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Designing Dispute Resolution Systems for Water Policy and Management

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**DESIGNING DISPUTE RESOLUTION SYSTEMS
FOR WATER POLICY AND MANAGEMENT**

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Innovation in Western Water Law and Management

**Natural Resources Law Center
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I. INTRODUCTION

A. Summary

The Montana state water planning process is a collaborative, consensus-building forum for resolving the stream of disputes that characterize water policy and management. It is based on one simple observation -- that water resource problems and conflicts are chronic and inevitable. In light of this observation, the planning process provides an ongoing forum or "system" for affected interests and the public to jointly identify issues, explore alternative solutions, and develop legislative and administrative recommendations. While the process has improved relationships among diverse interests and resulted in some innovative policies, it might be fine-tuned in a variety of ways.

B. References

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II. THE MONTANA STATE WATER PLAN

A. Origin

1. In 1967, the Montana legislature passed the Water Resources Act, which outlines several water management goals for the state (Section 85-1-101, MCA). The legislature also called for the development of a state water plan as the mechanism to accomplish the goals (Section 85-1-101(10)).
2. According to the statute, the state water plan should be:
 - (a) Comprehensive;
 - (b) Coordinated;
 - (c) Provide for multiple uses;
 - (d) Set out a progressive program for the conservation, development, and utilization of the state's water;
and
 - (e) Propose the most effective means by which the state's water resources may be used for the benefit of the people, with due consideration of alternative uses and combinations of uses (Section 85-1-203, MCA).
3. The Department of Natural Resources and Conservation (DNRC) is responsible for developing the state water plan.
4. In the process of formulating the plan, the DNRC is to:
 - (a) Consult with the legislative Water Policy Committee;
 - (b) Hold public meetings prior to adopting the plan;
 - (c) Adopt the plan with approval from the Board of Natural Resources and Conservation (BNRC);

- (d) Publish the plan; and
 - (e) Submit it to the Water Policy Committee and to each general session of the legislature (Section 85-1-203, MCA).
5. Prior to 1987, efforts to develop the state water plan focused on comprehensive, multiple-use basin plans (McKinney, 1990). While these plans resulted in volumes of technical information, the institutional and political feasibility of implementing the plans was never considered. Consequently, the plans provided little guidance to resource managers in resolving complex and controversial water management problems, and ended up as "shelf-art."
6. In 1987, the DNRC embarked on a new approach to developing the state water plan. After reviewing the water planning processes of other western states, the DNRC decided to adopt the general approach used by the Kansas Water Office. The DNRC has adapted and refined the approach used in Kansas to reflect the unique hydrologic, institutional, and political characteristics of Montana.

B. A Collaborative, Consensus Building Process

- 1. The Montana state water planning process has gradually evolved and been refined during the past three years.
- 2. Today, the state water planning process recognizes that a large number of federal, Indian, state, local, and even

regional entities have a role in the management of Montana's water. It also recognizes that several interests are affected by water management decisions, including irrigators, municipalities, energy and industrial developers, and fish, wildlife, and outdoor enthusiasts.

3. The planning process provides an opportunity for all these parties to be involved in formulating and implementing policies, programs, and strategies to resolve water resource conflicts and problems in Montana.
4. The planning process provides multiple levels of public involvement and opportunities to resolve differences. All of these opportunities are designed to jointly identify problems and develop solutions that are acceptable to all affected interests.
 - (a) Community Dialogues -- these are public meetings designed to allow the public to identify which issues should be addressed by the state water plan during any given cycle.
 - (b) State Water Plan Advisory Council (SWPAC) -- this is a broad-based group, appointed every two years by the Governor, to advise the Director of the DNRC on which issues to address and what solutions to recommend.
 - (c) Steering Committees -- these committees, which are created for each issue addressed in the state water plan, are composed of representatives from all

affected interests. They jointly identify the specific problems related to each issue, explore and evaluate options, and make recommendations to the SWPAC.

- (d) Open Houses -- these public meetings provide an informal opportunity for the public to review and comment on draft plan sections.
 - (e) Public Hearings -- these formal public meetings, sponsored by the DNRC and the BNRC, provide an opportunity for public review and comment of the proposed final plan sections.
 - (f) These formal opportunities for public involvement and dispute resolution are supported by a series of meetings with the legislative Water Policy Committee, water user groups, and special interest groups.
5. In addition to providing multiple opportunities for public involvement and dispute resolution, the Montana state water planning process is continuous.
- (a) It is based on the simple observation that water resource problems and conflicts are chronic and inevitable.
 - (b) It is a systematic, ongoing process to address not just a single water management issue or dispute, but the "stream of disputes" that characterize the management of water in Montana and throughout the West. In this respect, the Montana state water

planning process is a "dispute resolution system" (Ury, Brett, and Goldberg, 1988).

- (c) It is anticipatory, proactive, and adaptable to a variety of water policy and management issues. The final plan sections (see Appendix) can be easily updated in response to implementation experience and emerging problems and opportunities.
6. The state water planning process operates on a two-year cycle, corresponding the biennial legislature. The process is initiated immediately after each legislative session, and concludes just prior to the next legislative session.
7. As currently contemplated, the planning process focuses on two basic types of issues.
- (a) First, it is designed to document, evaluate, and revise the legal and institutional framework for resolving statewide water management issues, such as instream flow protection, drought management, and agricultural water use efficiency.
 - (b) Second, the planning process focuses on basin-specific water management issues.
 - (c) This effort may focus on a single issue at a time (e.g., water supply in the Milk River Basin), or consider multiple issues at the same time (e.g., water quantity and quality in the Clark Fork River Basin).

