



MEMORANDUM

TO: Southwest Water Planning Region Steering Committee Members

FROM: Daniel B. Stephens & Associates

DATE: April 14, 2004

SUBJECT: Selection of alternatives for detailed analysis in the SW Regional Water Plan

First and foremost, we would like to thank everyone who participated in the alternatives selection meeting conducted on Monday, April 5. Although the process can be complex and at times frustrating, we felt the Steering Committee did a commendable job of working together to help determine which alternatives are most appropriate for further analysis.

Since the meeting, DBS&A staff have met and tried to address the key issues and concerns indicated by committee members. We have refined the definitions of the alternatives to provide more clarity, weighted the few unweighted technical sub-criteria (but not those related mostly to personal values), and double checked the technical scores to ensure appropriateness. A few of the technical scores were modified slightly to improve consistency among the alternatives. The weights of the objectives and the ranking of quality of life criteria developed by the Steering Committee at the April 5 meeting were not altered.

Attached to this e-mail, please find the updated alternatives definitions, rating scale, all the scores used to rank the alternatives, and the final results of the model. Based on the results of the model, the list of alternatives we propose for further analysis are:

- 1) WC2 Agricultural Conservation
- 2) ID7 Rain Harvesting
- 3) WS1 Watershed Management
- 4) WM1 Water Banking
- 5) WC1 Municipal Conservation
- 6) WM7 Gila In-Stream
- 7) ID8 Enhance Surface Recharge
- 8) ID1 Gila ASR

In addition, there were several alternatives that scored high but which we feel can be addressed with a lesser degree of effort. These alternatives would be discussed but would not be analyzed in accordance with the ISC Regional Water Planning template. These are:

- 1) WM3 Border GW Management
- 2) WQ1 Protection
- 3) WC3 Industrial
- 4) WM4 Groundwater Management Plan



Committee members are welcome to review the model results, objectives weighting, and alternatives scores. However, we would like to remind everyone that the model is only a tool to help establish the alternatives that warrant additional study.

Therefore, we propose that everyone look at the list of proposed alternatives, present them to their stakeholder groups, and determine if there is anything missing from the list that makes the list unacceptable to them. It is important that the committee reach a consensus on which alternatives should be evaluated.

If there are any questions or concerns, please feel free to contact us at (505) 822-9400. We look forward to seeing everyone at the next steering committee meeting on April 22.



Southwest Regional Water Plan Definitions of Preliminary Alternatives

This document defines each of the proposed alternatives for meeting water resource needs of the Southwest New Mexico water planning region. The short titles given for each alternative (e.g., ID1 Gila ASR) are used as labels in the decision analysis computer model.

Water Resource Infrastructure Development

- *ID1 Gila ASR: Divert New Mexico's Gila/San Francisco River Entitlement for aquifer storage and recovery.* Divert Gila water through a pipeline, infiltration gallery, or small side stream reservoir to an aquifer storage and recovery project to store the water in underground basins.
 - *ID2 Gila Surface: Store New Mexico's Gila/San Francisco River Entitlement in reservoirs.* Divert Gila water and store it in surface reservoirs. Reservoir options would include a main stem or large side canyon reservoir(s).
 - *ID3 WW Reuse: Treat and reuse wastewater.* Recycle municipal wastewater for landscape irrigation
 - *ID4 Recycling: Recycle commercial and residential on-site water for nonpotable uses.* Implement the use of residential gray water systems and/or recycle commercial or industrial water for landscaping or industrial uses.
 - *ID5 Desalination: Desalinate water in southern basins.* Pumping and treating brackish groundwater from the southern basins will increase the water supply in the areas near the desalination plants.
 - *ID6 Non-Gila Surface: Develop additional surface water.* Several projects have been considered in the past on rivers in the region other than the Gila. Stakeholders should identify specific projects that the region may wish to consider.
 - *ID7 Rain Harvesting: Collect rainwater off structure roofs or other impervious surfaces.* Rainwater collection systems would be used to collect rainwater and store for non potable uses such as irrigation or a portion can be treated for potable use. Domestic, agricultural, and stock users would be primary beneficiaries.
 - *ID8 Enhance Surface Recharge: Enhance surface recharge in and along surface water courses by installing check dams or using other methods to slow runoff and increase bank storage and percolation to groundwater.*
- ID9 Large Scale Importation: Import a large amount of water into the region. This would include diverting water from other regions, and constructing a canal or pipeline to convey the water to the Southwest Region.*



Water Conservation

- *WC1 Municipal: Implement municipal water supply conservation.* Municipalities can identify conservation opportunities and sources of inefficiencies. Leaks are often the source of significant water losses in municipal systems. Public education, promotion of xeriscaping (use of low-water-use plants in landscaping), and/or increases in block water rate structures can be used to foster household conservation. This alternative could also include requirements and incentives for water conservation in new subdivisions and water restrictions during drought.
- *WC2 Agricultural: Implement agricultural conservation measures.* Conservation measures such as laser leveling or drip irrigation can greatly improve water use efficiency in the agricultural sector. Lining ditches and encasing delivery systems will reduce the amount of water lost to seepage and evaporation between the headgate and the delivery point for crops. The fact that water savings in this area will also reduce the amount of recharge to the shallow groundwater and may reduce return flow credits must be considered.

