A Water Planning Framework

Developing Effective Water Governance and Management Plans for New Mexico

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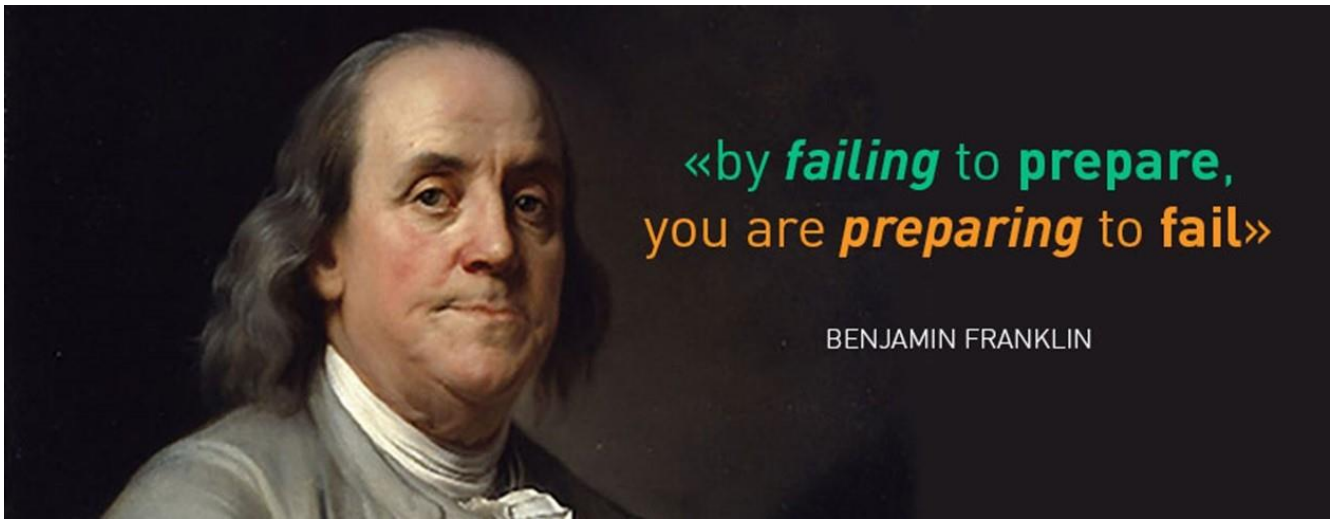

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New Mexico is faced with, but has not faced up to, important water resource limitations: downstream delivery obligations, federally mandated requirements, and state-permitted water uses and authorizations that substantially exceed sustainable supplies, all in the context of a rapidly changing climate. Without action to address articulated problems, New Mexico citizens' current and future water supplies as well as our pocketbooks are at risk. New Mexico must establish the institutional capacity to plan for its otherwise dire water future. Why establish a robust ongoing process for multi-level water planning?

- to create an orderly, well-founded prioritization for capital outlay projects
- to enable effective use of AWRM by creating negotiated shortage-sharing agreements
- to coordinate/optimize local, regional, and state reactions to climate-driven transitions
- to evaluate and prioritize proposed infrastructure needs
- to recommend modification to policies, regulations and/or statutes
- to ensure decisions are based on sound science and hydrologic reality
- to identify problems at the appropriate level as they materialize
- to propose, evaluate, and prioritize solutions for the identified problems

This paper proposes an approach to plan for effective water governance and management in New Mexico. The purpose is to describe in the Fifty-Year Water Plan the characteristics of a fully developed water planning regime--constraints, planning process, and planning levels. Significant action is needed to implement the proposed regime. The actions needed to establish the proposed water planning regime–human and financial resources, tasks and task sequences, milestone schedules, etc.–should be the subject of a separate document developed by the agencies promptly after the Fifty-Year Water Plan is accepted.

While details appear in the following pages, key characteristics of an effective water planning regime are:

- Water plans must have impact; approval of plans is a commitment to support implementation
- Planning is data and science based, driven by hydrologic reality as affected by climate
- Hydrologic data and modeling are provided or supported by the state
- The state establishes planning regions based on common sources of water
- Ongoing, balanced, state-supported regional-level planning entities are created
- Mechanisms exist for self-organized community-level planning entities to be supported
- Funds are distributed based upon well-organized proposals
- Accountability processes are in place to ensure effective use of funds
- Planning results in prioritized implementable recommendations–policies and projects
- Planning processes are iterative, based on evolving climate, physical and demographic conditions
- Planning focuses on identifying problems and seeking solutions to those problems
- Proposed solutions are carefully evaluated for viability and prioritized
- Evaluations address multiple criteria–economic, legal, political, social, environmental, etc.
- Planning is conducted at the level appropriate to the problem being addressed
- Ongoing stakeholder and general public participation is maintained
- Consistency among neighboring planning processes is maintained
- Effectiveness of implementation in solving problems is monitored
- Legislative and grant funding is available at sufficient levels to support the processes