- (d) Using the legal and institutional policies developed by addressing statewide water management issues, the long-term objectives of the basin specific plans are to document available water supplies and existing uses and rights; to project future water resource needs and priorities; and to integrate water, land, environmental, social, and economic goals, identify conflicts, and assess tradeoffs in order to optimize water use within the basin (Getches, 1988).
8. Although the DNRC is responsible for developing the state water plan, it has realized that the most valuable role it can play is not to determine what recommendation or outcome is reached, but how they are reached.
 9. The DNRC facilitates the development of the state water plan by focusing on such concerns as:
 - (a) Who is involved in the process;
 - (b) How are issues identified, framed, and their consideration bounded;
 - (c) What information is brought to bear;
 - (d) How are alternatives developed and analyzed;
 - (e) How are trade-offs made; and
 - (f) What are the procedures for implementing, monitoring, enforcing, and evaluating the final recommendations.
 10. The DNRC, in cooperation with the Governor's Office and the BNRC, has the final authority to approve and adopt the state water plan.

11. In sum, the Montana state water planning process provides an ongoing, systematic forum for the broad set of interests affected by water management decisions to voluntarily sit down together, exchange information, and develop solutions through negotiation, collaboration and consensus building (see generally, Viessman and Smerdon, 1990).

III. IMPLEMENTATION EXPERIENCE

A. The Experience in 1988

1. During 1988, the first year of implementing this new planning process, the Governor appointed a State Water Plan Advisory Council (SWPAC) to oversee the development of the plan. The SWPAC consisted of ten members, including the directors of four state natural resource agencies; four legislators; and two members from the public-at-large.
2. With minimal public involvement, the SWPAC selected four issues to address during the first planning cycle (water data management, agricultural water use efficiency, federal hydropower licensing and state water rights, and instream flow protection).
3. The DNRC then created broad-based Steering Committees to address each issue. It also prepared a discussion paper on each issue that outlined existing programs and policies, identified problems, and presented alternative

solutions.

4. Each Steering Committee, under the leadership of a representative from the DNRC, met to discuss the background papers during one all-day meeting. After considerable posturing and questioning their role in the planning process, the Steering Committees eventually addressed the problems and options presented in the discussion papers. In some cases, the participants agreed to the problem and a recommended solution. On several issues, however, the members could not reach agreement on anything.
5. The results of the Steering Committee meetings were then summarized and presented to the SWPAC. The SWPAC met and, after questioning their role in the planning process, debated the proposed options and recommendations. It eventually approved preliminary recommendations for each issue largely by majority voting rather than consensus decisionmaking.
6. The DNRC then facilitated nine public meetings to receive public input on the proposals. Approximately 2500 people attended the nine meetings. Most of the comments focused on the instream flow protection and agricultural water use efficiency plan sections. While some people supported the recommendations in these two plan sections, the comments were overwhelmingly opposed to the recommendations.
 - (a) The greatest concern expressed was the fear that the

state water plan was designed to take away water rights.

- (b) Several people questioned the credibility and legitimacy of the DNRC, and wondered why it was developing a "state water plan."
 - (c) There was also some questioning as to how and why the four issues being addressed were selected.
 - (d) Many people also felt that representation on the SWPAC and the Steering Committees was not balanced.
 - (e) In short, there was a considerable amount of resistance on all fronts to the state water plan itself and to the specific recommendations contained in the first four plan sections.
7. The DNRC summarized and evaluated the public comments, and then provided recommendations to the SWPAC on how to revise the four plan sections. The DNRC's recommendations responded largely to the concerns of the agricultural community, and hence many of the more innovative preliminary recommendations in the instream flow and agricultural water use plan sections were significantly scaled back.
8. The SWPAC adopted nearly all of the DNRC's recommendations for revising the plan sections, this time through consensus decisionmaking.
9. The SWPAC then sponsored three more public hearings on the proposed final plan sections. Approximately 300 people

attended the three public hearings and the comments were generally the same as those at the first set of public meetings.

10. After the public hearings, the SWPAC discussed the public comments and revised some of the recommendations in the instream flow and agricultural water use plan sections. During this revision process, the SWPAC resorted to majority voting rather than consensus decisionmaking.
11. Before the DNRC submitted the SWPAC's somewhat controversial final recommendations to the BNRC for their approval, the new Governor stepped in and asked to review the recommendations. Working with the DNRC, the Governor suggested several changes to the SWPAC's final recommendations. The revised recommendations were then presented to the BNRC and it approved the first four sections of Montana's state water plan.