Water Quality

- *WQ1 Protection: Identify, protect and monitor groundwater and surface water vulnerable to contamination.* Numerous initiatives could support this alternative. For example, drafting and implementing source water and wellhead protection plans for key water supplies would define appropriate land uses near water supply wells, thus ensuring that nearby activities do not lead to contamination of the water supply. Aquifer protection programs in particularly sensitive areas as well as nonpoint source pollution control projects could potentially contribute to protecting water quality in the region.
- *WQ2 Replace Septic: Construct alternative wastewater treatment systems to replace/modify septic systems.* Replacing septic systems with community or individual liquid waste treatment systems may protect future water supplies by ensuring that septic systems do not contaminate shallow groundwater.

Water Supply Development

- *WS1 Watershed Mgmt: Manage watersheds to improve yield and reduce the risk of fire.* Active watershed management can in some cases increase the amount of water in a watershed that is available for meeting future water demand. If done properly, thinning can contribute to watershed health and reduce the risk of catastrophic fire.
- *WS2 Weather Modification: Implement cloud seeding or other programs to increase precipitation.* Several techniques are used in some western states to generate winter precipitation in mountainous areas. Silver iodide or dry ice particles, and/or microwaves are injected, launched, or directed toward an upper layer of clouds.
- *WS3 Restore Riparian Vegetation: Remove non-native vegetation and revegetate with native species to reduce riparian evapotranspiration.* The presence of exotic species



such as salt cedar can greatly increase evapotranspiration and thus reduce the water supply. Replacing this type of exotic vegetation with native, low-water-use vegetation may improve yields from the watershed.

- *WS4 Groundwater: Develop additional groundwater.* Municipalities and other subdivisions of the state can reserve water for the future to guarantee that it will be available for the region when the need arises. This alternative should include specific projects currently under consideration, such as well field relocation, expansion, or construction.

Water Resources Management

- *WM1 Water Banking: Establish a local water bank.* Some regions have recommended developing a local water bank to allow and manage temporary water transfers to meet short term need. The New Mexico Office of the State Engineer (OSE) has jurisdiction over water transfers and leases and therefore would be involved in the process. Water banking may not be applicable in areas where OSE administrative criteria limit transfers from one area of a basin to another.
- *WM2 Regional Authority: Establish a regional water management authority.* This entity (e.g., a water user's association) would act as a fiscal agent for and provide water resource management, coordination, and distribution of the Gila/San Francisco River Entitlement and other regional-scale projects.
- *WM3 Border Groundwater Mgmt: Develop a border groundwater management plan.* The purpose of the alternative is to protect groundwater supplies in the Mimbres, Playas, and Animas basins, which are located on the international boundary with Mexico. This alternative would include modeling and monitoring to evaluate the impact that groundwater pumping in Mexico has on New Mexico groundwater supplies.
- *WM4 Groundwater Mgmt Plans: Develop local groundwater management plans.* This alternative will allow for control and management of groundwater at the local level. In basins where the OSE already has well developed administrative criteria, a groundwater management plan could be developed to recommend critical management areas if necessary. In areas where no administrative criteria exist, these plans could assist in maintaining water levels and sustaining the groundwater supply.
- *WM5 Domestic Wells: Restrict installation of new domestic wells and/or the amount of pumpage from existing domestic wells in areas outside of the Gila.* This would allow the municipalities and counties to implement ordinances that identify and regulate the number of private wells located near and potentially impacting municipal water supplies or other senior water rights holders.
- *WM6 Declare Groundwater Basins: Petition the OSE to declare undeclared groundwater basins in the region.* Once the OSE has assumed administrative control of these basins, water suppliers in the region could begin submitting applications to



appropriate available water for future use. Declaration of the basins would protect existing users from impairment from future users.

- *WM7 Gila In-Stream: Set aside some of the captured New Mexico Gila/San Francisco River Entitlement for instream flow and environmental purposes in the Gila.* Gila Central Arizona Project (CAP) water would not be diverted, but would legally be reserved for instream use.
- *WM8 Water Availability Requirement: Ensure that future growth optimizes use of water resources and protects local social and cultural values.* An example is local or county ordinances that require stringent proof of available supplies as a prerequisite to approval of new developments.
- *WM9 Water Rights Re-allocation: State buys fallow water rights and re-sells when a beneficial use is identified.*

WM10 Water Rights Administration: Consideration of making water use in the Gila National Forest more equitable with the rest of the region. For example, allow some use of water for small scale outside uses such as a small vegetable garden or watering pets.

