
TECHNICAL MEMORANDUM

SUBJECT: **Green River Basin Plan**
 Institutional Constraints

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Introduction

In recent years, federal and state laws, rules, regulations and policies have effected the business of water development and management. The purpose of this technical memorandum is to identify and discuss some of these institutional constraints.

Federal Environmental Laws

In the late 1960's and early 1970's, Congress passed legislation to protect the environment. Prior to the passage of these laws, most water projects were designed and operated for specific consumptive uses for municipal, agricultural or industrial purposes or to provide flood control benefits. Any environmental benefits derived from the projects were indirect and incidental to the purposes for which they were designed. While such benefits could be considerable, they were not protected or required by law. With the passage of environmental laws, minimum flow releases became requirements of federal project permits. At the same time, the economic benefits of recreation and reservoir fisheries became more apparent, which resulted in minimum pools becoming a planned component of reservoir operations.

Actions relating to water supplies and development that might be requested of the federal government that initiate or "trigger" the federal environmental laws include, but are not necessarily limited to, the following:

1. Issuance of special use and right-of-way permits for new water projects on federal lands, including those lands administered by the Bureau of Land Management (BLM), the U.S. Forest Service (USFS), and other federal agencies.
2. Renewal of special use and right-of-way permits for existing water projects on federal lands, including those lands administered by the BLM, the USFS, and other federal agencies.
3. Contracting for storage water from federal reservoirs.
4. Renewal of existing contracts for storage water from federal reservoirs.

5. Actions that involve the discharge of dredged and/or fill material into waters of the United States, including rivers, streams, and wetlands, require the issuance of a Section 404 permit under the Clean Water Act. (e.g. the construction of dams, diversion dams, pipeline crossings, etc.)
6. Procurement and renewal of licenses from the Federal Energy Regulatory Commission (FERC) to produce hydropower.
7. Use of federal funds, loans or grants, to construct a new water project or rehabilitate an existing water project.

The only water development activity that is not subject to federal environmental laws is drilling a well with non-federal funds on non-federal lands outside the banks of rivers, streams, and wetlands. However, piping the water from such wells across federal lands or rivers, streams, and wetlands could initiate a federal environmental review.

Endangered Species Act

The Endangered Species Act of 1973 (ESA) requires the Secretary of Interior, through the U.S. Fish and Wildlife Service (USFWS), to determine whether wildlife and plant species are endangered or threatened based on the best available scientific information. The ESA constrains all federal agencies from taking any action that may jeopardize the continued existence of an endangered or threatened species. If a federal agency is considering an action that may jeopardize an endangered species, Section 7 of the ESA requires that the agency must consult with the USFWS. There is a process of biological assessments and opinions that may result in conclusions that the proposed action will not jeopardize the species, that a reasonable or prudent alternative is needed to mitigate the impacts of the proposed action on the species or its habitat, or that the action should not be taken. The USFWS strongly encourages the coordination of the Section 7 consultation procedures with those procedures required by other statutes such as the National Environmental Policy Act and the Clean Water Act.

National Environmental Policy Act

The National Environmental Policy Act of 1969 (NEPA) requires that federal agencies consider all reasonably foreseeable environmental consequences of their proposed actions. A review of that action under NEPA can be in the form of a simple finding of no significant impact (FONSI), an environmental assessment (EA), or an environmental impact statement (EIS). Further, NEPA requires federal decision makers to "study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources." (42 USC 4321 et seq., Sec. 102(2)E). NEPA created the Council of Environmental Quality (CEQ). Regulations of the CEQ require that the "no action" alternative be considered; all reasonable alternatives should be considered; the reasons for Institutional Constraints Memo

eliminating potential alternatives must be provided; the action preferred by the federal action agency should be identified, if possible; and appropriate mitigation measures should be included (40 CFR Part 1502). NEPA provides federal agencies the opportunity to determine which alternative, including no action, they feel best serves the applicant's purpose and need. The alternative selected by the federal agency may differ from the one preferred by the applicant.

Clean Water Act

Section 404 of the Clean Water Act of 1972 prohibits discharging dredged or fill materials into waters of the United States without a permit from the U.S. Army Corps of Engineers (USCOE). The waters of the United States include rivers and streams and, as of 1993, wetlands. USCOE policy requires applicants for 404 permits to avoid impacts to waters of the U.S. to the extent practicable, then minimize the remaining impacts, and finally, take measures to mitigate unavoidable impacts. In addition to the alternative review required by NEPA, Section 404 (b)(1) guidelines (40CFR Part 230) require an alternative review to define the least environmentally damaging practicable alternative. Further, the guidelines are used to ensure that a project, after considering mitigation, will not cause significant impacts to the aquatic ecosystem.

