



GILA CONSERVATION COALITION

Saving New Mexico's Last Wild River

July 24, 2014

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RE: Comments on BOR Appraisal Level Report on the AWSA Tier 2 Proposals and Other Diversion and Storage Configurations

Dear Ms. Gonzales and Mr. Anderson:

Thank you for the opportunity to provide comments on the BOR "Appraisal Level Report on the AWSA Tier 2 Proposals and Other Diversion and Storage Configurations."

The report provides decision makers and the public with project cost and economic information that indicate that a Gila River diversion/conveyance/storage project does not make economic sense. Project costs for BOR alternatives range from \$300M - \$600M, with negative net benefits for the BOR alternatives, ranging from -\$270M to -\$635M. The Tier 2 GBIC, Hidalgo County and Deming Diversion Proposals range in cost from \$42M to \$503M, with negative net benefits that range from -\$2M to -\$438M. Exchange costs are estimated at \$34M over the life of the projects; however, this does not take into account that the Central Arizona Project estimates that delivery costs will increase by 40% percent by 2019 and will continue to increase over time.

Given that this report is being provided to the New Mexico Interstate Stream Commission as it contemplates its preliminary decision under the Arizona Water Settlements Act, there should be a **more detailed discussion of uncertainty associated with the analyses**. There are three significant areas of uncertainty that warrant more discussion and full disclosure:

- 1) **The project yield has not been adequately assessed.** There are a number of factors that influence project yield that have been omitted from the Appraisal Report discussion on pages 10 – 12. Climate change will influence the amount of water available for diversion under the CUFA. Dr. David Gutzler's paper regarding the impacts of climate change on Gila River stream flow

produced as part of the AWSA planning process should be included. This paper indicates an 8% decrease in median stream flow from December through June due to climate change. This paper has been available for months on the nmawsa.org website and should be included in the discussion of project yield. Additionally, The Nature Conservancy Gila River Flow Needs Assessment, produced under a BOR Desert Landscape Conservation Cooperative grant that included staff of the BOR and ISC, was provided to the ISC and BOR in June. There has been sufficient time to include a discussion of the study's climate change scenario results in the Appraisal Report.

Additionally, evaporation and seepage losses could be significant. Former Interstate Stream Commission director Norm Gaume and ISC's independent engineering consultant RJH Consultants have both provided analyses that indicate that high seepage and evaporative losses could impair project yield. BOR has calculated evaporative losses from reservoir storage, but has not factored this information into project yield and the economic analysis. A discussion of the potential magnitude of seepage losses should be included.

These factors will affect the economic analysis and financial feasibility of the diversion alternatives. The economic analysis as currently conducted assumes the full AWSA junior water right of 14,000 afy is obtained. If the yield is less, then the net benefits are more negative everything else remaining equal. Similarly, the project may not be viable from a financial perspective if less water is delivered for a given fixed cost.

Before making a decision on how to proceed, decision makers need to understand how these factors will affect the results of the cost and economic analyses presented in the Appraisal Report.

Although discussion of these topics was not specifically included in the Memorandum of Understanding between BOR and the ISC, this report has included other additional information not specifically requested by the ISC, such as cost of lining Winn Canyon, the cost of terminal water treatment in Deming, and the existing discussion on yield. To be consistent, the BOR should include these factors, as they are critical to understanding the uncertainty associated with the Appraisal Report analysis results.

- 2) **The economic analysis used the Tier 2 proposal project cost information and not the revised cost information provided in earlier parts of the Appraisal Report.** Without explicit mention of this, the reader is led to believe that the revised BOR cost estimates are included in the economic analysis. For example, if the updated cost information were used in the case of the GBIC proposal the project costs would be double the Tier 2 estimates. This would change the net benefit calculation.
- 3) **The report states “Geology related to proposed reservoirs is the most significant unknown associated with all of the proposals.”** Because the geotechnical data will not be available until September, there should be a discussion about how project costs could increase due to the findings of the geo-tech studies. Identification of the types of costs that could increase and a range of percentage increase similar to what was provided by the RJH Engineers evaluation of Bohannon Huston (BHI) PER would be helpful to decision makers.

