CHAPTER 6

Implementing New Water Management Concepts—Legal and Institutional Considerations

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Regional Planning and Resource Management

Resolving and managing the Basin's water resource problems will require establishing and maintaining some type of regional institutional structure for cooperative planning and resource management.

Most of what we have recently learned about the hydrology and hydrogeology of the Albuquerque Basin has resulted from short duration partnerships between Federal, State, and local agencies sharing specific interests and objectives. While the results of these investigations will be put to good use, we may fail to realize the full benefit of this information if it is not viewed, remembered, and emphasized in a regional or basinwide planning and policy framework. Resolving and managing the Basin's large-scale and long-range water resource problems will require establishing and maintaining some type of regional institutional structure for cooperative planning and resource management. In addition to planning, policy, and management functions, there is also a need for long-term data collection and continuing scientific evaluation.

Local agendas often drive resource management decisions and may override regional concerns. This sometimes results in damaging policies and impaired political relations. The "big picture" is hard to focus on in a context of day-to-day operational crises. Even if the big picture is brought into view, solutions are often beyond the reach and control of local entities. There are too many jurisdictional boundaries, conflicting issues, and institutional constraints to overcome unilaterally. Technical resources and funding available to individual communities are often inadequate.

An approach successfully used on many large-scale projects involving multiple countries, States, regions, communities, or water districts is to pool funds and technical capability as well as planning, implementation, and management authority. Combined resources can then be brought to bear in resolving regional resource issues. Failure or inadequacy of regional resource planning and management often carries serious consequences or heavy costs. For example, over-appropriation of Pecos River water has resulted in an interstate lawsuit and a ruling requiring New Mexico to reduce its water use on the river. Achieving the necessary reductions by buying out water rights and disallowing water use by junior appropriators is costly and creates hardship.

A well-organized regional water resource planning, policy, and management structure currently does not exist in the Albuquerque Basin.

A well-organized regional water resource planning, policy, and management structure currently does not exist in the Albuquerque Basin. The Middle Rio Grande Conservancy District and Albuquerque Metropolitan Arroyo Flood Control Authority are examples of regional entities providing this type of special governmental function, but they are limited in either scope, jurisdiction, or both.

A regional water resource planning, policy, and management structure can be built on a variety of models ranging from a regional authority (like the District) to a coalition of individual water users or management agencies working together under a joint powers agreement. Whatever the form, a structure is needed to establish sustainable basinwide resource management goals and provide for cohesive long-range planning, implementation, and management.

As many of these functions are already performed by separate organizations, it may be a good idea initially to assemble a regional management structure from delegates representing each of these existing organizations. Such a group would include delegates from each pueblo and municipality, the District, the Middle Rio Grande Council of Governments, the Interstate Stream Commission, and other public entities directly involved with Basin water resource management.

A regional organization could also serve a need to maintain continuity and "institutional memory" in technical and scientific areas. As participants in short-term planning studies finish their work and move on to other projects, they carry with them unpublished and intuitive information about the systems they studied. Personnel change is a common problem in any organization, but important information, if it is key to an agency's core responsibility, is generally absorbed and retained in institutional memory. Without this memory, participants in new studies must expend substantial efforts to regain a position on the learning curve where their predecessors left off.

After a decision is made that regional water resource planning and management is necessary or desirable, the next decision would be to determine the most suitable structure to accomplish this mission. Would a legally constituted body with authority to establish policy, issue regulations, and acquire and spend money be needed? Would a more formalized cooperative relationship between the many existing individual water resource management agencies work better? Or should an existing organization, such as the Interstate Stream Commission or the Middle Rio Grande Council of Governments, be provided with the necessary authorities and resources and be adapted to the role?

The greatest obstacles to the establishment of an effective regional water resource management structure are political and legal.

The greatest obstacles to the establishment of an effective regional water resource management structure are political and legal. Regardless of the proposed makeup of the organization and any enabling legislation that may be needed to establish its mission and authority, members must come with an understanding and belief that there is a common cause and purpose, rather than a need to defend their individual interests. A difficult balance must be found when establishing a regional management structure. Political entities with the most investment or stake will seek a greater influence. Smaller groups will seek an equal say in decisions.