The following pages are organized into four sections:

- Introduction describing the need for reformed planning
- Criteria for the planning to be effective
- Potential process steps for planners to follow
- The obligations of planning entities at each level

1. Introduction

All credible projections for the future of New Mexico's highly variable native water supplies indicate steady, inexorable decreases in upstream mountain snow accumulations, earlier spring runoffs, increasing evaporation rates, and increasing reliance on groundwater supplies leading to potential depletion. Without proper advance planning for our water resources, disastrous water shortages will potentially result, with major impacts to the State's economy due to irrigation water shortages, reductions in and potential loss of riverine communities and ecosystems key to recreation, conflicts among Pueblos, Tribes and Nations and other communities over limited water supplies, and failures to meet interstate compact requirements.

Water planning is the process through which we potentially can equitably determine how best to minimize, mitigate, and potentially adapt to the pending water shortages projected for our State. New Mexico's past water management plans have failed at the State, regional, and local levels to tie water planning to the ongoing and projected user needs and to the actual water supplies available. Previous water planning efforts were commonly done by essentially ad hoc planning groups, which were subsequently dissolved and their plans shelved. Funding and staffing of state agencies charged with planning have been unreasonably constrained by funding and staffing limitations. Often the availability of realistic current or projected future water supplies were grossly overstated, "hydrologic realities" were ignored, and the plans often just "borrowed" water from neighboring regions to supply local demands.

Currently, State and regional agencies lack the knowledgeable professional staff necessary to plan effectively for our dwindling water resources and its associated uncertainties. Hiring to provide needed statewide planning capability is essential. Statutory, regulatory, and policy updates are needed to allow for and to encourage implementation of effective water management planning.

Earlier guidance (the "Template" in the 1994 Regional Water Planning Handbook and its 2013 update) stressed the importance of comparability among the regional plans. It failed to address adequately the fact that planning requires accounting for local and regional differences in water supplies as well as differences in water user problems, values, and priorities across the state. Moreover, it did not adequately outline the benefits adaptive water management makes possible. New Mexico requires better water planning, focused on critical problems being driven or worsened by climate disruption.

The New Mexico Interstate Stream Commission (ISC) developed the State's *Fifty-year Water Plan.* Its first step, called the "*Leap Ahead Analysis,*" produced a report titled "Climate Change in New Mexico over the Next 50 Years: Impacts on Water Resources." It forecasts severe reductions in our future water supply and great climate-induced uncertainty in the remaining water quantities as well as for locations, intensities, and precipitation frequencies, such that our management and legal systems may not be able to function effectively. This ongoing analysis provides a unique opportunity to mobilize concerned local and regional stakeholders, organizations, and agencies to develop new and well-needed water management plans. The following document provides a framework through which New Mexicans can develop needed planning and management solutions to aid us in our changing water future.

2. Essential Considerations in Developing Water Management Plans

General attributes for effective water management planning include:

- Planning goals and requirements defined through statutes and regulations
- Clearly Identifying and broadly agreeing on the problems to be addressed along with their projected future consequences that can drive planning
- Defining and honoring self-defined community values
- Ensuring continuing broad stakeholder participation
- Aligning water planning efforts according to shared regional aquifer and river systems
- Establishing and coordinating well-funded, authoritative, ongoing state and regional entities for defining water planning, implementation, and monitoring
- Establishing and maintaining appropriate coordination with Pueblos, Tribes and Nations
- Basing plans on well-founded information from climatology, hydrology, engineering, biology and other scientific disciplines, as well as other demographic, legal, and other considerations
- Carefully evaluating and prioritizing possible management strategies or actions, including impacts, costs, and benefits
- Ensuring and supporting the prompt implementation of the prioritized recommendations
- Monitoring implementation progress and adjusting plans as situations evolve

A. Statewide Planning Criteria: In advance of planning, basic state-level criteria for productive water planning must be set forth by policy, regulation, or statute to define the value that the state will expect in return for funding the water planning process and to establish requirements that plans must honor.

B. Funding Water Planning: Successful plan development, implementation, and monitoring across all planning levels require funding by the legislature and agency and local government support to help fund lower-level planning.

