Rive speckled dace, and several species of petitioned springsnails.[69] Perhaps even more disconcerting are the 24 springs providing habitat for special status species that are disclosed as having negative impacts from the ground water mining, but not enough is known about the geohydrology to predict the impacts on the species of concern.[70] For these species it is a game of chance on whether or not they will be afforded the opportunity for viability and survival. The promised monitoring and mitigation would be ineffectual and will be further discussed in another section of these comments.

Once again, it is clear that imperiled and seemingly protected species of fish and other aquatic life will be highly vulnerable to impacts from the proposed pipeline that may well lead to their extinction.

Terrestrial Animal and Rare Plant Resources

The "surplus" ground water the SNWA hopes to mine is actually largely water needed and used by native plants and ecosystems for evapotranspiration ("ET"). The DEIS discloses that the modeling used suggests that there will be an 84% reduction in ET in Spring Valley, a 33% reduction of ET in Snake Valley and a 54% reduction of ET in the Great Salt Lake Desert Flow System, with a much lesser reduction in the White River Flow System south of Spring Valley.[71]

The impacts from such reductions would result in a catastrophic ecosystem change in composition, structure and function. Plants utilizing surface or shallow ground water (phreatophytes[72] and meadow species) would be decimated and would be largely replaced by species not needed as much water. The DEIS discloses that, in response to a 10-foot or greater drawdown of ground water, meadows would become less vigorous and dry and be replaced by dry land species of grass, while the current basin shrublands, so valuable for wildlife habitat, would see canopy cover progressively thinned, and dominant plant composition change to dry land species, including invasive non-native species such as cheatgrass, which in turn will spark a

[67] DEIS, pages 3.7-37 – 40.
[68] DEIS, Table F3.7-11
[69] Ibid.
[70] Ibid.
[71] DEIS, Table 3.3.2-6.
[72] DEIS, Table 3.5-6.

wholesale change in the frequency and intensity of wildfires (fire regime). This in turn will fundamentally change the ecosystem values and services that the sites can provide.[73]

Naumburg et.al. (2005), noted that, "Although changes in depth to groundwater occur naturally, anthropogenic alterations may exacerbate these fluctuations and, thus, affect vegetation reliant on groundwater. These effects include changes in physiology, structure, and community dynamics, particularly in arid areas where groundwater can be an important source of water for plants. To properly manage ecosystems subject to changes in depth to groundwater, plant responses to both rising and falling changes in depth to groundwater tables must be understood."[74]

The area of land that will be affected is staggering. The DEIS estimates that over the 200-year study horizon, 191,506 acres of basin shrubland will be impacted along with 8,048 acres of wetlands and meadows.[75] Keep in mind that these impacts ignore changes from drawdowns less than 10-feet in nature. Hence, the impacts on terrestrial species and ecosystems will likely be greater than analyzed and disclosed in the DEIS.

There was no disclosure of the impacts for areas with lesser drawdown, and not any convincing discussion provided on why the less than 10-foot drawdown impacts were not important to species and ecosystems that could be adversely impacted. Depending upon the hydro-geologic characteristics of the specific aquifer, a 1-10-foot drawdown could conceivably impact hundreds of square miles and untold springs and streams, as well as countless acres of terrestrial habitats, even to the point that they dry or suffer significant adverse impacts. Hence, the impacts on terrestrial species and ecosystems will likely be greater than analyzed and disclosed in the DEIS. We would again direct your attention to previously cited NDOW concerns regarding this matter.[76]

A further glaring omission in the DEIS is the complete absence of any analysis or disclosure of the effects of pumping on predatory mammals such as coyotes, cougar, bobcats, and badgers. Current conservation biology science recognizes the critical roles that predators play in healthy ecosystem function and the cascade of problems that occur when they are eliminated.[77] Since the impacts to prey species due to large-scale vegetation and ecosystem changes are likely to be great and significant, it stand to reason the impacts on their predators will be at least as large.

Whenever such large and fundamental changes to ecosystems are made, all species and aspects of the system are impacted. The number of affected species in this case could easily number in the hundreds. However, the DEIS chooses to only analyze a subset of all the species that could

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[73] DEIS, pages 3.5-38-43.

[74] Naumburg, Elke, Ricardo Mata-Gonzalez, Rachael G. Hunter, Terry McLendon, and David W. Martin, 2005. Phreatophytic vegetation and groundwater fluctuations: a review of current research and application of ecosystem response modeling with an emphasis on Great Basin vegetation. Environmental management, Vol. 35:6, pp. 726-740.