B. Major Lessons from 1988

1. During 1988, the DNRC made several mistakes and learned several lessons about designing and facilitating a dispute resolution system for water policy and management. Several of the major lessons are highlighted below.
2. First, representatives from all potentially affected interests should participate from the beginning in designing and fine-tuning the dispute resolution system. Given that the state water planning process was initiated

- and designed solely by the DNRC, nearly all affected interests questioned the credibility and motivation of the DNRC. The resulting spirit of distrust was perhaps the major obstacle during the first year.
3. Second, it is extremely important to define and agree to the decisionmaking process (or ground rules) before the process begins. During the first year, the roles and responsibilities of the participants, including the public, were not clearly defined. Given the large number of formal actors (including the legislative Water Policy Committee, the BNRC, the DNRC, the SWPAC, and the Steering Committees), there was considerable confusion over who should be making what decisions and at what point in the process the decisions should be made. The number of decisionmakers and decision points should also be held to a minimum to reduce the opportunities for derailing consensus recommendations reached earlier in the process.
 4. Third, all working committees, including the SWPAC and the Steering Committees, must be perceived as including a balanced representation of all affected interests. As mentioned above, the agricultural community felt that the committees did not adequately represent their interests, even though they had representatives on all committees.
 5. Fourth, it is critical to provide adequate time for the affected interests on the Steering Committees and the SWPAC to educate one another, define and agree on the

problems, gather and analyze information, generate all possible alternative solutions, and negotiate over the acceptability of the alternatives. The first year of Montana's state water planning process was crammed into one calendar year, which severely limited the opportunities for both public involvement and dispute resolution.

6. Sixth and finally, the relationship of the dispute resolution system to existing decisionmaking channels must be carefully considered and mapped out. Ideally, representatives from the formal decisionmaking arenas should participate in the dispute resolution system. In 1988, however, several influential legislators and the BNRC were not adequately involved and informed throughout the planning process. Consequently, they resisted approving the plan and passing legislation implementing some of the plan's recommendations.

C. The Experience in 1989-90

1. The development of the state water plan during 1989-90 went much smoother than in 1988 for several reasons.
2. First, the DNRC facilitated eight Community Dialogues that allowed the public to identify the issues that would be addressed. Two issues, both identified by the public, emerged from this process -- water storage and drought management. This initial step in the planning process

- allowed the public and affected interests to gain some ownership and commitment to the process, from the very beginning, by identifying which issues to address.
3. Second, representation on the SWPAC and the Steering Committees was carefully balanced to reflect all affected interests. The DNRC asked interest groups to identify one or more persons who could represent their interests on the various Steering Committees.
 4. Third, the DNRC played a more neutral role in facilitating the development of the plan sections on water storage and drought management. The DNRC had one staff member who facilitated each Steering Committee, and another staff member who served as a technical expert on each Steering Committee. This relationship allowed the DNRC to maintain its neutrality in facilitating the process, while also contributing substantively to the development of water policy.
 5. Fourth, the planning cycle was extended to two years to allow additional time for research, negotiation, public involvement, and consensus building.
 6. Finally, the public and affected interests were familiar with the state water planning process during 1989-90, and thus were not caught off-guard.
 7. The success of the state water planning process during 1989-90 is illustrated by the ease with which four bills, all developed as part of the plan sections on water

storage and drought management, sailed through the 1991 legislative session. The four bills:

- (a) Create a Drought Advisory Committee to proactively respond to drought conditions throughout Montana (HB 537, 1991).
 - (b) Allow for the temporary transfer of water rights (SB 386, 1991).
 - (c) Allow water users to maintain the right to beneficial use of water saved by improving the efficiency of their systems (SB 265).
 - (d) Establish a comprehensive water storage policy for the State of Montana (SB 313, 1991).
8. In addition to providing bipartisan support for these bills, the working relationships among diverse interests established through the state water planning process carried over to several other important pieces of legislation.

IV. EVALUATION

A. General Reactions

1. As illustrated by the recent success of the legislative initiatives emerging from the state water planning process, the dispute resolution system is increasingly being hailed by all affected interests, legislative leaders, and the Governor as an effective and efficient way to resolve water policy and management issues.

2. The planning process has established communication channels and cooperative working relationships among the diverse water interests in the state. It has also resulted in the development of some innovative water policies and programs (e.g., a program to lease water for instream flow purposes).
3. The idea of a dispute resolution process or system is being used a model for many other water management and natural resource issues in the state.

B. Survey of Steering Committee Members

1. After the completion of the 1989-1990 planning cycle, the DNRC surveyed the Steering Committee participants in an effort to determine the effectiveness of using broad-based groups to resolve water policy and management issues. Based on the results of the survey, several recommendations emerge on how to improve the use of broad-based Steering Committees to develop the state water plan. (Some of the more substantive recommendations are presented below.)
2. Include more legislators and others responsible for implementing state water plan recommendations on the Steering Committees.
3. Include more public interest representatives on the Steering Committees.
4. Include fewer government representatives on the Steering

Committees, but ensure that sufficient technical expertise is available to the committees.

5. Define the objectives and tasks of the Steering Committees.
6. Provide more time for the Steering Committees to gather and analyze information, and to negotiate over alternative courses of action.
7. Clarify how Steering Committees should make decisions.
8. Many of these recommendations are consistent with and reemphasize the lessons learned during 1988. They are also consistent with some of the lessons provided by other attempts to design and facilitate dispute resolution systems to resolve public policy issues.