C. Hydrologic Reality: Water management planning must be based on sound science and data to define hydrologic reality for each region; that is, how much usable water is there or scientifically projected to be for both surface water and groundwater supplies? Distinction must be made between wet water (the liquid) and paper water (rights, permits, or promises). Potential links of surface water to groundwater require quantification. Native basin water and water transferred from outside sources must be distinguished. Regional definitions of hydrologic reality need to be quantified by the expertise available, for example, in NM state agencies, NM Bureau of Geology, and the US Geological Survey.

While considering hydrologic reality for our planning, we must recognize the effects of rapidly changing climate. It brings new unknowns and uncertainties to our understanding of the science (e.g., consequences of more frequent, more intense, and less predictable weather events). As new scientific knowledge is obtained through the next years and decades, planning decisions must regularly be reconsidered, adjusted, and updated.

D. Water Rights: Under the New Mexico Constitution all the water in the state belongs to the public. The right to use water is called a *water right,* including (1) senior surface-water rights declarations defined by pre-1907 users who put water to beneficial use without any governmental forms or permission, and (2) junior post-1907 OSE-issued water rights for new surface-water users. The most senior water rights include those, but not all,

that are held by Pueblos Tribes and Nations. Water-rights holders do not actually own the water, just the rights to use it; but the rights are considered private property that may be sold or leased with authorization from the State Engineer. Therefore, development, potential approval, and implementation of water management plans must honor senior water rights in priority as well as current and potential water rights transitions, forfeitures, abandonments, and retirements.

3. Steps for Developing Water Management Plans

The water management planning process needs to be tailored to specific areas and planning needs. The formality and specific needs of each planning step and the magnitude of consideration for each will differ according to the specifics of the area and issues included within each plan's jurisdiction (community, municipality, region, or state). The involved steps tend to remain nearly the same for each plan developed, as described in this section.

A. Identify the Scope and Magnitude of the Problems to Be Addressed: This opening step of water management planning includes addressing a series of considerations or questions, including:

- Why is this particular planning effort needed?
- What needs to be addressed? Why? How?
- List problems and issues needing attention; e.g., available water supplies, user requirements, infrastructure needs, information compilation, water-sharing alternatives, and water rights.
- Describe the imminence and likely consequences of leaving the problem unaddressed.
- Prioritize recommended efforts for dealing with the identified problems.

B. Identify Adaptation Strategy Alternatives: For each problem and issue listed, the water plan needs to provide one or more conceivable actions intended to help adapt to the impending situation. The kinds of actions considered can include:

- Infrastructure Improvements
- Policy or Regulatory Changes
- Negotiated Forums and Resultant Agreements
- Community Empowerment
- Agency Capacity Building
- Tradeoff Balancing of Sacrifices
- Others

C. Evaluate the Alternatives: After identifying the array of adaptation strategy alternatives, the next step is to evaluate the alternatives' effectiveness and downsides. These evaluations will serve to support the selection recommendation process. For each adaptation strategy alternative, the planners should measure (quantitatively where possible) the alternative's costs and benefits or its advantages and disadvantages. These goodness/badness attributes should be considered in multiple dimensions, which could include, as applicable, the following:

- Physical/Technical/Uncertainty Feasibility
- Economic Impacts
- Legal Considerations
- Social/Cultural Impacts
- Effects Upon Future Generations
- Impacts to Natural Environmental Services
- Dollar Costs/Benefits
- Political Feasibility
- Obstacles to Implementation
- Impacts on Other Choices

D. Produce Recommendations: The next step is to develop a plan with prioritized recommendations, developed in light of the above multi-dimensional evaluations. Often, to meet basic future water needs, the developing plans will need to select alternatives reflecting how best to share equitably the pain of adapting to climate change impacts or due to extended drought conditions regardless of their cause. Historical strategies used to share water shortages cooperatively might be adaptable for developing plans in New Mexico. However, the "doctrine" of prior appropriation for water rights and existing water-management approaches may conflict with some planning options, which conflicts may be ameliorated via alternative administration (for example, shortage-sharing agreements). Defining options to address each problem then leads to determining which options might be implementable and tried first. The resultant plan documents should address the following questions and issues.

- Which actions should be taken (or discarded) to address each identified water management problem?
- What trade-offs may be required for each?
- Are there interactions among the management actions considered?
- Do the selected options need to be sequenced for implementation?
- What new issues or problems may result with implementation?
- Does the public and political will exist for implementation of the selected options?
- How should the necessary funding be made available to allow implementation of the selected options?
- Establish final approval and adequate funding to implement the plan.