[75] DEIS, Table 3.5-14.

[76] NDOW, pages 1-2.

[77] See: http://e360.yale.edu/feature/the_crucial_role_of_predators_a_new_perspective_on_ecology/2442/ .

be potentially impacts, apparently using a habitat surrogate approach. While taking this approach may have some validity in science, the BLM has failed to document and disclose why it feels such an approach is valid and for which specific species the very broad vegetative classifications are representing.

For sake of demonstration of the potential impacts, a few of the species that are included in the DEIS will now be explicitly covered in our comments, with the understanding that far more impacts will exist. These examples are meant to demonstrate the fundamental analysis and disclosure flaws found in the DEIS.

Sage grouse

The greater sage grouse was found to be warranted for protections under the Endangered Species Act in March 2010.[78] The sage grouse has also been identified by the BLM Nevada State Office as sensitive under BLM Manual 6840.2

Sage grouse, as the name implies, is closely allied and dependent on various stages of sage brush development for their life stages and survival. Grouse are found in different stages of sagebrush development depending upon the season and the needs of the grouse during that time.[79] Despite the well-known importance of this habitat to sage grouse and other sagebrush obligates, the quality and quantity of sagebrush habitats have declined for at least the last 50 years and the welfare of the grouse mirrors this trend.[80] [81]

Sage grouse have a strong fidelity to their display, breeding, summering and wintering areas. Male grouse typically travel up to 1.3 miles to their lek sites, while during the breeding season, females typically travel less than 3 miles, but up to 22 miles to nest. Sage grouse exhibit both migratory and non-migratory behaviors, and populations of the grouse can contain both behaviors. Non-migratory grouse usually do not travel more than 6 miles annually, although migratory birds typically travel 21 miles annually, but travels up to 100 miles have been documented.[82]

In general, sage grouse nests are placed under shrubs having larger canopies and more ground and lateral cover as well as in stands with more shrub canopy cover than at random sites. Sagebrush cover near the nest site was greater around successful nests than unsuccessful nests in

[78] Federal Register, March 5, 2010. See: http://www.fws.gov/mountain-prairie/species/birds/sagegrouse/FR03052010.pdf .
[79] Doherty, Kevin E., David E. Naugle, Brett L. Walker, and Jon M. Graham. 2008. Greater sage-grouse winter habitat selection and energy development. J. of Wildlife Management 72(1):187-195.
[80] Connelly, John W., Michael A. Schroeder, Alan R. Sands, and Clait E. Braun. 2000. Guidelines to manage sage grouse populations and their habitats. Wildlife Soc. Bull. 28(4):967-985.
[81] Becker, JM, CA Duberstein, JD Tagestad, and JL Downs. 2009. Sage-grouse and wind energy: biology, habits and potential effects of development. Pacific Northwest National Laboratory, operated by Battelle, for the U.S. Department of Energy. Contract DE-AC05-76RL01830.
[82] Ibid.

Montana and Oregon, and successful nests were in sagebrush stands with greater average canopy coverage than those of unsuccessful nests.[83]

Characteristics of sage grouse winter habitats are relatively similar throughout most of the species' range. Studies have shown that the grouse prefer sagebrush habitats with greater than 20% canopy cover. During winter, sage grouse feed almost exclusively on leaves of sagebrush.[84]

As previously noted, the DEIS discloses that these types of basin shrublands will be dramatically altered in terms of structure and expanse, much to the detriment of the sage grouse.

Faced with increasing demands on wild public lands to supply sites for renewable energy development, the NDOW developed conservation standards to help protect and conserve the species and their habitats.[85] This document gathered and synthesized the most currently available research and scientific knowledge regarding the topic, and represents the current state-of-the-art and science. While the proposed action is not an energy project, aspects of it such as transmission lines, well and pumping stations and the activity associated with the operations of the project are similar. Comparison of the requirement of the DEIS to the NDOW standards reveals that the DEIS requirement fall far short of providing the protections sought by the state and the current state-of-the-art and science. The NDOW, in their comment letter on the DEIS, also made reference to these short comings.[86]

It is quite clear that the right-of-way and pumping impacts on sage grouse from the proposed action would be immense and the mitigation measures envisioned (such as 2-miles buffers from leks) less than those called for by NDOW standards and current best science.