In order to comply with Section 303 (a) and (b) of the Clean Water Act, the Basin states established the Colorado River Basin Salinity Control Forum in 1973. Recently, the Forum published its "1999 Review, Water Quality Standards for Salinity, Colorado River System", which outlines policies that will affect some existing and future water development activities in Wyoming's Green River Basin. These policies are:

- * Policy of Implementation of Colorado River Salinity Standards through the NPDES Permit Program. This policy applies to industrial and municipal discharges.
- * Policy for Use of Brackish and/or Saline Water for Industrial Purposes. This policy applies to industrial water use.
- * Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program for Intercepted Ground Water. This policy applies to mines and wells which discharge intercepted ground water.
- * Policy for Implementation of Colorado River Salinity Standards through the NPDES Permit Program for Fish Hatcheries. This policy applies to discharges from fish hatcheries.

For additional information regarding salinity control, please refer to the Technical Memorandum entitled "Green River Basin Plan, Colorado River Basin Salinity Control Program" prepared by Pat Tyrrell of States West Water Resources Corporation.

Section 303(d) of the Clean Water Act requires the State of Wyoming to identify water bodies that do not meet uses, as designated by stream classifications, and are not expected to meet water quality standards after application of technology-based controls. It is also intended to identify a priority ranking for each water quality limited segment and develop total maximum daily loads (TMDL) to restore each water body segment. TMDL is the ability of a water body to assimilate pollution and continue to meet the use designated by the stream classifications. Future water development projects will need to address water quality benefits and impacts. Section 319 of the Clean Water Act provides funding assistance to address non-point source water quality issues. Water quality issues are more specifically and fully addressed in the Technical Memorandum entitled "Green River Basin Plan, Surface Water Quality" prepared by Jake Strohman of States West Water Resources Corporation.

Solutions

The federal government, with the authorizations provided by the Endangered Species Act, the National Environmental Policy Act, and the Clean Water Act, has the tools to ensure the protection of the endangered species, critical habitat and other federal environmental interests. The federal agencies responsible for the implementation of these acts have not been reluctant to use these tools to achieve these goals. The following is a list of actions project proponents may take to address the institutional constraints within federal and state environmental laws, rules, regulations and policies.

* Project Purpose

Project proponents should have a clear definition of the purpose of their project. There are numerous uses of water and hence there may be multiple purposes associated with any proposed project: agricultural, municipal, or industrial water use; power generation; flood control; recreation; fisheries and others. In fact, the project proponent may have several purposes in mind. One reservoir could serve all of the above listed purposes. However, the alternatives analyses required by NEPA can become very complex, time consuming and costly for a multipurpose project. Each of the purposes for a proposed project will typically have its own individual alternative analysis. For example, a proposed reservoir designed to provide an agricultural water supply and recreation benefits would have to undergo a needs analysis and alternative review for both of the purposes. The project proponent would be required to verify that there are needs for additional agricultural water and recreation and that the operations of the proposed project to provide these benefits were the least environmentally damaging practicable alternative to meet those needs. Therefore, a project proponent is forced into defining the "primary" purpose of the project, such as agricultural water use, for purposes of the NEPA review. The purpose of providing recreation benefits would become a secondary benefit of the proposed project and, if it is determined that this secondary purpose causes substantial environmental damage, beyond that of the primary purpose, recreation benefits may have to be deleted from the proposed operation of the project.

* Project Need

The project proponent must define the need for water to meet the defined purpose or purposes for the project. For example, if the purpose of a proposed agricultural project is to increase the yield of alfalfa or native hay, the amount of water needed for this purpose must be calculated. If the purpose of a proposed municipal project is to meet future water needs, the project proponent must complete population projections and future demand estimates in a manner that withstands the scrutiny of the federal permitting agencies. Industrial water users will need to calculate the water needs for their proposed operations. The needs analyses will have to quantify the amount of water that will be stored or diverted and consumed by the proposed action. Typically, the federal permitting agencies will require that future water conservation activities be considered in the needs analysis.