C. Lessons From the Literature

1. In addition to Montana's experience, several additional lessons for designing and facilitating dispute resolution systems for water policy and management have emerged from the literature (Ury, Brett, and Goldberg, 1988; Brock and Cormick, 1989).
2. First, the affected interests must be sufficiently dissatisfied with existing decisionmaking processes to come together to jointly create and support an alternative forum for problem solving and dispute resolution.
3. Second, the existing decisionmaking authorities must be willing to experiment with new ways of solving problems

- and resolving disputes. In addition, their role in the process must be clearly defined, and they must assume the responsibility of educating the participants in terms of any administrative and policy constraints.
4. Third, the forum for developing the system should itself be flexible and adaptable, and dominated by the participants rather than staff and experts.
 5. Fourth, the dispute resolution system must provide stability, certainty, and predictability, as well as flexibility and adaptability.
 6. Fifth, the participation of an experienced neutral facilitator, with access to key parties and knowledge of existing decisionmaking processes, is critical to the success of the dispute resolution system.
 7. Sixth, once the system is designed, it should be tested on a pilot project so that bugs can be worked out, confusion and frustration minimized, and positive experience built upon.
 8. Seventh, the participants must be provided the necessary motivation, skills, and resources to effectively participate in the process.
 9. Eighth, it is important to realize that initial failures often contribute to future successes.
 10. Ninth and finally, it is also important to realize that a dispute resolution system may not be appropriate for resolving all water policy and management issues. In

general, the issues that are most likely to be resolved through a dispute resolution system are those where:

- (a) The issues in dispute are well-defined;
- (b) The different parties having a stake in the decisions to be made are well known and organized;
- (c) Power between these parties has become well-developed and somewhat balanced;
- (d) It is costly for all parties to continue in an adversarial process; and
- (e) The issues must be resolved and a decision made one way or the other.

V. PROSPECTS FOR THE FUTURE

A. Opportunities for Improvement

1. While the Montana state water planning process has improved relationships among diverse interests and resulted in some innovative policies, it could be refined and improved in a variety of ways (as suggested above).
2. In the immediate future, however, the dispute resolution system is most likely to be improved in the first instance by focusing on the question of how the state water planning process can be most effective in light of limited resources (e.g., should the state water plan focus on both statewide and basin-specific issues?). In addition to addressing this difficult strategic question, the dispute resolution system might be improved in two specific ways.

3. First, the DNRC should develop a more effective system for monitoring and evaluating the implementation of state water plan recommendations.
 - (a) To date, the attention of all affected interests has focused on the "development" of the state water plan and the implementation of recommendations for legislation. Very little attention has focused on the implementation of the other recommendations contained in the state water plan.
 - B. While each plan section identifies a particular public or private entity that is responsible for implementing a given recommendation (see the attached plan section on Drought Management as an example), there is currently no system of accountability -- that is, there is no systematic way to ensure that the recommendations are being implemented.
 - C. Finally, and perhaps most importantly, there is no systematic way to evaluate the "on-the-ground" impact of the various recommendations.
6. Second, the SWPAC and DNRC should critically think about the efficacy and desirability of developing a strategy for incorporating issues that emerge during any given planning cycle. While the creation of a permanent SWPAC would help resolve this problem, it does not answer the more fundamental question of whether, in light of limited resources, this would be the most effective way to

proceed.

B. Plans for the Future

1. During 1991 and 1992, the state water plan is likely to address a mix of statewide and basin-specific issues.
2. At the statewide level, there is an increasing interest to focus on the issues of groundwater protection and the relationship between water quantity and water quality.
3. On the basin-specific level, the state water plan is likely to address one or more basins, including the:
 - (a) Upper Clark Fork -- where water quality and quantity problems have created a paralysis in water allocation and management.
 - (b) Milk River -- which is subject to water shortage 7 out of every 10 years, and existing water conveyance systems are deteriorating and inadequate.
 - (c) Mussellshell River -- where water supply is inadequate to meet existing demands, and there is no coordinated plan for operating a series of state-owned dams.

C. Conclusions

1. Montana's state water planning process provides an ongoing, systematic forum for the broad set of interests affected by water management decisions to voluntarily sit down together, exchange information and educate one

another, and develop policies through negotiation, collaboration, and consensus building.

2. The effectiveness of the dispute resolution system is illustrated by the ease with which four bills, all developed as part of the state water plan during 1989-90, sailed through the 1991 legislative session.
3. In addition to providing broad-based support for these bills, the working relationships among diverse interests established through the state water planning process have carried over to several other natural resource initiatives in the state.
4. Finally, the dispute resolution system employed for resolving water policy and management issues in Montana may provide a useful model for resolving other natural resource disputes.

MONTANA WATER PLAN

FINAL

December 1990

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INTRODUCTION

Montana's water supplies vary from year to year. Some years there is too much water and flooding occurs. In other years, there is too little water and drought results. Drought is an inevitable part of Montana's climate. It will happen again as it has happened in the past.

Most Montanans understand that drought is inevitable. This does not mean that they can do nothing to reduce drought effects. Although the state may not be able to make it rain or snow, it can help its citizens prepare for and minimize the effects of drought.

The questions are whether, how, and when the state should use its authority to ease the effects of drought. This section of the state water plan proposes an answer to these questions. A policy is proposed that defines the proper role of the state in drought management. Then, this plan section recommends specific actions to fulfill that role.