Previously in these comments the characteristics of sage grouse nesting and brood-raising and winter habitats were briefly described based on work done by Connelly and his associates. The DEIS reveals that 280,006 acres of sage grouse nesting and early brood-raising habitat would be adversely impacted along with 351,839 acres of winter range.[87] These acreages amount to 59% and 75% respectively of the total available habitat.[88] We refer to the NDOW standards for an indication of the significance of these impacts. The standards state, "The NGSCT considers Category 1 habitats (leks and nesting habitat) irreplaceable and Category 2 habitats (quality winter and brood rearing habitats) critical to the long term persistence of sage-grouse

[83] Ibid, Connelly etal. 2000.
[84] Ibid.
[85] Nevada Governor's Sage-Grouse Conservation Team. 2010. Nevada energy and infrastructure development standards to conserve greater sage-grouse populations and their habitats. 58 pages plus appendices.
[86] NDOW, page 5.
[87] DEIS, Table 3.6-15.
[88] BLM erred in their calculation of percent of groundwater development area these acres represent by including in their averages the zero acres for Dry lake Valley. If nesting and winter habitat do not exist to being with, then they should not be averaged in with basins where such habitats do exist. By including Dry Lake Valley, the BLM minimizes and fails to disclose the true magnitude of the impacts.

populations. Energy or transmission development should be avoided within Category 1 and 2 sage-grouse habitats."[89]

By all accounts of the best available scientific information, it would appear that the impacts from the proposed ground water mining would set the viability of the sage grouse spiraling downward and would greatly contribute to the bird's threats of extinction.

Southwestern willow flycatcher

The southwestern willow-flycatcher is a species protected as endangered under the ESA.[90] On August 15, 2011, a notice appeared in the Federal Register announcing a proposal by FWS to revise the designation of critical habitat for this flycatcher.[91] Among the areas to be designated in Nevada are the Key Pitman State Wildlife Management Area and the Paharagant National Wildlife Refuge.[92]

The DEIS discloses that both the above area of critical habitat and the Meadow Valley Wash, another area of habitat for the flycatcher would be adversely impacted by the proposed ground water mining, due to the connectivity of the ground water flow system in the area.[93]

Once again, it is clear that imperiled and seemingly protected southwestern willow-flycatcher will be highly vulnerable to impacts from the proposed pipeline that may well lead to their extinction.

Desert tortoise

The desert tortoise is a species protected as threatened under the ESA.[94]

The proposed pipeline right-of-way would negatively impact 2350 acres of tortoise habitat, including 1759 acres of formally designated critical habitat.[95]

The DEIS incorrectly assumes that the tortoise would not suffer any indirect impacts from the ground water mining aspects of the proposed action.[96] Maps of the predicted drawdowns for the 200-year mark show up to 200-foot declines in parts of Delamar Valley, Kane Springs Valley and Pahranagant Valley, all of which provide habitat for the desert tortoise.[97] These declines threaten the species that the tortoise relies upon for its habitat, including creosote bush.

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[89] Nevada Governor's Sage-Grouse Conservation Team. 2010. Nevada energy and infrastructure development standards to conserve greater sage-grouse populations and their habitats. 58 pages plus appendices.
[90] See: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B094 .
[91] See: http://www.gpo.gov/fdsys/pkg/FR-2011-08-15/pdf/2011-19713.pdf .
[92] Ibid, page 280.
[93] DEIS, page 3.6-23.
[94] See: http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C04L .
[95] DEIS, page 3.6-39.
[96] DEIS, page 3.6-73.
[97] DEIS, Figure 3.3.2-5.

Again, it is clear that imperiled and seemingly protected desert tortoise will be highly vulnerable to impacts from the proposed pipeline that may well be adverse to their local populations and recovery.

Native ungulates

Native ungulates, including deer, elk, pronghorn and big horn sheep are important contributors to healthy and viable ecosystems.[98] They are also a fundamental part of Nevada's natural heritage and a source of recreation for thousands of hunters.

The adverse impacts to native ecosystems outlined in the *Terrestrial Animal and Rare Plant Resources* introductory section have dire consequences on native ungulate species:

- Over 649,200 acres of pronghorn habitat, including 25,000 acres of crucial winter range affected;
- Over 203,000 acres of mule deer habitat, including 17,000 acres of crucial summer and 58,000 acres of crucial winter range affected;
- Over 195,000 acres of year-round elk habitat affected; and,
- Over 15,900 acres of big horn sheep habitat affected.

While not all these acres will be impacted to the same degree or intensity, large areas of habitat will none-the-less be destroyed or degraded.

The proposed mitigation measure of providing artificial water sources for the ungulates will not address the adverse impacts caused by the loss of over 192,000 acres of basin shrubland habitat.

