Memorandum

To: Idaho Water Resource Board

From: Helen Harrington

Date: October 17, 2013

Re: Water Resource Planning ("Planning") Committee Items

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1. Review of May 8, 2013 Meeting

   A. Status of the Idaho State Water Plan
   Plan became effective during the 2013 legislative session. There were several topics discussed by the committee – (1) the process for SWP revision; (2) legislative concerns about specific policies; and (3) committee discussion about developing a defined process for review and reviewing and to improve the communication between the IWRB and the legislature.

   B. Treasure Valley CAMP
   Committee directed staff to review and compile the comments received regarding the draft TV CAMP and bring recommendations for changes to the committee. As directed by the committee, this process will continue to move forward, but has lower priority than other IWRB projects.

2. Following the May committee meeting, Chairman Roger Chase sent letters to Governor Otter and legislative leadership discussing the IWRB intentions and process for reviewing the state water plan and developing a policy on sustainability (copies attached).

3. RP CAMP Membership

   In July, I received a formal request from Stimpson Lumber Company to replace Hal Keever on the RP CAMP Advisory Committee. Mr. Keever had been an original member of the advisory committee but had not be a consistent participant in recent period. Stimpson Lumber Company. requested that a consultant be appointed to replace Mr. Keever. This request has provided an opportunity to consider the make-up of the advisory committee and consider how to most effectively ensure key local interests are at the advisory committee.

   The wood products industry is a vital part of the Northern Idaho economy and should be represented as part of the RP CAMP activities. A current member of the advisory committee, Mr. Kermit Kiebert, has a long history in the wood products industry and has a private business. Additionally, he is a member of the Idaho Board of Environmental Quality and is associated with the North Idaho Chamber of Commerce. These qualifications appear to make Mr. Kiebert highly capable to representing the wood products industry and other economic interests. He also has the contacts to provide communication with those interests when appropriate.

   I recommend that the IWRB accept Mr. Keever's resignation and notify Stimpson Lumber Company that Mr. Kiebert will represent the wood products industry's interests at the RP CAMP Advisory Committee, as well as be available to carry information from them to the advisory committee.

4. CAMP Implementation Funding Status

There is one pending funding request which will be presented to the IWRB in November. The request is from Ralston Hydrologic Services, Inc. The request is for $70,000. The RP CAMP AC recommended funding the project, but it is unlikely there will be much match. Dr. Ralston was in attendance when the RP CAMP AC considered the project for recommendation and was directed to contact local interests to determine support for the project and try to find matching funds.

The project is an evaluation of modifying the municipal pumping centers to possibly mitigate for the late summer low flows. In simple terms, it will evaluate if moving the Spokane pumping away from the river during the critical times will result in increased river flows. This project doesn't have the individual benefits to an individual or entity which projects like CREP or AWEP have. The project would be useful to start a conversation regionally about strategies to mitigate the low flows, much like the Washington recharge study did. In this case, it may serve to demonstrate that although it might be costly, it is an alternative that should be evaluated alongside the recharge concept. In any case, the project would be good to start the conversation.

I recommend that the project be funded without requiring a match. This is a technical study which, if we had IDWR resources, we would do internally. However, since much of the technical staff is used for ESPA work (and doesn't require a match), it is not equitable to ask that technical work undertaken for RP CAMP have a match. For example, the work Mike McVay does with the ESPA model to evaluate recharge locations is technical work which benefits the ESPA CAMP implementation, but doesn't require match since it is IDWR staff. Additionally, there is significant value in the study done by researchers not associated with IDWR. By having an outside contractor, the perception that the results are biased will be alleviated.

Attachments:
1. State Water Plan with Legislative Track Changes
2. Letter from Governor Otter to IWRB, dated 9/5/2012
3. Letter to Governor Otter from Chairman Roger Chase, dated 6/7/2013
4. Letter to Idaho Legislative Leadership from Chairman Roger Chase, dated 5/28/2013
5. Sustainability Background Paper
6. Project Proposal from Ralston Hydrologic Services, Inc.