BACKGROUND

Drought threatens all water needs. Dryland agriculture is particularly vulnerable. Drought also increases the threat of wildfire. These drought-related impacts arise primarily from soil moisture deficiencies. However, the most controversial drought issues typically surround the use of water from our streams, lakes, and aquifers.

The prior appropriation doctrine determines who gets to use scarce water from these sources. This doctrine of "first in time is first in right," which will continue to be the basis for water allocation and use in the state, assigns priority to water uses based solely on the date of appropriations. Given the unadjudicated status of most water rights in Montana, drought presents several problems for Montana water users. These problems include: (1) procedural difficulties in enforcing unadjudicated water rights; (2) the expense of beginning to enforce water rights in areas that historically lacked enforcement; (3) a lack of water conservation incentives in the law; and (4) legal restrictions and practical difficulties associated with changes in the use of water rights.

Under these circumstances, how can important water uses be protected? In extreme, life-threatening emergencies, the government has the authority to take water rights, with pay, to protect the public good. Such a situation is better avoided. Less intrusive ways to cope with the effects of drought, or possibly to prevent them, are preferred.

Another approach is to better inform water users about the probability of drought. Where drought appears likely,

water users may be asked to consider options that would minimize their risk and extend limited water supplies. This approach requires planning. Planning may also reduce the vulnerability of agriculture and forests to drought. Because drought occurs with greater warning and frequency than other kinds of disasters, planning has great promise for reducing its effects.

Much was learned in recent years about the types of impacts and conflicts that are likely during drought. Perhaps the most important lesson is that the best time to reduce the impacts of drought is before they happen. Recent experience has shown the need for a larger box of tools to prevent and mitigate drought-related problems.

POLICY STATEMENT

It is the policy of the State of Montana to support proactive drought management at the local level to protect the natural resources, economic base, and lifestyles of Montana citizens. This policy requires programs for drought monitoring, assessment, preparedness, mitigation, and assistance.

The state must consider the needs of all water users during drought, including dryland and irrigated agriculture; municipal and rural water suppliers; energy producers; mining and mineral processing, forest products, tourism, recreationists, and recreation-based businesses; and individual water users. Incentives should be provided for all water users to act to prevent or reduce the effects of drought. State technical and financial assistance should be provided to water users in a consistent and predictable manner. Water users should consider the risks posed by drought when making major management decisions and should know what to expect from government if drought occurs.

ISSUES, OPTIONS, AND RECOMMENDATIONS

Eight functions are identified as necessary for accomplishing the state's proactive drought management policy. The issues are how to accomplish these eight functions.

Issue 1 - Drought Monitoring and Early Warning

Drought monitoring means collecting data, analyzing it, and reporting on the probability and severity of drought. Several government agencies and a few private entities are involved. Current monitoring efforts can be improved to provide better early warning of drought conditions.

One useful tool for monitoring drought is the Palmer Drought Index (PDI). The PDI is valuable as a measure of soil moisture and its availability to meet the needs of dryland crops and rangeland forage. The PDI is calculated weekly by the National Weather Service for seven broad regions of Montana. These regions are so large that some locally severe drought conditions go unreported. Also, the PDI is not a good predictor of streamflows, particularly in mountainous regions where runoff depends primarily on snowmelt. An alternative index, known as the Surface Water Supply Index (SWSI), is being developed to forecast streamflow conditions in such areas. In Montana, both the PDI and SWSI may be used for drought early warning and monitoring. The SWSI is applicable to water users dependent on streamflows, and the PDI is applicable to dryland agriculture.

Questions arise as to how monitoring information should be compiled and made accessible. Who should be responsible? Should monitoring efforts be intensified as drought conditions appear likely?

Options

1. Improve monitoring of soil moisture.
2. Pursue the calculation of the PDI for smaller geographical areas.
3. Encourage the continued development and revision of basin-specific SWSIs.
4. Improve coordination in the collection, interpretation, and reporting of the PDI, SWSI, and other drought forecasting and monitoring information. This information must be passed on to people in time for them to make decisions to reduce their vulnerability to drought.

Recommendations

Options 2, 3, and 4 are recommended. Option 1 was considered desirable, but rejected on the basis of potential manpower and cost-related problems.

Issue 2 - Impact Assessment

Drought impacts are assessed by using the monitoring information to predict economic, environmental, and social costs. Assessments may be prepared on the drought-related impacts to: (1) specific crops and livestock, (2) tourism, (3) energy production, (4) domestic water supplies, (5) wildfire, and (6) fish and wildlife.

Options

1. Support research applicable to specific Montana locations on the relevance of water availability to

crop and livestock production, tourism, energy production, the quality of domestic water supplies, wildfire potential, and fish and wildlife production.

2. Develop economic models that can compare the value of water for various uses in the economics of specific areas in Montana.
3. Coordinate the efficient and timely assessment of impacts related to various water uses. A list of the individuals with the expertise to assess impacts should be maintained.

Recommendation

Option 3 is recommended. While basic research is strongly supported, Option 1 was rejected as being too vague to be implemented. The economic information derived under Option 2 would also be useful, but this option was rejected to avoid creating the false impression that the state is interested in reallocating water based on economic values.