A regional water resource management organization for the Albuquerque Basin would probably require authorizing legislation, regardless of the type of structure. A group of delegates from the numerous affected entities could meet to develop the conceptual framework for the organization.

Once a conceptual basis of the organization is established, the State legislature would be approached for a charter. Charters and enabling legislation for existing entities may also need to be reviewed and modified to allow delegates from these organizations to participate.

Legal and Administrative Considerations

New types of water uses or allocations may require changes or clarifications in law, contracts, or administrative policies.

Implementation obstacles will also need to be addressed. Law and administrative policy establish restrictions on allocations and uses of water. New types of water uses or allocations may require changes or clarifications in law, contracts, or administrative policies. Effecting changes requires investment of money, time, political effort and, in some cases, public involvement. Experience in Arizona, Colorado, Texas, and Utah indicates that many innovative water management projects require new legislation to deal with previously unneeded or unanticipated activities. Much of the language for required new statutes could be extracted from legislation drafted in these States. Their experiences warrant investigation, if only to avoid duplicated efforts. Permitting for artificial ground-water recharge by injection wells, ownership and diversion rights for ephemeral stormflows, and spreading basin recharge projects are examples of areas that may require new legislation or legal clarification.

New concepts, like aquifer recharge and recovery schemes, will require further developments in law and policy.

Water rights are protected under the State constitution. New Mexico water law is based on the prior appropriation doctrine which establishes a right to use water based on appropriation of water and putting it to "beneficial use." Under New Mexico law, "natural" waters flowing in streams or contained in declared underground basins belong to the public and are subject to appropriation for beneficial use. Prior appropriators have rights senior to later, or junior, appropriators. Senior rights have precedence and are satisfied before junior appropriators may take water. Once water is appropriated and beneficially used, the right to use the water becomes a constitutionally protected private property right. This legal structure originated in the last century to protect surface water rights of agrarian users. As the use of ground water has become more prevalent, the law has evolved to address issues related to ground-water withdrawals, their effect on surface waters, etc. New concepts, like aquifer recharge and recovery schemes, will require further developments in law and policy.

The State Engineer's Office is the agency responsible for administration of water rights. A permit from the State Engineer is required before new appropriations of water are allowed. Changes in point of diversion or purpose of use also require the State Engineer's determination that the change will not impair other rights.

With particular regard to aquifer recharge and subsequent recovery, there are some fundamental legal questions that will have to be addressed:

- Application of water to a beneficial use is an essential condition of a valid water right. However, beneficial use is not strictly defined, and there is some question about whether use of water for aquifer recharge could or would be considered beneficial. In some States, recharge is considered a beneficial use; in others, it is not.

- The law requires the owner of a water right to exercise dominion and control over appropriated water to prevent its commingling with the public waters. No existing law permits the storage of water in underground basins in New Mexico. Consequently, protection of the right to recover water that is artificially recharged is not established.

- The type of surface water rights being used for ground-water recharge may determine the extent and nature of the State Engineer's jurisdiction over recharge activities.

- The status of water recharged passively is vague. The State Engineer requires diversion as a condition defining appropriation. A water right could be considered invalid if no actual diversion from a stream is taking place.

- Protection of water quality would be a paramount concern in all recharge activities.

From a legal perspective, some distinction between active and incidental recharge could be made. Active recharge by injection wells or purposely built surface recharge facilities like recharge basins could be considered differently from incidental recharge sources such as canal seepage or deep percolation from farm fields. Recharge from active projects could be more easily measured, monitored, and credited than water recharging the aquifer from passive incidental sources.

Because of the Federal interest in project waters and facilities, the National Environmental Policy Act would be applicable to most proposals for recharge projects, water banking, etc.

Federal law and contracts between water users and Reclamation for repayment of infrastructure development costs or the use of water owned by the Federal Government have significant influence on water uses and allocations in the Middle Rio Grande Valley. Under terms of its contracts with the Middle Rio Grande Conservancy District, the City of Albuquerque, and other water users, Reclamation has oversight responsibilities and authorities that apply to significant portions of the

Basin's surface water and existing facilities for water storage and conveyance. Contract provisions also apply to the disposition of funds that may result from water leasing agreements. Consequently, Federal approval may be required for changes in use or allocation of water. Because of the Federal interest in project waters and facilities, the National Environmental Policy Act (NEPA) would be applicable to most proposals for recharge projects, water banking, etc. The extent and complexity of NEPA requirements depend on the type and scope of the proposed project and the anticipated environmental impacts. The Clean Water Act and other regulatory laws would also apply to many activities. Compliance with the Endangered Species Act may be a further consideration.