Additional Comments

The report falls short in identifying the project beneficiaries. As can be seen from the attached map of property ownership, the principal beneficiary of agricultural water from these projects would be Freeport-McMoRan, the largest publicly traded copper company in the world with billions of dollars in annual net revenue. Will the public be expected to subsidize this multi-national corporation that currently

owns about 63,000 acre-feet of water in southwest New Mexico and only uses approximately 15% of their water rights annually?

The financial feasibility discussion is lacking in critical details. It omits the fact that only \$100M (\$66M + \$34M in 2004\$) is likely to be available from the Lower Colorado Basin Development Fund and New Mexico would be expected to finance the shortfall. This omission perpetuates the belief that there is \$128M available for building the diversion. This discussion also omits mention of payment of the annual exchange costs that would need to be covered. These costs should be included alongside the annual OM&R costs to give a complete picture of the annual costs of a diversion. Most importantly, there is no information provided that describes the ability of project beneficiaries to pay for this project. This information is critical to understanding if a project is feasible.

The discussion of environmental impacts of diversion projects is significantly incomplete and lacks balance. BOR and ISC staff participated in The Nature Conservancy Gila River Flow Needs Assessment produced under a BOR Desert Landscape Conservation Cooperative grant. It is our understanding that the final report was provided to the ISC and the BOR in June, however, the findings of this study were not included in the discussion of environmental impacts. This report obviously meets the threshold of available information for use in an appraisal level study. This is a critical error of omission which threatens the credibility of this report, making the decision to omit appear political. The potential ecological impacts of hydrologic alterations due to a diversion as described by this study should be included in the Appraisal Report. The TNC report should also be included in the Appraisal Report bibliography. Decision makers need to understand the latest potential environmental impact information in order to understand the regulatory risks associated with moving forward with a NM Unit.

Additionally, the BOR report under-represents the value of Mangus Creek to the long-term viability of the Loach Minnow and Spikedace. Recent watershed scale fires have made conservation of these endangered fish more difficult due to impacts to source populations. Mangus Creek is a rare watershed that is not at great risk from fire due to its position lower in the Gila watershed and lack of forested vegetation. This lower level of risk from landscape scale disturbance makes it a critical source population for the rest of the Gila drainage. We are not aware of a more secure population throughout the range of these 2 species. As such loss of the habitat in Mangus Creek is unmitigatable at any price and shouldn't be treated like other habitat losses (though we believe that any habitat loss for these species is unacceptable and may lead to a possible jeopardy opinion).

The BOR report also doesn't disclose potential impacts to the popular Box Canyon campground at Mogollon Creek. The proposed GBIC diversion dam would be located within the campground and would back up water into this critical riparian habitat. Further, any of the proposed diversion locations would require conveyance canals to be constructed through the campground, destroying valuable riparian vegetation important for wildlife and recreation. This omission significantly downplays the impacts of any of the proposed projects in that area and doesn't allow the public to fully assess the impacts on this popular recreation site. This is one of the few places on the Gila where the public can camp and recreate so near the river.

Additionally, there would be significant environmental impacts to the riparian vegetation and to the natural character of the Gila River canyon above Mogollon Creek if a diversion structure and attendant conveyance canals were built in this remote canyon. The construction disturbance would be substantial and the character of the canyon would be altered permanently. After much public review this reach has been placed off-limits to vehicles by the US Forest Service, and it makes no sense to subject the river here to the heavy machinations of dam construction and conveyance systems.

Finally, the BOR report describes flow augmentation as a potential benefit of diversion proposals, but does not give equal discussion to the potential ecological damages of the diversion proposals. The ISC has not demonstrated that flow augmentation will achieve ecological benefit. The BOR should therefore not describe it in the report as a given. Certainly there are also much cheaper methods to assure consistent flows below the existing agricultural diversions.

Appraisal Report omits the mitigation properties that could be impacted by diversion alternatives.