Although these species are not necessarily rare or imperiled, they are co-managed by NDOW, and are of cultural significance to both Native American Tribes and sportsmen with long-standing hunting traditions. The desert subspecies of big horn sheep is a BLM sensitive species.

The proposed monitoring and mitigation plans outlined in the DEIS do not provide assurances that the public's interests in wildlife, recreation and the environment will be adequately protected.

The DEIS makes repeated incorporation by reference to several external documents created by Stipulated Agreements between Department of Interior Agencies and the SNWA – the Spring Valley and the Delamar, Dry Lake and Cave Valleys Hydrologic Monitoring and Mitigation Plans, and the draft Snake Valley Monitoring, Mitigation and Management Plan.[99]

Unfortunately, these plans have fundamental flaws which may them useless for purposes of protecting the public's interest and trust. We will highlight the major ones in the following.

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[98] Hobbs , N. Thompson. 1996. Modification of Ecosystems by Ungulates. *The Journal of Wildlife Management.* Vol. 60, No. 4, pp. 695-713.

[99] For example, DEIS, pages 3.3-113 to 122.

Using the Spring Valley Agreement and Plan as a representative for the others, the general theme of these agreements and plans is that the federal agencies will drop or not file protests before the Nevada State Engineer with regards to any SNWA groundwater right applications in the covered valleys (basins). In return, monitoring, management and mitigation plans are to be mutually developed, which in theory would lead to achieving common goals such as studying and characterizing the groundwater flow systems, manage the development of groundwater by the SNWA to avoid *unreasonable* adverse effects to water-dependent ecosystems, and to avoid *unreasonable* degradation of the scenic values and visibility from Great Basin National Park due to particulate pollution and loss of surface vegetation (emphasis added).[100]

The agreement also established three groups to facilitate the implementation of the Monitoring, Management, and Mitigation Plan ("MMMP"). An Executive Committee ("EC") comprised of one manager from each of the parties to the agreement would be a decision body that receives and acts upon information and data from the other two groups. A Technical Review Panel ("TRP") comprised of one representative from each of the parties, would meet to address the geo-hydrologic concerns such as development of a regional groundwater flow numerical model, aquifer studies, and review of results from the monitoring of production pumping. A Biological Working Group ("BWG") would mirror the TRP but have the appropriate expertise related to water-dependent ecosystems. Both the TRP and the BWG would make recommendations to the EC on the needs and conduct of the MMMP.[101]

This structure is flawed for a number of reasons:

1. <u>The structure could easily result in decision delays that could threaten ecosystems and species.</u>

   All three bodies were to fulfill their purposes using consensus decision-making. Consensus is a long, often drawn out process, which can result in excellent decisions under the right circumstances, but also allows a minority of members to hold the others hostage in making a decision.

   The EC was to make decisions based on recommendations from the TRP and BWG, and if either of those groups could not reach consensus (no guidance as to the time allowed for consensus to be reached) would make the ultimate decision. Nothing in the agreement or plans describe upon what basis the EC was to reach consensus, leaving such decisions on the welfare of water-dependent ecosystems at rick to political rather than best- available science. If the EC could not reach consensus, the matter would be referred to the State Engineer or another agreed upon third-party.[102]

   Given the number of layers and the time to reach consensus, it is quite probable that reaching an ultimate decision will take months and possibly years. Such delays when poorly

[100] Stipulation for Withdrawal of Protests – Spring Valley. 2006. DEIS Appendix C.
[101] Ibid.
[102] Ibid.

understood groundwater systems and imperiled species are involved could lead to disastrous results.

2. The system for collection of data, and its interpretation and handling and reporting is wide open to malfeasance.

Another fundamental flaw is that the SNWA is the primary entity charged with data collection, handling, summarizing, analyzing, interpreting and reporting. This lack of unbiased oversight and control leads to dubious scientific credibility.
A much improved structure would be to have a neutral third-party handle these tasks and then report them to the BWG and TRP.

3. The MMPS do not have pre-set biological triggers or threshold points to prompt action.

Even if good, unbiased monitoring occurs, the question what it means to ecosystems and species remains. There is a lack of a priori biological or physical indicators that would trigger an appropriate reduction or stoppage of groundwater pumping to protect water-dependent ecosystems. Without such pre-set triggers, due to the factors discussed in #1 above, there could be a considerable delay in response which could imperil species or even drive them to extinction. Any monitoring or triggers should be conservative in nature and in accordance with the precautionary principle. The BWG should establish an acceptable range of variation of nested targets and ecological indicators.