A more detailed discussion of legal and institutional considerations associated with alternative water resource management strategies was prepared as an Assessment component study by Dr. John Hernandez (Hernandez, 1996).

CHAPTER 7

Recommendations

Chapter 7

RECOMMENDATIONS

We must ensure the availability of water and protect its quality for the future.

This report has described how patterns of land and water use in the Middle Rio Grande Basin have adversely impacted its water resources. Effects apparent in depletion of ground-water supplies, declining aquifer recharge, and water quality degradation are becoming better understood and more widely recognized. Developing sustainable water management strategies under pressure of rapid population growth and diversifying demands is a great challenge, but we must ensure the availability of water and protect its quality for the future. Damage to the hydrologic system will continue unless a regional perspective on land and water use is applied at all levels of planning and management.

By illustrating the nature and cause of adverse resource impacts and presenting some examples of mitigating solutions, we hope to encourage resource managers at all levels to work together to integrate management of both land and water to allow sustainable use of the region's resources. In addition to the array of management concepts and alternatives contained in this report, we present some recommendations which we believe would be helpful in achieving this goal.

Valuable time should not be spent seeking the "magic bullet" comprehensive solution.

There is not a single best solution to the Basin's water resource problems. Valuable time should not be spent seeking the "magic bullet" comprehensive solution. A combination of many partial but complementing measures will be needed. Alternatives that provide the greatest and most immediate benefits should be prioritized for "fast track" implementation. With good planning, other elements can be staged for subsequent implementation and fine tuning.

Regional Planning and Resource Management

We recommend establishment and maintenance of a regional organization to continue assembling the big picture view of the Basin's water resources, their allocation, and management.

We recommend establishment and maintenance of a regional organization to continue assembling the big picture view of the Basin's water resources, their allocation, and management. This organization should have some degree of authority to promote and implement a regional management strategy. It might also have authority to deal with interests outside the Basin. Charter functions should specifically include:

- Promoting regional planning cooperation
- Establishing regional land use, ground-water quality, and recharge protection policy guidelines
- Providing monitoring, compliance, and implementation support to the Basin communities

Recommendations for Key Agencies and Governments

Certain governments and agencies can be identified as having the most significant influence on water management in the Basin. Some recommendations can be specifically addressed to these entities.

City of Albuquerque

The City should continue its leadership by promoting and practicing sound resource management with a basinwide perspective.

As a very large water user with considerable technical and financial means, the City unilaterally has more power and leverage to eliminate or minimize adverse impacts to the hydrologic system than any entity in the Basin other than the Middle Rio Grande Conservancy District. The City should continue its leadership by promoting and practicing sound resource management with a basinwide perspective. Having coordinated several multiagency investigations over the past several years, the City has obtained a considerable amount of current information with which to better manage its land and water. We hope that the City will continue to work toward progressive water management goals by using and sharing this new information.

The City should pursue a course of conjunctive use management strategies that incorporate:

- Integrated land and water use planning policies
- Combined use of San Juan-Chama Project allocations with both shallow and deep ground-water supplies
- Recharge protection and enhancement programs especially in critical recharge areas

Most of the management alternatives discussed in this report will require establishing both internal and external partnerships. External partnerships between the City, Federal, State, and tribal planning and water management authorities should be developed to the greatest possible extent. Internal partnerships between the City's various departments and agencies should also be developed to promote integration of land and water use planning.

Middle Rio Grande Conservancy District

The District has been practicing regional water management in the Basin since the 1920's. Its legal and institutional position defines a special role for the District in the water management

community. A long history of sustaining agricultural productivity through irrigation supply and drainage has deeply ingrained in the District a sense of responsibility toward the region's agricultural constituency. The District has successfully promoted and protected rights and facilities serving this constituency, and it will and should continue to do so. However, the types and magnitudes of demands for water in the Basin are rapidly changing, and optimization of all available water will soon be required.

The District is uniquely positioned and qualified to assist Basin water users in attaining regional water management goals.