Issue 3 - Coordination of Governmental Actions

Coordination is essential to properly administer programs for drought monitoring, impact assessment, assistance, education, and mitigation. Presently, the vehicle for drought management coordination is the 1985 Montana Drought Plan. This plan designates the Disaster Advisory Council as responsible for providing coordination. However, the plan and the Disaster Advisory Council are only activated after a drought situation emerges. This is contrary to the proposed proactive drought policy. Further, the coordination provided by the plan is vague with respect to drought monitoring, management decision making, assistance, education, and mitigation. There is little knowledge of, or adherence to, the plan by most other drought-affected government agencies or the general public.

Options

1. Replace the current drought plan, by directive of the governor, with a document that incorporates the recommendations of the state water plan.
2. Expand the Disaster Advisory Council to include federal, local government, and private representation.
3. Create a permanent Drought Monitoring Committee responsible for forecasting drought conditions. This committee would advise the governor of the need to activate the Disaster Advisory Council. The Drought Monitoring Committee would have authority to:
 - a. review and report drought monitoring information.

b. identify those areas of the state with a high probability of drought and target reporting and assistance efforts to those areas.

c. upon request, appoint and organize local drought advisory committees for those areas. Committee membership should be comprised of state and local government officials, including conservation districts; and local water user groups, including dryland and irrigated agriculture, municipal and rural water suppliers, energy producers, mining and mineral processing, forest products, tourism, recreationists and recreation-based businesses, and individual water users.

d. assign state agency staff to provide technical assistance to local drought advisory committees.

4. Provide specific criteria for activation of the Disaster Advisory Council, other than a governor's directive.

5. Reassign responsibility for state drought management coordination from the Disaster Advisory Council to a permanent Drought Advisory Committee. The Drought Advisory Committee would be chaired by a representative of the Governor's Office and representatives of each of the other agencies previously represented on the Disaster Advisory Council, though not necessarily the directors of those agencies. Non-voting representatives of federal and local governments and public and private interest groups should also be appointed. The Drought Advisory Committee would have authority to:

a. review and report drought monitoring information.

b. identify those areas of the state with a high probability of drought and target reporting and assistance efforts to those areas.

c. upon request, appoint and organize local drought advisory committees for those areas. Committee membership should be comprised of state and local government officials, including county disaster services coordinators and conservation district supervisors; local water user groups, including dryland and irrigated agriculture, municipal and rural water suppliers, energy producers, mining and mineral processing, forest products, tourism, recreationists and recreation-based businesses, and interested citizens.

d. request state agency staff to provide technical assistance to local drought advisory committees.

Recommendations

Options 1 and 5 are recommended.

Issue 4 - Triggering Mechanisms

The current drought plan uses the Palmer Drought Index to trigger certain drought response activities. With the development of the Surface Water Supply Index, an additional criterion becomes available that is more applicable to surface water users. These criteria may be used to gauge the propriety of certain drought management activities against the severity of the drought conditions.

Triggering mechanisms serve as guides for state action. They are not intended to replace existing procedures based on local conditions and requests. For example, the issue of when to declare a disaster, and when to declare the disaster over, can be controversial. Some recreation-based businesses may oppose the designation, while some farmers and ranchers may want it in order to take advantage of federal assistance programs. This kind of conflict is best dealt with at the local level, with the triggering mechanisms merely serving as guidelines to help in making such decisions.

Options

1. To insure that drought-response efforts correspond to the magnitude of specific drought conditions, the drought plan should recommend specific actions corresponding to numerical indicators of drought severity. Actions should be linked to numerical thresholds as drought conditions both intensify and recede.

2. Both the PDI and the SWSI should be used as triggering mechanisms. The PDI should be used to indicate drought severity to dryland agriculture, and the SWSI to forecast and measure the severity of drought for surface water users. Other drought monitoring information should also be considered. If this information indicates that the PDI or the SWSI are not accurate indicators of drought severity, actions should be taken earlier or later than the triggering mechanisms would suggest.

Recommendations

Both options are recommended.

Issue 5 - Assistance Programs

Assistance programs are programs available immediately prior to, during, and after a drought. Some of these programs are reactive, rather than preventive, in nature. Federal assistance programs are primarily geared to providing financial assistance, while state assistance programs generally provide technical assistance. The federal government administers the crop insurance program, which allows farmers to protect themselves financially against drought losses. Other federal programs are activated when a disaster is declared by the president or the chief executive officer of the responsible federal agency. Although the majority of these programs are geared to agricultural users, there are a limited number of programs for other types of assistance needs.

Options

1. Expand the types of technical and financial assistance provided to all victims of drought, filling the gaps left by federal financial assistance programs.
2. Update the list of available state and federal assistance programs in the state drought plan.
3. Provide technical and financial assistance to local drought advisory committees for promoting local drought preparedness.
4. Oppose elimination of the federal crop insurance program, and support changes in this program that will make it more efficient and attractive to producers.

Recommendations

Options 2, 3, and 4 are recommended. Option 1 was rejected as being too vague and politically impractical.

Issue 6 - Funding for Drought Management Programs

Drought monitoring, assessment, education, mitigation, and assistance all cost money. The issue is how to pay for improved state drought management. Some improvement in drought management programs may be possible by reallocating and better utilizing existing resources. Significant improvements are unlikely without additional funds.