4. The aquifer response time adds considerable uncertainty and risk.

Mitigation based on aquifer monitoring has an inherent problem with its efficacy – aquifer systems don't have instantaneous response times like a faucet, there are inherent delays in response to cessation of pumping. Bredehoeff and Durbin reported on this phenomenon in the journal *Ground Water*. They observed that particularly in large aquifer systems there is a delayed response between observation of an impact and its maximum effect, along with a long time lag between changing the stress and observing an impact at a distant location. The result is that the maximum impacts are larger than those observed when pumping is halted, and once halted the recovery to the pre-pumping state occurs very slowly – perhaps over a millennium for large systems.[103]

SNWA proposes to reduce or cease groundwater withdrawals to avoid adverse unacceptable environmental impacts. Setting aside immense doubt and skepticism that once the pipeline is built that it will ever be allowed to have reduced flows, this mitigation is another case of something that sounds good, but which in fact is unreliable.

For this measure to have any hope of success, very detailed resource-specific thresholds and criteria for curtailing pumping in response to adverse impacts would need to be in place, based on soil and plant water requirements throughout the pumping impact area. In theory,

[103] Bredehoeff, J. and T. Durbin. 2009. Ground Water Development – The Time to Full Capture Problem. Ground Water: 1-9.

for instance, if soil water needed by native plants is insufficient to sustain their health and vigor, pumping from well linked to discrete monitoring sites would then be shutdown or have pumping reduced. This theoretical mitigation measure, however, runs up against the problem of aquifer response time. Production wells can reduce spring flows and groundwater levels relatively quickly compared to the time needed for the water table to replenish and be able to supply the water needs in question.

Nothing in the DEIS or MMMPs suggest a proposed measure with enough scientific vigor or specificity to address this concern. At best such a measure is speculative and a theory that should be subjected to small scale experimentation rather than being the foundational piece of mitigation.

Given this uncertainty with timing and impacts, the use of the MMMPs as mitigation measures in the DEIS is highly inappropriate and scientifically unjustified.

5. The Stipulated Agreements and MMMPs have low standards.

As previously mentioned, the lack of a clear basis on which decisions will be made is a fundamental flaw. Likewise, goals and objectives modified with the undefined terms "reasonable" or "unreasonable" provide little or no certainty or assurance of what is being gained through the MMMPs. It is easy to produce a great sounding document, but without regulatory or other assurances, the words can be hollow and meaningless.

6. The Stipulated Agreements lack regulatory and other assurances that the mitigation measures proscribed will be actually carried out.

The Stipulated Agreements governing the MMMPs include the provision: "Any commitment to funding by the DOI bureaus or the SNWA in the stipulation, including specifically any monitoring, management, and mitigation actions provided for in Exhibit A is subject to appropriations by Congress or the governing body of the SNWA as appropriate."

In the present (and long-term) political climate, funding from public sources is under extreme pressure. Long-term survival of the MMMPs is therefore highly speculative and even unlikely. The MMMPs as described will, over the long term, make aquatic biological resources in the area of impact increasingly dependent on continuation of the program, while the program itself becomes increasingly unlikely to exist.

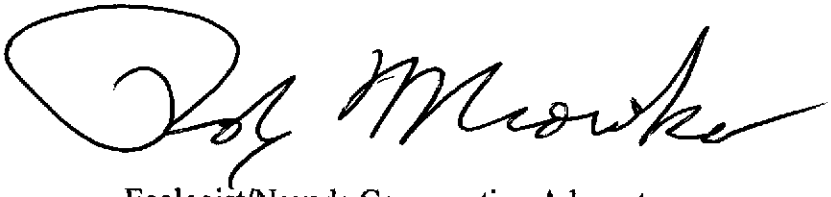
The NDOW also observed the shortcomings of the proposed mitigations and stated:

In general, we found mitigation-related sections of the EIS to be *very inadequate* in addressing potential impacts. Under many Alternative scenarios the Project could result in potential widespread and wholesale extirpations of populations of fisheries resources (including native and nonnative, game and non-game species), and significant disruptions to or disturbance of terrestrial wildlife species as long-term Project implementation occurs."[104] (emphasis added).

[104] NDOW, page 5.

In closing we urge you as the State Engineer to deny the SNWA's request for water rights as not being in the publics' interest, does not uphold the State's trust responsibilities, is based on unsubstantiated needs, and that it is undeniably not environmentally sound.

Sincerely yours in conservation,



Ecologist/Nevada Conservation Advocate