* Alternative Analyses

Project proponents should have evaluated several alternatives prior to selecting the alternative that is going to be subjected to the federal review process. As previously noted, NEPA regulations require that the "no action" alternative be considered; all reasonable alternatives should be considered; and the reasons for eliminating potential alternatives must be provided. Therefore, project proponents should develop enough information on alternatives to evaluate how well the preferred alternative will fare under the federal review. The federal agencies will typically require that water conservation must be considered as an alternative to the project. For example, if a municipality charged more for water, would the increased cost to the consumer reduce the demand in sufficient quantities to address projected needs without building a new water supply project?

* Selection of the Preferred Alternative

Cost and technical feasibility are the primary factors considered by project proponents in determining project feasibility. While these factors are also considered by federal permitting agencies, the federal perspective is more interested in the environmental damage that may occur if the project is constructed and implemented. Therefore, the project proponents should consider potential environmental impacts in developing project alternatives. For example, a pipeline alignment that avoids wetlands should be evaluated. Perhaps, an off-channel reservoir on a ephemeral stream with a supply canal can meet the water supply needs as well as a reservoir on a Class I fishery. While the revised pipeline alignment or off-channel reservoir may be more costly to construct, those increased costs may be more than offset by the mitigation costs to replace wetlands or mitigate the impacts to the fishery. In addition, federal clearances for a pipeline that does not impact wetlands or a reservoir with no or minimal fishery impacts will be easier to obtain.

Federal Lands

There are federal lands throughout the Green River Basin. There are lands administered by the Bureau of Land Management (BLM). There are national forests, wilderness areas, wildlife refuges, and candidates for wild and scenic designations. The BLM, the U.S. Forest Service, or other agencies managing the federal lands must assure that the requirements of the above laws are met before they can issue a special use permit authorizing a proposed action on federal lands, such as construction of a water project.

The scrutiny under which the federal laws will be applied is based on the sensitivity of the environment impacted or effected. For example, it may be a rather simple process to obtain a special use permit to construct a small water pipeline across the prairie within BLM jurisdiction. However, it would be virtually impossible to obtain a special use permit to construct a large dam within a wild and scenic designation.

Project proponents must demonstrate a "purpose and need" for a project in order to obtain federal clearances for major water projects, whether or not the proposed project is located on federal lands. However, if the proposed location of the project is on federal lands, the "purpose and need" of the project proponent may be secondary to goals of the federal agency's management plans.

As previously noted, NEPA provides federal agencies the opportunity to determine which alternative, including no action, they feel best serves the applicant's purpose and need. If the proposed project is located on federal lands and does not comply with the federal agency's management plan, project proponents may be faced with the daunting task of convincing that federal agency that the proposed project at that specific location is the only alternative available to meet the proponent's purpose and need.

Lands within national forests, wilderness areas, wildlife refuges, and wild and scenic designations are environmentally sensitive. The federal government selected the lands because of their beauty and habitat. Therefore, even if a project proponent obtains approval from the federal government to construct within these areas, that project proponent better bring his or her checkbook. The costs to mitigate the project impacts to the streams, fisheries, terrestrial habitat and wildlife will be considerable. In fact, these costs must be considered in determining whether or not the proposed project is economically feasible.

There is some uncertainty involved in constructing projects on federal lands. Typically, a special use permit has an expiration date. The project owners must seek a renewal of the special use permit to continue to operate their water projects. The issuance of the renewal will be based on the federal laws, rules and regulations in place at the date of the renewal rather than the requirements under which the special use permit was originally issued. For example, if a species in the project area is placed on the threatened or endangered lists, the project owner may be required to revise the operations of the project to accommodate the perceived needs of the species. If the project is a dam, the owner may be required to deliver a portion of the storage water supply to the habitat of the species in order to obtain the renewal of the special use permit.

If possible, project proponents should avoid locating their project on national forests because of the encumbrances that may be placed on their investments or projects. It is virtually impossible to locate new water projects within wilderness areas, wildlife refuges, and lands with wild and scenic designations.

Wyoming Environmental Laws

The Section 401 of the Clean Water Act provides for the state certification of any federally licensed or permitted facility which may result in a discharge to the water of the state. The 401 certification provides a mechanism for the states to amend, or perhaps veto, a permit that the federal agency might otherwise permit. While the 401 certifications are required for several federal actions, most 401 Certifications relate to Section 404 Dredge and Fill Permits required from the U.S. Army Corps of Engineers. A separate permit application is not required since all 404 Permit applications are automatically forwarded to the state in which the 404 permit is being requested.