E. Implement Strategies: The planners, or their designees, need to implement the plan.

- Assign roles and responsibilities to those who are to coordinate implementing the plan actions
- Define the timeline for implementation
- Allocate and distribute funding to the tasks required for plan implementation

F. Monitor Implementation: As the plan is implemented, a regular, ongoing need exists to monitor and assess the effectiveness of the actions implemented.

- Define the monitoring approach, including the field parameters monitored, monitoring frequencies, and the data analysis plan.
- Implement the field monitoring plan.
- Analyze and interpret the monitoring results.

G. Reporting: Periodic plan updates and other appropriate documents submitted to regional and state planners need to include:

- A compilation of plan actions implemented, and timelines followed.
- Tables of monitoring data collected and any related information.
- Descriptions of the analysis procedures and results produced.

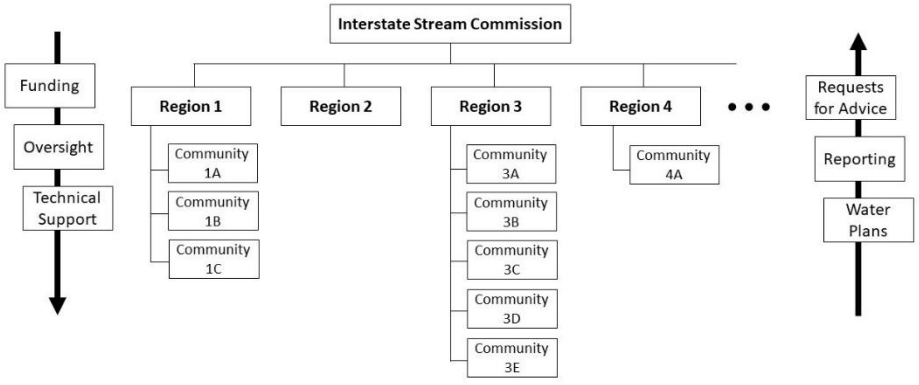
- Interpretations and conclusions on whether the plan actions implemented adequately resolved or adapted to the situation as intended.
- If not, how the water management plan might be revised and updated and whether the plan's goals and strategies should be revised.

H. Adaptive Management: To ensure a robust water future for New Mexico, planning must be recognized as an iterative planning, implementation, monitoring, assessment, updating and learning process using what is commonly called *adaptive management.* State, regional, or community planners need to regularly assess whether outcomes are moving in the right direction toward greater water resilience and are taking account of changed hydrologic conditions.

4. Establishing Water Planning Involvement, Areas, and Authorities

Water management planning must be accomplished over individual areas appropriate for the scale of the problems and specific issues to be addressed. Planning critically requires involving both bottom-up and top-down approaches, well-coordinated, as appropriate, over community, municipal, regional, state, and Pueblos, Tribes and Nation stakeholder planning levels. Bottom-up involvement is required to identify local water user needs, activities, values, and priorities. Local involvement is essential to help ensure the area's water plan receives necessary recognition and needed support to help promote meaningful voluntary adherence to the plan. Top-down involvement is required to provide overarching planning guidelines and requirements; to define the geographical boundaries for the individual planning units; to help provide data and other technical information needed to complete the plans; to ensure that the implementation plans developed are adequately enforced and monitored for success; and to coordinate all the water planning activities across the State.

Planning at all levels should be developed by permanent, balanced planning entities drawn from interests across various community-interest groups. Often each planning group will develop its own internal organization, procedural rules, decision-making requirements, and develop plans that are broadly acceptable to its constituents.



Example Structure for State, Regional, and Community Water Planning

Planning must conform to State requirements. Developed plans must avoid water conflicts and must be consistent with current and projected hydrologic realities and existing legal water-sharing commitments and in compliance with New Mexico's water rights and with interstate and international water compacts.

A. Community Planning: The basis for effective water management planning requires that local problems, issues, and concerns, plus the actions through which their resolution hopefully can be achieved, must be clearly defined. This requires a broad consensus at the community level. Potential agreements on shared

strategies for equitably adapting to changing climate and hydrological realities must come from and reflect the local communities' collective and shared interests

Ad hoc, self-organized, and appropriately diverse community planning entities may form to conduct the local planning activities. Such entities may operate in a self-funded manner or obtain funding from the regional water planning entity via acceptable proposals.

Planning requires opportunities for effective local public community stakeholder input before important policy decisions are made. To draw participation, critical discussion must focus on the existing and projected impacts on water infrastructure, water-related behaviors, and water-use needs. Approved plans must be just and honor water rights ownership of the Pueblos, Tribes and Nations and others.