Options

1. Reallocate and better utilize existing staff and operating budgets.
2. Apply for grant funding from the Montana Water Development Program, Renewable Resource Development Program, or other state or federal sources for a pilot drought management program.

3. Seek a direct legislative appropriation of funds.

Recommendations

Option 2 is recommended. Option 1 is recommended as a fallback position if grant funding does not materialize. Option 3 was rejected as unrealistic in light of the state's current budget problems.

Issue 7 - Research and Educational Programs

Many educational opportunities are available on how to prepare for drought through the Cooperative Extension Service, the Soil Conservation Service, the Bureau of Reclamation, local conservation districts, and other agencies. Some people may not know this information exists. A water education program called the "Montana Watercourse" is established at the Water Resources Research Center in Bozeman. This program provides information to adults and also develops a training program and curriculum for school teachers to teach Montana's children about water resources and its management.

Research is ongoing in a number of areas to find ways to reduce drought impacts, particularly those suffered by agriculture. One example is research to develop more drought resistant varieties of crops.

Options

1. Encourage the use of existing water educational programs, including those of the Extension Service, Soil Conservation Service, conservation districts, and the Montana Watercourse.
2. Support ongoing research into ways to improve drought monitoring, assessment, and mitigation.
3. Publish and distribute a comprehensive annotated directory of available educational resources about water conservation.
4. Better utilize the media and other means of communication for informing the public about drought management options and activities.

Recommendations

All of the options are recommended.

Issue 8 - Drought Mitigation Strategies

Drought mitigation strategies are potential options or improvements to ongoing water management activities that would, over the long term, reduce the adverse effects of drought.

Options

1. Amend the law to allow emergency water right transfers with expedited state review.
2. Allow utilities to invoke temporary water rate hikes to encourage emergency water conservation measures.
3. Use weather modification technology where it is feasible.
4. Increase the educational emphasis given to the watershed-related aspects of forest and range management, managing plant and tree ground-cover to minimize drought impacts.
5. Provide county governments, conservation districts, or water conservancy districts the emergency authority to implement and enforce local drought plans.
6. Inventory and review operating plans of all existing reservoirs in water-short basins to encourage reservoir operators to adequately consider drought contingencies.
7. Inventory and review the operating plans of state-funded reservoirs to insure that these plans address drought contingencies. Where no operating plans exist for these reservoirs, such plans should be developed and implemented. Also, these reservoirs should be rehabilitated to operate at design capacity and improve the state's capabilities to respond to drought consistent with State Water Plan recommendations for the rehabilitation of water storage projects.
8. Establish stronger economic and other incentives for private investments in water conservation.
9. Consider feasible water storage where it will increase water supply security.
10. Consider basin closure by petition of local water users, as provided by law, to preclude over-appropriation and further aggravation of water shortage situations.
11. Encourage voluntary water conservation by domestic, municipal, and industrial water users.
12. Clarify state law so that water right holders who conserve water are clearly allowed to sell or lease the salvaged water in a manner that does not adversely affect existing water users.
13. Improve water use and conveyance efficiencies in agricultural, municipal, and industrial systems where such improvements will not adversely affect groundwater supplies or return flows needed by other water users.

14. Clarify state law to clearly allow the voluntary, temporary changes of private water rights and contract water exchanges. Such changes could reallocate water to highly valued offstream and instream water uses, whose users anticipate water short years. Such reallocations would be regulated by the state to insure the protection of other potentially affected water users and would have to be planned well in advance of the anticipated dry years.
15. Urge the Board of Natural Resources and Conservation to adopt rules where the installation of water measuring devices will significantly help to resolve conflict and improve the distribution of water during drought in water-short drainages.
16. Find ways to expedite the resolution of local water use conflicts and water rights enforcement during drought before the general adjudication process is completed.
17. Develop a model water conservation ordinance or contract clause for adoption by municipalities and rural domestic water suppliers.

Recommendations

Options 4 and 6 through 17 are recommended. Option 1 was rejected because the committee felt there was no way to expedite the water right change process without compromising the protection of other water right holders. Options 2 and 5 were rejected because these authorities already exist. Option 3 was not believed to be a viable drought management tool at this time.

PLAN IMPLEMENTATION

Legislative Action

First, the legislature needs to clarify the planning and coordination responsibility for drought response. The Division of Disaster and Emergency Services should continue to be responsible for disaster declaration and emergency response activities, while the Drought Advisory Committee would assume responsibility for planning and coordinating drought preparation activities. Second, the legislature needs to clarify that the water rights change statute allows voluntary, temporary water right changes that would not adversely affect other water users. Third, the legislature needs to clarify that water right holders who salvage water through conservation retain the right to sell or lease that water.

Administrative Action

Calculating the Palmer Drought Index for smaller geographical areas should be the responsibility of the State Climate Center at Montana State University. The Soil Conservation Service should continue to develop and refine the Surface Water Supply Index. Coordination in reporting drought monitoring information should be the responsibility of the Department of Natural Resources and Conservation (DNRC), in cooperation with the Montana Water Information System in the State Library. The DNRC would report drought information using computer generated maps prepared by the Montana Water Information System. The reporting effort should make better use of the media and other available means of communication, such as computer bulletin boards.