Those items typically required in the provisions of the Section 401 Permit are outlined below:

- * Pollution Control Plan
- * On-site Pollution Control Officer
- * Water Quality Monitoring for turbidity
- * Safe handling of all hazardous materials located on-site.
- * Construction of adequate water supply, sanitary and trash facilities for any constructions camps located on-site.

The Section 401 permit also outlines those additional permits required prior to the initiation of construction activities. These additional permits are described below:

1. NPDES - National Pollution Discharge Elimination System Permit.

Typically, the selected contractor for the project will prepare a "Notice of Intent" 30 days prior to any surface disturbances taking place. The major requirements of the NPDES (storm water general permit) pertain to the development and implementation of a pollution plan along with regular inspection of pollution control facilities.

2. Non-Storm Water Discharges.

An individual NPDES discharge permit from the State Department of Environmental Quality may be required for point source discharges to surface waters not related to storm water runoff. These can include discharges from gravel crushing and washing operations, cofferdam dewatering, vehicle or machinery washing, or other material processing operations, if they are conducted.

3. SPCC (Spill Prevention, Control, and Countermeasures Permit)

If above ground storage of petroleum products exceeds 1,320 gallons in total or more than 660 gallons in a single tank an SPCC plan may have to be developed as provided for in the EPA's Oil Pollution Prevention regulations.

Wyoming Water Law

Wyoming water law is based on the prior appropriation doctrine, or "first in time-first in right". Therefore, in times when there is not enough water to fulfill all the water rights, those water users having an earlier priority date on their water right are allowed to receive their full entitlement before those water users that have a later priority date or "junior" water right may receive any water under their right. If a particular water right holder does not feel he is getting the water that his water right deserves, he can contact the State Engineer's Office and "call" for water rights regulation. If the State Engineer concludes that the water right holder has "standing" to make the "call", the State Engineer's Office will regulate the available water based on the priority dates of the water rights on the stream or river for which the "call" was made.

The priority date for a new project is established by the date the project proponent applies for a water right from the Wyoming State Engineer's Office. In order to determine the water supply a new project may achieve, it is important to evaluate the existing water rights that will be "senior" to the new project. Before the decision is made to pursue a project at a particular location, the potential yield of the project should be estimated. The firm yield is the water supply benefits the project proponent could expect under worst case or drought conditions. If the proposed project is located on a stream or river that has several "senior" water rights, a new project may not be able to achieve a water supply in the drier months, such as July and August, or during drought years. Under these conditions, the development of storage facilities would be required to store water when flows are surplus to existing water rights.

The old "rules of thumb" relating to yield and feasibility were as follows:

1. The demands of industrial water users must be met 10 out of 10 years or a firm annual basis.
2. The demands of municipal water users should be met 9 out of 10 years, as the municipality could implement water conservation measures during the 10th year.
3. The demands of agricultural water users must be met 8 out of 10 years before a new water supply project would be considered feasible.

However, today, all water users are interested in a firm supply before they are willing to invest in a water project due to the costs involved. In fact, industrial water users are interested in the yield of a potential project under "doomsday" conditions, such as assuming that the worst water year of record occurs in consecutive years. These expectations of water users make the priority date of the water rights of new projects relative to existing water rights a critical factor in the feasibility of new water development projects.

River Basin Compacts

Basically, the Upper Colorado River Basin Compact provides Wyoming 14 percent of the water allocated to the upper basin states by the Colorado River Compact. Wyoming's developable water under the two compacts can be estimated at between 728,000 and 1,043,000 acre-feet per year. Compact issues are more thoroughly addressed in the Technical Memorandum entitled "Green River Basin Plan, Summary of Interstate Compacts" prepared by Pat Tyrrell of States West Water Resources Corporation.

The sections of the compacts provide assurances to Wyoming that its compact entitlement is protected:

Colorado River Compact, Article III (a):

*There is hereby apportioned from the Colorado River system **in perpetuity** to the upper basin and to the lower basin the exclusive beneficial use of seven million five hundred thousand (7,500,000) acre-feet of water per annum, which shall include all water necessary **for the supply of any rights which may not exist** (emphasis added)*

Upper Colorado River Basin Compact, Article XVI:

*The failure of any state to use the water, or any part thereof, the use of which is apportioned to it under the terms of this compact, **shall not constitute a relinquishment of the right** to such use to the lower basin or to any other state, **nor shall it constitute a forfeiture or abandonment of the right** to such use. (emphasis added)*

These protections provided by the compacts may cause one to question the necessity for development under the principle of "use it or lose it", the battle cry which fostered the Wyoming Water Development Program. The compacts provide a sound legal defense of our entitlements and Wyoming would use these defenses in the face of legal challenge. However, it is also good business for Wyoming to be a good steward of its compacts entitlements through use and planning for future use.