LEGISLATURE OF THE STATE OF IDAHO

Sixty-second Legislature First Regular Session - 2013

IN THE HOUSE OF REPRESENTATIVES

HOUSE BILL NO. 247

BY RESOURCES AND CONSERVATION COMMITTEE

AN ACT

RELATING TO THE COMPREHENSIVE STATE WATER PLAN; RATIFYING AND APPROVING THE COMPREHENSIVE STATE WATER PLAN WITH AMENDMENTS; AMENDING POLICY 1I RELATING TO AQUIFER RECHARGE, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 1K RELATING TO COMPREHENSIVE AQUIFER MANAGEMENT PLANS, TO REVISE THE POLICY STATEMENT, TO REVISE DISCUSSION PROVISIONS AND TO REVISE IMPLEMENTATION STRATEGIES; AMENDING POLICY 2B RELATING TO FEDERALLY LISTED AND OTHER AQUATIC SPECIES, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 2C RELATING TO MINIMUM STREAM FLOWS, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 2D RELATING TO STATE PROTECTED RIVER SYSTEM, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 2E RELATING TO RIPARIAN HABITAT AND WETLANDS, TO REMOVE ALL PROVISIONS IN POLICY 2E; AMENDING POLICY 2F RELATING TO STREAM CHANNEL REHABILITATION, TO REVISE THE POLICY STATEMENT, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 2G RELATING TO SAFETY MEASURES PROGRAM, TO REVISE THE POLICY STATEMENT, TO REVISE DISCUSSION PROVISIONS AND TO REVISE IMPLEMENTATION STRATEGIES; AMENDING POLICY 3D RELATING TO FUNDING PROGRAM, TO REVISE THE POLICY STATEMENT, TO REVISE DISCUSSION PROVISIONS AND TO REVISE IMPLEMENTATION STRATEGIES; AMENDING POLICY 3E RELATING TO WATER RESOURCE PLANNING PROGRAM, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 3G RELATING TO CLIMATE VARIABILITY, TO REMOVE ALL PROVISIONS IN POLICY 3G; AMENDING POLICY 4E RELATING TO SNAKE RIVER BASIN NEW STORAGE, TO REVISE DISCUSSION PROVISIONS; AMENDING POLICY 6A RELATING TO CONSERVATION PLANS IN THE SALMON/CLEARWATER RIVER BASINS, TO REVISE THE POLICY STATEMENT, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; AMENDING POLICY 6B RELATING TO INSTREAM FLOW PROGRAM IN THE SALMON/CLEARWATER RIVER BASINS, TO REVISE THE POLICY TITLE TO PROVIDE FOR MINIMUM STREAM FLOW WATER RIGHTS AND OTHER INNOVATIVE MEASURES TO ADDRESS AQUATIC SPECIES CONCERNS IN THE SALMON/CLEARWATER RIVER BASINS, TO REVISE THE POLICY STATEMENT, TO REVISE DISCUSSION PROVISIONS, TO REVISE IMPLEMENTATION STRATEGIES AND TO REVISE MILESTONES; TO PROVIDE THAT ALL STATE AGENCIES SHALL EXERCISE THEIR DUTIES IN A MANNER CONSISTENT WITH THE COMPREHENSIVE STATE WATER PLAN AS AMENDED; AND DECLARING AN EMERGENCY.

Be It Enacted by the Legislature of the State of Idaho:

SECTION 1. That pursuant to Section 42-1734B(6), Idaho Code, the Comprehensive State Water Plan (Part A) adopted by resolution of the Idaho Water Resource Board on November 28, 2012, is ratified and approved with amend-

ments as follows:

Policy **1I - AQUIFER RECHARGE.** Page 15 of the Comprehensive State Water Plan.

Aquifer recharge should be promoted and encouraged, consistent with state law.

Discussion:

Managed aquifer recharge: Managed recharge projects ~~may~~ can be an appropriate means for enhancing ground and surface water supplies, providing mitigation to senior water right holders for junior ground water depletions, or to help maintain desirable aquifer levels. In addition, managed recharge may help optimize existing water supplies by changing the timing and availability of water supplies to meet demand. ~~Managed recharge may also be used as an adaptive mechanism for minimizing the impacts of variability in climate conditions. Idaho Code § 42-234(4) requires that managed recharge projects do not injure existing water rights and gives the Director authority to approve, disapprove, or require alterations in the methods employed to achieve ground water recharge.~~ The effects on ground water and surface water budgets from managed recharge projects ~~must~~ should be monitored to determine the effectiveness of such projects after implementation.~~.~~

The Board supports and assists in the development of managed recharge projects that further water conservation and increase water supplies available for beneficial use. Projects involving the diversion of natural flow water appropriated pursuant to Idaho Code § 42-234 for managed recharge in excess of ten thousand (10,000) acre-feet on an average annual basis must be submitted to the Idaho Water Resource Board for approval prior to construction. Idaho Code § 42-1737.

Aquifer storage and recovery: The use of managed recharge to store surface water in a confined underground area could be an important element in meeting future water use needs. Further understanding of the economic, legal, ecological, and technical feasibility of using confined underground aquifers for water storage in Idaho is required for the purpose of policy development and planning and to avoid injury to existing water rights.

Page 16 of the Comprehensive State Water Plan.

Incidental aquifer recharge: The incidental recharge of aquifers occurring "as a result of water diversion and use that does not exceed the vested water right of water right holders is in the public interest." Idaho Code § 42-234(5)]. Incidental recharge ~~may be an~~ is a very important component of some aquifer water budgets and should be maintained and encouraged consistent with state law.