As shown in the attached map, the BOR diversion alternatives and Tier 2 proposals under consideration could impact properties obtained for mitigation purposes from water development projects in the Lower Colorado River Basin. This would require 2:1 (or higher) mitigation as part of any Gila River diversion project under the AWSA. What are the costs and other implications if the ISC chooses to move forward with a NM Unit? This is a significant issue that should be included in the Appraisal Report.

Appraisal Report doesn't make clear enough that BOR diversion and storage options don't include full costs of water delivery to municipalities in the 4 County area. It is difficult to evaluate the BOR diversion, conveyance, and storage options and compare them to other potential configurations such as those evaluated by Bohannon Huston because they don't include the estimated costs for delivery to water users. It doesn't make sense to divert and store water without a delivery system. It's unlikely that agricultural water users could utilize all the water stored in the larger storage proposals (and they would need to pump it back upstream). So it's reasonable to call attention to the additional costs of delivery systems similarly to how BHI did it. For example, using the BOR diversion and storage option using Greenwood Canyon and Sycamore Canyon costs \$598M without a delivery system. If costs were transposed from the Deming project (\$156M for the pipeline) the cost of a diversion system including delivery would be \$754M. Further, if it is assumed that water treatment would be needed there would be an additional \$21M added, totaling \$775M (would there need to be a treatment plant for each municipality using water?). This configuration is most comparable to the BHI diversion system estimates because it can utilize the most water that New Mexico can take in any given year (64K AF).

Additionally, the annual OM&R costs would likely be in the same range as the Deming project at \$8.9M annually with the annual exchange costs putting the annual costs in the \$10M range (and likely to rise) creating a cost of at least an additional \$500M cost over the life of the project, totaling a \$1.275 Billion cost (or more) for the life of a diversion, storage, and delivery system. These kinds of cost figures and the subsequent changes to the cost/benefit analyses are important for the public and the ISC to consider while evaluating the financial viability of a Gila diversion.

The Bureau should conduct its analysis of the New Mexico Unit consistent with the updated Principles and Requirements.

Compliance with CEQ's Principles and Requirements for Federal Investments in Water Resources ("Principles and Requirements"), updated in March 2013, will significantly improve the quality and value of the Bureau's planned analysis. Key relevant findings in the Principles and Requirements include the following:

- Excluding hard-to-quantify ecosystem services has traditionally led to biased evaluations, and a "narrow focus on monetized or monetizable effects is no longer reflective of our national needs."
- Federal investments should prioritize water efficiency; if water efficiency is not sufficient, agencies should promote "the reuse and reclamation of water" and non-structural alternatives.
- Federal agencies should evaluate risk and uncertainty, including the risks of climate change. This is critical for projects in the Colorado River Basin, which is projected to see flow

reductions on the order of 9% by mid-century, and even more critical for recipients of water from the Central Arizona Project, a relatively junior water right in the Lower Basin.

The Principles and Requirements will apply to the New Mexico Unit. First, the Gila River diversion or non-diversion alternative is a federal investment affecting water quality and/or quantity because the project will receive substantial federal subsidies (between \$66 and \$100 million, in 2004 dollars). Second, the updated Principles and Requirements apply to federal water resource investment decision making undertaken by the Department of Interior. Although the Final Principles & Requirements are not final, CEQ encourages agencies “[t]o the extent possible . . . to begin implementing the concepts laid out in these modernized Principles and Requirements consistent with law.” Furthermore, there is little doubt that the Principles & Requirements will be in effect by the time that any New Mexico Unit design is subjected to NEPA review. Accordingly, the Bureau should not wait to apply the Principles & Requirements to its analysis of the New Mexico Unit.

The advantages of applying the Final Principles & Requirements to the Bureau’s analysis are especially clear in the context of the New Mexico Unit’s potential need for a dredge and fill permit under Section 404 of the Clean Water Act, where, among other things, the selected alternative must be the Least Environmentally Damaging Practicable Alternative (a.k.a., “LEDPA”). However, application of the Final Principles & Requirements will also benefit the Bureau’s NEPA compliance by promoting consideration of a full range of action and non-action alternatives. The Bureau’s upfront consideration of practicable non-structural alternatives and non-monetary project costs could save all stakeholders significant time and money.