In the past, Wyoming has been approached regarding the potential sale or lease of water to downstream out-of-state interests. The proposals addressed the procurement of unused

natural flow passing the state line as well as the purchase of water from existing reservoirs. The compacts would certainly indicate that such uses by Wyoming are possible. However, these proposals have been met with considerable debate. Many Wyoming citizens fear that such sales or leases will become irreversible. Once sold or leased, such water may never be retrievable for Wyoming should future demands need it. Others question why downstream interests would be willing to pay for Wyoming's unused natural flow when they are presently getting the water for "free".

Regardless, there are institutional hurdles that would have to be overcome for marketing of water to downstream interests to become a reality. Under current state law, the export of water outside the state must be approved by the Wyoming Legislature. Further, such transactions would also have to be approved by the Upper Colorado River Commission (the coalition of upper basin states established by the Upper Colorado River Basin Compact). Presently, it appears that obtaining these approvals would be very difficult, if not impossible. Therefore, Wyoming citizens should take comfort in the fact that if such transactions are proposed, the decision as to whether or not Wyoming should sell or lease a portion of its compact entitlement will be debated in public forums within Wyoming and throughout the West.

The compacts also allow Wyoming flexibility in the use of its entitlement. In particular, the Upper Colorado River Basin Compact, Article XV (b), states the following:

The provisions of this compact shall not apply to or interfere with the right or power of any signatory state to regulate within its boundaries the appropriation, use and control of water, the consumptive use of which is apportioned and available to such state by this compact.

In effect, this provision allows for out-of-basin (but in-state) use of Wyoming's compact allocation. This flexibility has been used in the past to provide the City of Cheyenne with a municipal water supply to meet its existing and long-term water needs. The fact that Wyoming's compact allocation can be used to meet the demands in other basins expands the future potential uses of the water.

Wyoming Water Development Program

Planning, constructing, and implementing a water project is costly enough. Adding the costs to acquire state and federal permits can be overwhelming for public entities in Wyoming. In 1975, in recognition that water development was becoming more difficult and additional water development was necessary to meet the goals and objectives of the state, the Wyoming Legislature authorized the Wyoming Water Development Program and defined the program in W.S. 41-2-112(a), which states:

The Wyoming water development program is established to foster, promote, and encourage the optimal development of the state's human, industrial, mineral, agricultural, water and recreation resources. The

program shall provide through the commission, procedures and policies for the planning, selection, financing, construction, acquisition and operation of projects and facilities for the conservation, storage, distribution and use of water, necessary in the public interest to develop and preserve Wyoming's water and related land resources. The program shall encourage development of water facilities for irrigation, for reduction of flood damage, for abatement of pollution, for preservation and development of fish and wildlife resources [and] for protection and improvement of public lands and shall help make available the water of this state for all beneficial uses, including but not limited to municipal, domestic, agricultural, industrial, instream flows, hydroelectric power and recreational purposes, conservation of land resources and protection of the health, safety and general welfare of the people of the state of Wyoming.

The task of setting priorities under the above all-encompassing definition falls to the Wyoming Water Development Commission (WWDC), which was authorized by the Wyoming Legislature. The WWDC is made up of ten (10) Wyoming citizens, appointed by the Governor. The Wyoming Water Development Program is administered by the director and staff of the Wyoming Water Development Office.

The Wyoming Water Development Commission can invest in water projects as state investments or can provide loans and grants to public entities (municipalities, irrigation districts and special districts) for the construction of projects specific to their water needs. The WWDC has adopted operating criteria to serve as "a general framework for the development of program/project recommendations and generation of information." Individuals and project entities interested in the development of specific water projects should seek information regarding the Wyoming Water Development Program and the possibility of obtaining financial and technical assistance for the development of those projects.