The District is uniquely positioned and qualified to assist Basin water users in attaining regional water management goals. It should open some space in its institutional mission and establish partnerships with other water user constituencies. The District should continue its support of regional water resource evaluation and management studies, and we encourage it to bring innovative water management ideas to the marketplace.

Some of the alternatives and opportunities presented in this report could be implemented immediately through partnerships between the District and other water users. For example, a partnership could be established between the City and the District to develop a nonpotable irrigation supply for a municipal dual-water delivery system. The District's mission could also be expanded or modified to include regional protection and enhancement of ground-water recharge through altered management of the canal and drainage system.

State of New Mexico

The State Engineer's Office and the Interstate Stream Commission are the State agencies responsible for water resource management. The State has been involved in recent Basin studies mainly through oversight interest of the State Engineer. However, on several of the Assessment investigations, the State was directly involved as a cost-sharing partner providing in-kind services for program design and review. This interactive and nonregulatory participation proved valuable.

Recent action to staff a position to coordinate future studies increases the potential for acquiring more of the information needed.

The State initiated the Middle Rio Grande Basin Technical Advisory Committee (TAC) to evaluate regional needs for water resource planning, management, data collection, and analysis. Recent action on the part of the Governor to staff a position in the State Engineer's Office to coordinate future studies identified by the TAC increases the potential for acquiring more of the information needed to achieve regional resource management goals. However, it does not address implementation of projects to achieve these objectives.

Regulatory and oversight functions of the State Engineer often seem to restrict acceptance of new information. While there is necessity for careful evaluation of novel ideas, regulatory agencies should be open to consideration of new data, scientific advancements, and innovative management proposals. Adequate resources should be allocated to regulatory agencies so that they can address these needs.

The State must recognize that Federal resources for providing technical and scientific support are being significantly reduced. State and local government will have to assume more of these responsibilities and costs. The State agencies should expand their role in participating in and implementing basinwide studies.

Federal Agencies

For many years, Federal scientific and resource management agencies have been involved in many alliances and partnerships with State agencies, local governments, and other stakeholder groups that are interested in better understanding and managing the region's resources. These efforts have generally produced good results by providing timely, unbiased, and pragmatically focused information relevant to a variety of resource management issues.

An expanded perspective on the region's overall resource needs has made recent interagency land, water, and ecological resource investigations successful.

Some of these issues fit neatly into agency missions, justifying, if not dictating, Federal involvement. Others could have been ignored if considered to be not strictly related to the agencies' core missions and responsibilities. An expanded perspective on the region's overall resource needs has made recent interagency land, water, and ecological resource investigations successful.

Federal agencies must resist a tendency toward tunnel vision which will naturally accompany current budget cutting and downsizing.

Federal agencies must now resist a tendency toward tunnel vision which will naturally accompany current budget cutting and downsizing efforts. Federal agencies must keep the big picture in view and manage accordingly. They must coordinate and combine resources with others where there are overlapping needs and capabilities. More so than ever, wasting resources on redundancy or missed opportunities must be avoided.

Native American Communities

The Pueblos of Isleta and Sandia participated in the Assessment investigations through cooperative data collection and data sharing agreements. This cooperation contributed to the success of studies of the reach of the Rio Grande between Sandia and Isleta Pueblos. This new knowledge will benefit all water users in the Basin.

A level of participation by the Pueblos in the Basin's water management community has not yet been fully defined. Sustainable regional water resource planning and management cannot take place without active involvement by all Basin stakeholders. The need for involvement of the Native American communities cannot be overstated.

Up to now, there has been a lack of coordination, cooperation, and sharing of information in terms of government-to-government relations between the Indian and non-Indian water user communities. To some degree, immediate or anticipated litigation or negotiation of water rights precludes the dissemination of proprietary information. However, Indian water rights litigation and negotiations may take many years to conclude, and the Native American communities should participate in current regional planning and resource management decisions to assure that their values and resource needs are fully represented.

Native American communities must become actively involved in current planning and resource management decisions.

Native American communities should become more actively involved in ongoing regional water resource study and management efforts. Although the cost of participation may appear daunting to communities with limited resources, the importance of the resource and the need for protecting water supplies and their quality justifies substantial investment. We recommend that the Pueblos continue to increase their level of cooperative involvement in the water resource community's scientific and resource management forums. Individually and collectively, they should also continue to develop their own scientific and resource management capabilities with assistance from the Bureau of Indian Affairs as necessary and appropriate.

