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## MEMORANDUM

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TO WHOM IT MAY CONCERN:

SUBJECT: Gila River Diversion Costs Could Exceed \$1 Billion

The Arizona Water Settlement Act of 2004 (AWSA) authorizes a federal water development project named the New Mexico Unit of the Central Arizona Project (NM Unit) to divert water from the wild Gila River, store the water in reservoirs, and pump the water to Deming.

Despite millions of dollars of studies, thousands of pages of reports, and the obvious intentions of the New Mexico Interstate Stream Commission (ISC) to build the NM Unit, comparison of costs for proposed diversions is difficult. The recent Bureau of Reclamation's July 2014 Appraisal Report<sup>1</sup> to the ISC analyzed a series of diversion configurations. It did not provide a complete cost for any workable configuration. My review shows that Reclamation estimates that a comprehensive diversion and water delivery system for Deming would cost more than **\$1.1 Billion**.

Reclamation provided costs for three elements that I have combined to show Reclamation's cost estimate for a project that would provide water to Deming by:

1. Diverting the Gila River above Mogollon Creek into conveyance canals and pipelines supplying diverted water to off-channel reservoirs constructed in Greenwood Canyon and Sycamore Canyon,
2. Providing a pipeline from these reservoirs to Deming, and
3. Building a Deming drinking water treatment plant.

Component	Construction Cost	Interest during Construction	OM&R Annual	Exchange Annual	Present Value of annual costs
Greenwood & Sycamore Reservoirs--Reclamation alternative 1	\$598.45	\$40.68	\$4.71	\$1.75	\$151.57
Pipeline to Deming	\$156.00	\$10.60	\$5.17		\$121.27
Deming water treatment plant	\$21.10	\$1.43	\$0.50		\$11.73
Subtotals	\$775.55	\$52.72	\$10.38	\$1.75	\$284.56
Total Construction Costs	\$775.55				
Total Interest During Construction	\$52.72				
Total Present Value of Annual Costs	\$284.56				
Grand TOTAL	\$1,112.83				
All costs are in millions of dollars					

Reclamation's Appraisal Report contains the construction cost of each element. Interest during construction must be added for each element. Each element also has associated annual operations, maintenance, and replacement (OM&R) costs. The project also must pay an annual "exchange" cost. In order to describe the project's total costs using Reclamation's standard method, I calculated the "present value" of all annual costs and added them to the costs of construction and interest during construction. (The present value method discounts future costs.)

All of the numbers in the table above appear in various places in Reclamation's Appraisal Report or can be calculated using Reclamation's formulas except for the annual cost of operating and maintaining Deming's drinking water treatment plant. Based on my experience, I estimated that cost at \$500,000 per year. The exchange costs are based on 12,000 acre-feet per year (the reduced annual average volume the ISC staff said on August 26, 2012, is legally available for diversion) at the current rate of \$146 per acre-foot. Exchange costs must be paid in advance for the Secretary of the Interior's delivery of Central Arizona Project water from the Colorado River at the California border to the Gila River downstream from San Carlos Reservoir. New Mexico is required by the law to replace by "exchange" all Gila River water diverted by the NM Unit.

A comprehensive diversion and delivery system is required to access the amount of water use allowed the AWSA. The law allows up to 64,000 AF of water to be diverted at a high rate during Gila River peak flows and stored in any single year for subsequent use in dry years when no water is legally available for diversion. The combined elements from the BOR report were designed for these parameters.

The ISC also paid a contractor, Bohannon-Huston, Inc. (BHI), to analyze diversion and delivery systems designed for the same maximum AWSA diversion parameters. BHI's directly comparable costs from January and April 2014 reports were less than half of Reclamation's. According to RJH Consultants, Inc., another ISC consultant, BHI cost estimates neglected some items and underestimated others:

"It is our opinion that the total cost for the project may be significantly low.... some of the required elements of the dams were not included. In addition, some of the unit costs are unrealistically low...it is our opinion that the cost of the dams could be underestimated by more than 100 percent.... overall project costs may be 25 to 50 percent higher..."

The BOR report has a much more realistic analysis of the cost for a comprehensive Gila River diversion and water delivery system. Reclamation has extensive water development experience and includes many costs that BHI ignored. BHI has no large-scale water development experience. The BHI cost estimates prepared in January and April 2014 for the ISC have no credibility.

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<sup>i</sup> Appraisal Level Report on the AWSA Tier-2 Proposals and Other Diversion-Storage Configurations, Bureau of Reclamation, July 2014, 400 pages