Upper Colorado River Recovery Implementation Program

John Shields, Interstate Streams Engineer for the Wyoming State Engineer's Office, provided the following description of the Upper Colorado River Recovery Implementation Program. Mr. Shields has been involved with the Program since its inception:

The U.S. Fish and Wildlife Service continues to assert in its ESA Section 7 biological opinions that proposed water projects are likely to jeopardize the continued existence of the Colorado squawfish, humpback chub, bonytail, and razorback sucker and result in the destruction or adverse modification of critical habitat. The Recovery Program provides reasonable and prudent alternatives to avoid the likelihood of jeopardy to the endangered fishes and destruction or adverse modification of critical

habitat. Critical habitat was designated within the 100-year floodplain for the four endangered fishes on March 21, 1994 (59 F.R. 13374).

In order to further define and clarify the ESA Section 7 consultation process in the Recovery Program, a section 7 agreement was implemented on October 15, 1993, by the Recovery Program participants (U.S. Fish and Wildlife Service, 1993). This agreement added a new concept for consultations on water development projects in the Upper Basin. Incorporated into this agreement is a Recovery Implementation Program Recovery Action Plan (Plan), which identifies actions currently believed to be required to recover the endangered fishes in the most expeditious manner in the Upper Basin (excluding the San Juan Basin). The Recovery Program is intended to offset both the direct and indirect depletion impacts of historic projects occurring prior to January 22, 1988. The elements of the Plan are identified for use as reasonable and prudent alternatives for historic water projects, if needed. For new projects, the intention is to continue the depletion charge, which is an integral part of the Recovery Program, but use the Plan if any additional measures are needed (i.e., for large depletions).

Because of the Section 7 agreement, the Service made a determination that there currently is sufficient progress to allow projects with depletions less than 3,000 acre-feet per year (both historic and new) to proceed without the need to identify specific Plan elements as reasonable and prudent alternatives. For new projects, however, a depletion charge would still be required. Since the initiation of the Recovery Program in early 1988, the majority of the projects with depletions under 3,000 acre-feet per year have been for projects with annual depletions of 100 acre-feet or less and which result in a cumulative total of 1,000 acre-feet of annual depletions in the Upper Basin.

Wyoming's participation in this Upper Colorado River Recovery Implementation Program will facilitate the process by which most Wyoming projects obtain federal clearances under ESA. Rather than spending thousands of dollars on evaluations of potential impacts to the fish species and their designated critical habitat and developing expensive mitigation plans, a project proponent may be able to pay a one-time charge for new depletions which is paid into a fund to benefit the endangered fish. The one-time charge is presently approximately \$14 per acre foot of the estimated annual depletion. This amount is adjusted annually for inflation.

Conclusions

Federal Environmental Laws

Water development has become difficult and costly. However, if a project proponent has a need for water, patience, and financial resources, the federal permitting process can be successfully completed and permits obtained for construction of water projects. In fact, Wyoming must maintain its resolve to develop its water resources to meet the needs of its citizens.

The State of Wyoming has historically been proactive in dealing with institutional constraints that may impact its ability to develop its water resources as allocated by court decrees and interstate compacts. State representatives review proposed federal mandates ranging from new federal environmental legislation to forest management plans to interject the state's position on these matters and provide for a state perspective in their development and implementation. These efforts are important to Wyoming and must continue. There have been successes, as evidenced by the Upper Colorado River Recovery Implementation Program and the Colorado River Basin Salinity Control Program. Without such cooperative efforts, water development in Wyoming's Green River Basin would be much more difficult and costly.

Future Water Development

The publication of the "Green River Basin Plan" should foster discussion among water users and state officials relative to water development in the Green River Basin in Wyoming. The plan concludes that Wyoming has water to develop in the basin. The water can be used for future municipal and industrial growth. There are existing agricultural water demands that could be met with the water. As previously noted, the Wyoming Water Development Program can invest in water projects as state investments or can provide loans and grants to public entities, such as irrigation districts, for the construction of projects. Historically, state investments in water projects have been limited to larger, multi-purposes reservoirs such as the Buffalo Bill Enlargement and Fontenelle Reservoir. However, recently, the Wyoming Water Development Commission (WWDC) recommended and the Wyoming Legislature authorized funding for the High Savery Reservoir.