Local community planning, when needed, must include Pueblos, Tribes and Nations, which have internal planning processes. These cannot be specifically addressed here, in part, due to differences among these groups. All water planning efforts must recognize these sovereign rights, including water rights. Management planning often will need to be coordinated on a government-to-government basis (aided by state or regional entities), as representatives from such potentially affected communities deem acceptable.

Community-level planning often will also need to incorporate considerations of municipal requirements as guided by state statutes and local ordinances. Municipalities, as defined by state law, are required to develop and maintain multi-decadal plans for acquiring and delivering water. As such, community-level planning must be consistent with these state and regional constraints. In turn, municipal plans should integrate with any community and regional management plans within or adjacent to its municipal boundaries, as well as with hydrologic reality.

B. Regional Planning: Water planning regions, defined using hydrologic boundaries, comprise areas that share many common needs and interests and have common water sources, such as a river, a discrete river reach, a large watershed, and/or a common aquifer.

Ongoing regional planning entities with appropriately diverse stakeholder involvement are needed to conduct the water planning, plan implementation and monitoring for the region. Such entities' activities can be funded by the State in response to proposals appropriately identifying the work to be accomplished.

Regional water plans are key to planning for effective surface water and groundwater management within the regions and across New Mexico. Regional plans integrate community and any other water planning efforts developed within its region. Regional planning requirements include needs to verify, as possible, that individual embedded community plans produced reasonable recommendations that are based on sound science, that they include technical integrity to succeed, and that they are consistent with adjacent or other overlapping plans. Regional planning also can fill in where internal community plans do not exist.

Regional planning requires regular operational funds from the State. Ultimately, regional plans will outline the total level of funding required for successful planning within the region, where this funding can come from, and how the funding will be distributed within the region. Regional planning must confirm that all resulting plans within that region are adequately supported, both technically and financially, during plan development and that approved plans are appropriately funded to help ensure their implementation and the monitoring necessary to judge success. State entity funders for water projects (e.g., Legislature, ISC, Water Trust Board, etc.) must take careful cognizance of the candidate project's prioritization in the appropriate approved

regional water plan. The regional plans must ensure consistency with state plans and criteria. In addition to addressing region-wide issues, regional plans must consider compliance issues within the region, including implications of their plan's implementation on interstate compacts and requirements for endangered species, plus compatibility with plans for neighboring regions.

Each planning region is responsible for producing and providing annual progress reports to the State that highlight the planning components addressed, successes, community issues, obstacles encountered, and any future action needed across all planning activities and implemented plans within its region. Regional water management plans should be updated at least every five years for State (ISC) review, approval, and implementation support. These plans should demonstrate broad participation, sufficient external coordination, careful evaluation of alternatives, and recognition of hydrologic reality. ISC's approval of regional plans should carry a commitment by the ISC to support implementation of the plan's recommendations.

C. Statewide Planning: Statewide water planning is required to address and assess problems and issues that span the State's multiple planning regions as well as interstate concerns. State planning should involve all State agencies having roles that include water supplies and use. [1] The ISC, as the State lead for water management planning, coordinates water planning with consideration of State and Federal requirements including, for example, Endangered Species Act compliance and various interstate compact requirements.

State planning requires adequate staffing to define and often provide and manage the technical and financial support necessary for successful development, implementation, monitoring of regional and community plans. State planners review regional plans to verify that they are sufficiently coordinated across regions, are consistent with state planning requirements, and will likely be reasonable and effective regarding hydrologic reality. State planning is also responsible for ensuring that all water planning efforts include, where appropriate, critically necessary coordination with Pueblos, Tribes and Nations.

Once completed, the State Water Plan will need to be periodically updated as water supplies and user needs change, as data from previous plans are compiled, and as the overall results and experience from earlier planning efforts expand. The State Plan should clearly state the statewide policies and regulations necessary for protecting and improving the State's water future. It should describe the regional and community planning efforts the State has encouraged and supported, both technically and financially. The State Plan should reflect common community and regional plan recommendations. The State Plan must also document the cross-regional and interstate problem solving that the State's water planning has developed, any recommendations required for future action on those problems, and the problems that are still to be sufficiently addressed.

[1] ISC - New Mexico Interstate Stream Commission; OSE - Office of the State Engineer; NMED - New Mexico Environment Department; EMNRD - Energy, Minerals and Natural Resources Department; WTB - Water Trust Board; WQCC - Water Quality Control Commission; DTF - Drought Task Force; CTF - Climate Task Force; NMIAD - New Mexico Indian Affairs Department.