Once authorized by the governor and the legislature, the Drought Advisory Committee should oversee the development of a new Montana Drought Plan. The new Montana Drought Plan should list individuals with the technical expertise and responsibility to perform drought impact assessments, upon request of the Drought Advisory Committee. This plan should also provide an updated list of state and federal assistance programs and identify the specific triggering mechanisms used to guide drought management actions.

Once a high probability of drought is indicated, the Drought Advisory Committee should consult with the local officials in the drought prone area and offer to provide state assistance to a local drought advisory committee. Local drought advisory committees also may be created in normal years where sufficient interest exists. The DNRC would staff the state Drought Advisory Committee and provide technical assistance to local drought advisory committees. The state Drought Advisory Committee is not intended to have any authority over the local committees. This relationship is necessary merely to ensure coordination between the state and local levels. Existing organizational relationships between state government and local officials (such as the relationship between the DNRC and local conservation districts) should be used to the extent possible to ensure efficient coordination. Local entities, such as conservation districts, should be encouraged to apply for state financial and technical assistance to develop local drought plans at any time.

The publication of an annotated directory of available educational resources about water conservation should be the responsibility of the Montana Watercourse. This program should also promote voluntary water conservation as part of its general educational charge and encourage the use of water education resources in the state.

The Board of Natural Resources and Conservation is urged to adopt rules relating to water measuring devices, as necessary to resolve conflict and improve distribution of water during drought. The way in which water storage will be considered for improving water supply security should be determined in the State Water Plan. The cooperation and assistance of the state Water Court and local district courts should be sought to find ways to expedite the resolution of local water right conflicts during drought.

The responsibility falls to the Drought Advisory Committee, with DNRC staff, to implement all of the other recommendations in this plan section, although other entities will certainly play an important part. These recommendations include suggesting basin closure as an option for local water users, seeking more efficient water use and conveyance by large water users, inventorying and reviewing reservoir operating plans, opposing elimination of the Federal Crop Insurance Program, educating people about management options to reduce drought impacts, and developing a model water conservation ordinance for adoption by municipalities and rural domestic water suppliers.

Financial Requirements and Funding Strategies

A grant is requested from the Water Development Program to establish a pilot drought management program. This grant will be a cooperative endeavor involving the State Climate Office, the State Library, the U.S. Soil Conservation Service, and the DNRC. The grant would provide staff and an operational budget to initiate implementation of the recommendations of this plan section.

A priority use of the grant would be to test the proactive, locally-focused drought management approach if a drought arises during the time when grant resources are available. If no drought develops, the funds will be used to lay the foundation for the use of this management approach when the occasion arises. This foundation includes the production of the new Montana Drought Plan, the establishment of the improved monitoring and early warning system, and the development of educational efforts and various mitigation strategies.

The reallocation of DNRC staff resources and operating expenses is recommended as a fallback method of funding some of the recommendations in this plan section if grant funds are not awarded. The efficient use of existing financial resources, and any available grant funding, is essential to implement this plan section.

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Plan Implementation Summary

<u>Action</u>	<u>Responsibility</u>	<u>Deadline</u>
Issue 1-Drought Monitoring		
Calculate PDI for smaller regions	State Climate Center	January, 1992
Develop SWSI	Soil Conservation Service (SCS)	January, 1992
Improve monitoring coordination	DNRC, State Library	January, 1992
Issue 2-Impact Assessment		
Coordinate timely impact assessments	Drought Advisory Committee	As Needed
Issue 3-Coordination of Government Actions		
Replace State Drought Plan	Governor, Drought Advisory Committee	August, 1991
Define drought management responsibility of Drought Advisory Committee	Legislature	April, 1991.
Issue 4-Triggering Mechanisms		
Include triggering mechanisms in new drought plan	Drought Advisory Committee	August, 1991
Issue 5-Assistance Programs		
Update list of assistance programs	Drought Advisory Committee	August, 1991
Assist local drought advisory committees	All State and Federal Agencies	As Needed
Issue 6-Funding Drought Management Programs		
Obtain grant funding	Legislature	July, 1991
Issue 7-Research and Education Programs		
Encourage the use of existing programs	Montana Watercourse, SCS, Extension Service, Conservation Districts, DNRC	Ongoing
Support ongoing research	Montana University System	Ongoing
Publish directory of water conservation information	Montana Watercourse	January, 1992
Develop public information strategy	Drought Advisory Committee	August, 1991
Issue 8-Drought Mitigation Strategies		
Inventory reservoir operating plans	Drought Advisory Committee, DNRC	July, 1992
Consider water storage and basin closure	Drought Advisory Committee, DNRC	Ongoing
Encourage water conservation	Drought Advisory Committee, DNRC	Ongoing
Clarify that state law allows sale or lease of salvaged water	Legislature	April, 1991
Clarify that state law allows voluntary, temporary water right transfers	Legislature	April, 1991
Consider adoption of water measurement rules	Board of Natural Resources and Conservation	October, 1992
Expedite water rights conflict resolution and enforcement	Water and district courts, Drought Advisory Committee, DNRC	Ongoing
Develop a model water conservation ordinance	Drought Advisory Committee, DNRC	August, 1991
Educate about forest and range management options to reduce drought impacts	Drought Advisory Committee, DNRC	Ongoing

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