High Savery Reservoir is a relatively small reservoir, with a capacity of approximately 22,400 acre feet. Storage water from the reservoir will be used to provide supplemental irrigational water, as well as to provide recreational and environmental benefits. Contrary to past practice, this reservoir is being constructed as a state investment. There are several reasons that the state decided to make this investment. One of the most significant reasons was that the project proponents convinced the legislature that the project was necessary to mitigate the transbasin diversions from the Little Snake River Basin by the the Cheyenne Stage I and Stage II Projects.

There are opportunities to construct smaller agricultural reservoirs in the Green River Basin. However, these development opportunities do not have the extraordinary history of the High Savery Dam. Therefore, these smaller agricultural projects may have to be financed by project sponsors. The loan/grant mix criterion presently applied by the Institutional Constraints Memo

WWDC limits grant funding for project sponsors to 50 percent of the total project cost. Wyoming statutes authorize a maximum 75/25 grant/loan ratio for project sponsors. Even though the WWDC and Wyoming Legislature may agree to increase the grant percentage to the maximum 75 percent, it may be difficult or impossible for the agricultural water users to make the payments on even a 25 percent WWDC loan, plus pay for the operation and maintenance of a dam and reservoir. However, when circumstances warrant, the WWDC and Wyoming Legislature will likely be asked to fund and construct smaller dams in the Green River Basin as state investments. Wyoming statute 41-2-121(a)(ii)(II) provides the following: *"Storage projects may be financed by grants for the full cost of the storage capacity but not to exceed public benefits as computed by the commission;"*

The availability of water in the Green River Basin and the flexibility provided by the Upper Colorado River Basin Compact offers the potential for transbasin diversions. The City of Cheyenne has constructed its Cheyenne Stage I and Stage II Projects, which transport water from the Little Snake River Drainage to serve its municipal water needs. The State of Colorado has a long history of constructing and implementing water projects that divert and transport Colorado River water into the South Platte River Basin for the benefit of Denver and other front range municipalities.

Early in the history of the Wyoming Water Development Program, studies were completed to evaluate the feasibility of a Stage III Project which would again divert water from the Little Snake River Drainage, but this time, for the benefit of municipalities located in the North Platte River Basin. Those studies indicated that such a project was costly and could not be financially justified, even with favorable WWDC funding assistance. Therefore, efforts turned to the construction of the Deer Creek Dam and Reservoir to meet the future water supply needs of Casper and other North Platte municipalities. Presently, the Pathfinder Modification Project is being considered as a replacement for the Deer Creek Dam and Reservoir. If implemented, the Pathfinder Modification Project could meet the needs of the North Platte municipalities for quite some time. However, large complex projects take a long time to implement. Perhaps the WWDC should consider completing reconnaissance level evaluations of transbasin projects that could serve the North Platte River Basin or other drainages surrounding the Green River.

Wyoming statute 41-2-121(a)(ii)(VIII) states: *"A project involving a transbasin diversion shall address the impact of the diversion and recommend measures to mitigate any adverse impact identified in the basin of origin."* This begs the question: Would it be possible for the WWDC to fund smaller agricultural reservoirs as state investments with the understanding that these projects would serve as mitigation for future potential transbasin diversion projects?

Water Marketing

As long as Wyoming has water to develop in the Green River Basin, there will be debate regarding the sale or lease of water to downstream interests. As previously noted, the sale or lease of natural flow allocated to Wyoming under the Colorado River Compacts is probably neither politically or institutionally feasible. Further, the long-term or perpetual sale of Wyoming's water would be short sighted. However, the lease of water that can be controlled may be a more feasible water marketing alternative. Storage water or other supplies that can be released or delivered on demand may offer revenue potential for the state. As the water supply can be turned on and off to meet specific demands, the possibility that water marketing would become irreversible becomes less likely. The water rights and leased water would remain under the control of Wyoming. At such time as Wyoming had a need for the water, the leases could be terminated, downstream deliveries stopped, and the water could be used in Wyoming. While such an alternative may be more feasible, there would still be many political and institutional issues to address.

Future Water Planning

The "Green River Basin Plan" is an important step towards identifying and achieving Wyoming goals in the Green River Basin. It is important to update and maintain the "Green River Basin Plan" or it will simply be a glimpse of the status of the water use in the year 1999. In order to improve on the plan, additional data will be necessary. Existing water use is an important element in planning for the future. Without an understanding of the existing water use, it is very difficult to define the water available for future use. It may be time in Wyoming's history that the installation of measuring devices and annual reporting of monthly water use become a requirement placed on water rights, with the exception of those water rights permitted for domestic, stock and other de minimis uses.

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