Implementation Strategies:

- Cooperate with public and private entities to develop, implement, and evaluate managed recharge projects.

- ~~Identify and propose changes to statutes, rules, and policies that will assist the development and implementation of managed recharge projects.~~

- Identify river basins where the use of managed recharge projects should be evaluated as a potential strategy for addressing increased demand on water supplies.

- Monitor and evaluate managed recharge projects to document effects ~~on water supply and water quality~~.

- ~~Appoint an Aquifer Storage and Recovery Task Force~~ Monitor and evaluate incidental recharge to document effects.

Milestones:

- Managed recharge projects that optimize water supplies implemented.

- Effects of managed recharge projects ~~on water supply and water quality~~ documented.

- ~~Aquifer Storage and Recovery Task Force recommendations submitted~~ Benefits of incidental recharge documented.

Policy **1K - COMPREHENSIVE AQUIFER MANAGEMENT PLANS.** Page 17 of the Comprehensive State Water Plan.

The Idaho Water Resource Board will complete and implement comprehensive aquifer management plans ~~to address the changing demands on the state's water supply~~ as required by the legislature.

Page 18 of the Comprehensive State Water Plan.

Discussion:

Idaho Code §§ 42-1779 and 42-1780 established the Statewide Comprehensive Aquifer Planning and Management Program and the Aquifer Planning and Management Fund, which are designed to provide the Board and the Department with the necessary information to develop comprehensive aquifer management plans, ("CAMPs") throughout the state. The program will be implemented in three phases. First, technical information describing the hydrology of the ground and surface water systems and the relationship between surface and ground water in a designated basin will be compiled. Second, the Board, with the assistance of an advisory committee, will develop a management plan, based on an assessment of current and projected water uses and constraints, to address water supply and demand issues specific to each basin. Finally,

the Board will be responsible for implementing the CAMPs to obtain sustainable water supplies and provide for the optimum use of a region's water resources.

Idaho's first CAMP was developed for the Eastern Snake River Plain Aquifer ("ESPA CAMP"). The ESPA CAMP was adopted by the Idaho Water Resource Board and approved by the legislature in 2009. The ESPA CAMP sets forth actions designed to stabilize and improve spring flows, aquifer levels, and river flows across the Eastern Snake River Plain. The ESPA CAMP uses a phased approach to achieve a designated water budget change through a mix of management actions, including but not limited to, aquifer recharge, ground-to-surface water conversions, and demand reduction strategies. The Board is responsible for implementation of the plan with the assistance of an advisory committee made up of representatives of stakeholders who rely upon the Eastern Snake River Plain Aquifer to supply water for beneficial use.

Statewide comprehensive aquifer planning was initiated in 2008~~. T~~ and the Rathdrum Prairie plan was completed in 2011 ~~and the Treasure Valley plan is expected to be completed in 2012~~. Additional aquifers will be designated for the development of comprehensive plans as funding and conditions allow.

Implementation Strategies:

- Develop and implement CAMPs for selected basins that establish goals, objectives, and implementation strategies to maximize available water supplies.

- ~~Secure funding for technical studies and planning activities.~~

Milestones:

- Number of CAMPs completed.

- Number of CAMPs implemented.

Policy **2B- FEDERALLY LISTED AND OTHER AQUATIC SPECIES.** Page 25 of the Comprehensive State Water Plan.

> The state asserts primacy over the management of its fish and wildlife and water resources. Accordingly, any reintroduction or introduction of federally listed species or other aquatic species without state consultation and approval is against the policy of the State of Idaho because it would impair or impede the state's primacy over its water resources.

Discussion:

The intersection between state water rights and the Endangered Species Act ("ESA") requires development of integrated solutions to water allocation

conflicts. Pursuant to Idaho Code § 36-103, the Idaho Fish and Game Commission, through the IDFG, is responsible for the preservation, protection, perpetuation, and management of all wildlife, including aquatic species, within Idaho. ~~IDFG also maintains a list of Species of Greatest Conservation Need, species that are low in numbers, limited in distribution, or have suffered significant habitat losses.~~ The OSC is responsible for the coordination of all state activities affecting endangered, threatened, and candidate species, and species petitioned to be listed under the ESA, and rare and declining species. Idaho Code § 67-818. OSC coordinates state implementation and response to federal recovery plans and participates in regional efforts with state and federal agencies and tribes on issues related to such species. Idaho Code § 67-818. Pursuant to Chapter 19, Title 22, Idaho Code, the ISDA is responsible for the regulation of aquatic invasive species. All activities related to the introduction or reintroduction of aquatic species that would affect Idaho's fish and

wildlife and water resources should be coordinated through these agencies, including species listed under the ESA.