Additional Basin Study and Data Requirements

Our knowledge of the Albuquerque Basin's water resources continues to evolve. Through recent multiagency efforts, we have attained a sound reconnaissance level understanding of the Basin's hydrologic assets, liabilities, and sensitivity to human impacts. More detailed work will be required before water management options or site-specific engineering alternatives can be implemented. A number of future study requirements have been identified through findings of recent studies and by the State sponsored Technical Advisory Committee. We offer a few comments on some of these requirements.

USGS Ground-Water Modeling

Modeling inputs can be improved significantly.

Development and review of the USGS ground-water model and initial modeling analysis show that the model will be able to provide reasonable simulations of the Basin's ground-water systems. However, the model has been populated with the most readily

available data and information. These inputs can be improved significantly. The model can be improved to provide better simulation of river losses, the effects of riverside and interior drains, and canal seepage. Another important modification will be to make the model represent declining recharge trends due to urbanization.

We recommend that the interagency work group undertake a comprehensive model review process to identify priorities and needed improvement and identify appropriate resources to accomplish the necessary work.

Technical Advisory Committee Recommendations

The Technical Advisory Committee's recommendations should be considered initial scoping.

The TAC brings together a diverse and seasoned group of resource management and earth science professionals. However, it has been impossible for participants to review and develop an adequate awareness and understanding of all findings from past and ongoing studies because of time and resource constraints under which these advisors participate. Because of the many issues related to the various levels of water management, there has been considerable difficulty in defining what the questions are (or anticipating what they will be) and in deciding what data are required to answer them. While TAC recommendations provide a comprehensive listing of the types and intensity of data that may be necessary, they may not accurately reflect all data collection and analysis requirements. In some cases, truly needed data are not identified. In other cases, some types or intensity of data collection are recommended where actual need is doubtful. The TAC's recommendations should be considered initial scoping which will be considered prior to developing plans of study or data collection programs.

Surface Water Monitoring Network

Adequate and reliable streamflow data is fundamental to good scientific evaluation of the resource base. Existing records are only adequate to characterize the hydrologic system of the Albuquerque Basin to a very limited degree of detail. Systematic measurements of streamflow and keeping of hydrologic records began on the Rio Grande in the 1890's, but only a very few stations have records dating back that far. Even the longest of these records represents a very short period in terms of climatic cycles and change.

The existing surface water measurement network is inadequate to accurately isolate or account for water uses in the Basin.

Our efforts to develop water budgets based on historic records have revealed that the existing surface water measurement network is inadequate to accurately isolate or account for water uses in the Basin. In contrast, our water budgets for 1993 were based on weekly paired-sample

measurements at eight strategic locations. Along with land and associated water use analysis, we were able to reasonably isolate and partition various losses from the surface water system.

We recommend that adequate surface water monitoring networks be established in all areas expecting significant water management issues to arise in the foreseeable future. These should be in place well in advance of needed issue resolution so that baseline data having an adequate period of record are available. Networks must also be designed to accommodate and reflect both geological and man caused impacts to the hydrology. However, we also caution against excessively ambitious monitoring which tries to measure everything in such a complex surface water system.

Ground-Water Data

Likewise, there is a need for more extensive ground-water data collection and monitoring networks. These systems are needed to provide information on direction and rates of ground-water movement, as well as movement of contaminants. Establishing ground-water elevation and water quality monitoring systems in important recharge areas should be a priority.

Final Comments

In closing, there are a few essential points that summarize the needs for successful management of water resources in the Albuquerque Basin which bear repeating:

(1) Cooperation between agencies at all levels is needed to initiate, establish, and maintain regional management of water resources.

(2) Adequate resources must be devoted to support efforts to develop unbiased information, data, and analysis of the available resources and the demands placed on them.

(3) Good impartial science is needed to guide and support policy decisions affecting resource management.

(4) The Basin's emerging resource problems cannot be solved by a single comprehensive solution. A solution will have to be built from a number of complementing parts. Planning and coordination are needed to ensure compatibility and proper prioritization of various solution elements.