Other Specific Comments:

- 1) **Potential CUFA constraints for storage reservoirs** – The report does not mention that there are potential legal and/or technical constraints under the Consumptive Use and Forbearance Agreement that may impede storage of water in side stream reservoirs. Specifically, how would dams built in these side streams with significant seasonal flows allow for bypass of large flows above the CUFA bypass parameters and the CUFA daily maximum diversion rates? These additional flow levels can be very large certain times of the year.
- 2) **Potential CUFA constraints for storage in Mogollon Creek, subsequent release and offset by low flow diversion through infiltration galleries** - The report does not mention that there are potential legal and technical constraints under the Consumptive Use and Forbearance Agreement that may impede this approach. Specifically, how would dams built in these side streams with significant seasonal flows allow for bypass of large flows above the CUFA bypass parameters and the CUFA daily maximum diversion rates? These additional flow levels can be very large certain times of the year.
- 3) **Technical and financial feasibility of lining Winn Canyon and other reservoirs with geotextile** – There is no discussion of the technical feasibility of lining storage reservoirs with geotextile. The cost is provided only for Winn Canyon. What would the costs be for the other reservoirs under consideration? What are the technical challenges associated with this approach?
- 4) **GBIC proposal cost and economic analyses inconsistencies and potential legal constraints**– The discussion of the GBIC proposal is not straightforward and there appear to be inconsistencies in how the project was analyzed. The project cost analysis assumes 350 cfs canals would be constructed, but these are not technically feasible with existing ditches and new 30-acre storage ponds. The report states that alluvial storage is not economically feasible, but yet the cost and economic analyses use yield numbers that don’t match up with 300 acre-feet of total storage.

Specifically, the calculation of benefits for the GBIC proposal uses an assumption of 14,000 acre feet of water for agricultural benefits leading to a benefit of \$7.26 to \$45.44 million. However the engineering studies on page 43 conclude that only 500 to 1000 acre-feet of water could be stored as alluvial storage or even less, 300 acre-feet, in on farm storage ponds (page 40). Therefore the agricultural benefit would be more in the range of \$0.26 to \$1.6 million. Finally, there is no consideration of the legality of expanding the ditches from the current legal capacity of 12 cfs to 350 cfs which would require a significantly large footprint, as well as destroy valuable wildlife habitat used by listed species.

- 5) **Lack of exploration of alternatives to hardened agricultural diversion dam** – We are disappointed that the BOR didn't examine alternative agricultural diversion dam construction as proposed by GCC and examined by BHI. There are much more environmentally friendly approaches to agricultural diversion that meet the same objectives put forth in the GBIC proposal. The BOR explored other alternatives that didn't appear in stakeholder proposals so it would be consistent to do so in this case. We encourage the BOR to explore agricultural diversion alternatives similar to those in the BHI PER.
- 6) **Inconsistencies in Storage Reservoir Costs and Benefits** – The appraisal analysis assumed recreation benefits for the reservoirs, but the costs of establishing reservoirs as recreational attractions have not been assessed and included in the analyses. Moreover, it is unclear if assuming that these reservoirs would be used for recreation is appropriate given that these reservoirs are on private land and given the significant fluctuations in water level. Until it has been determined that these reservoirs are suitable for recreation it seems that including recreational benefits is inappropriate and misleading.
- 7) **F. Lee Brown Paper “Economic Considerations Pertinent to the Appraisal of Phelps Dodge Tyrone Water Rights” should be included in the economic analysis value of water discussion.** This analysis describes the limitations on willingness to pay for bulk water for agricultural and M&I use in southwest New Mexico. This report can supplement information in the Brown study of Rio Grande water rights referenced in the economic analysis discussion.

Thank you for consideration of our comments.

Sincerely,



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