In enacting the ESA, Congress contemplated a state-federal alliance to advance the recovery of listed species and provided for the development of state-led recovery efforts. Congress has directed federal agencies to "cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species." 16 U.S.C. § 1531(c)(2). Cooperative community-based conservation programs can be more effective in providing on-the-ground habitat benefits than enforcement actions. With site-specific information about water and land use practices and habitat requirements, targeted and effective conservation strategies can be developed and implemented that protect private property rights and assure state primacy over water resources while, at the same time, providing natural resource protection.

The Idaho Water Resource Board holds minimum stream flow water rights for 205 river reaches important to ~~ESA-listed~~ aquatic species and established as part of the Snake River Water Rights Settlement Act of 2004 ("2004 Snake River Water Rights Agreement"). The minimum stream flow water rights provide significant protection for ~~ESA-listed~~ aquatic species in the Salmon and Clearwater River basins. The water rights for streams in watersheds with substantial private land ownership and private water use were established after consultation with local communities. Where the minimum stream flow water rights are higher than existing flows, the state works with water users on a voluntary basis to rent or otherwise acquire water to return to the streams. ~~The Water Supply Bank and Idaho Water Transactions Program are used to achieve these objectives.~~ In conjunction with the minimum stream flows, the state agreed to work with local stakeholders and communities to address habitat concerns on a limited number of streams with degraded habitat. ~~The work plans include measures to remove barriers to fish passage, revegetate stream banks, and restore wetlands to proper functioning.~~ These programs

also assist in the implementation of the Columbia Basin Fish Accords in which the state, the Bonneville Power Administration, and the U.S. Army Corps of Engineers ("USACE") agreed to address issues associated with the direct and indirect effects of the Federal Columbia River Power System and U.S. Bureau of Reclamation's ("USBOR") Upper Snake River Project on the fish and wildlife resources in the Columbia River Basin. ~~As discussed in Policy 6B, these projects target flow-related limiting factors in the Lemhi and Pashimeroi rivers.~~

The 2004 Snake River Water Rights Agreement also provides for the development of agreements to assist in the recovery of ESA-listed species, under Section 6 of the ESA. The plans are to be developed in collaboration with local landowners and water users, affected Indian tribes, and state and federal natural resource agencies. Section 6 agreements will provide incentives for conservation through the granting of incidental take coverage to participants in the program. Such agreements would provide participating water users with protection against uncertainty and regulatory delays while contributing to the recovery of listed species. Section 6 of the ESA may also provide opportunities for the implementation of voluntary conservation plans developed in collaboration with local water users and stakeholders in other regions of the state. The Board, in collaboration with other state agencies and local units of government, develops

local and regional conservation strategies that contribute to the protection and recovery of ~~ESA-listed species and Species of Greatest Conservation Need~~ aquatic species.

Implementation Strategies:

- Participate in the development and implementation of ~~habitat conservation plans pursuant to~~ Section 6 agreements.

- ~~Collaborate with OSC, IDFG, other state and federal agencies, affected Indian tribes, local units of government and local stakeholders to develop and implement conservation programs that preclude the need for listing of species and contribute to listed species' recovery.~~

- Coordinate with OSC and IDFG ~~to integrate water resource programs with species protection and recovery, including the establishment of minimum stream flows and state designation of protected rivers~~ on species conservation issues.

Milestones:

- Number of Section 6 agreements implemented.

- ~~Number of voluntary conservation agreements and measures implemented.~~

- Number of strategies implemented and coordination with OSC and IDFG that preclude the need for listing under the ESA and result in listed species' recovery.

Policy **2C- MINIMUM STREAM FLOWS.** Page 27 of the Comprehensive State Water Plan.

The Idaho Water Resource Board will exercise its authority to establish and to protect minimum stream flow water rights on those water bodies where it is in the public interest to protect and support instream uses.

Discussion:

Minimum stream flows protect and support many nonconsumptive beneficial uses of water such as fish and wildlife habitat, aquatic life, recreation and aesthetic values, transportation, navigation, hydropower generation, and water quality. These uses contribute to Idaho's economy and the well being of its citizens.

In 1925 and 1927, the legislature declared that the preservation of certain lakes for scenic beauty, health, and recreation was a beneficial use of water. In 1971, the legislature authorized the first formal appropriation of minimum stream flows by directing the Idaho Department of Parks and Recreation to appropriate a specific reach of Niagara Springs in the Malad Canyon area for instream flow purposes. The 1976 State Water Plan called for, and eventually legislation was enacted, creating a state-wide minimum stream flow program. Chapter 15, Title 42, Idaho Code, authorizes the Idaho Water Resource Board to appropriate the minimum flow of water required to protect designated uses if the appropriation is in the public interest and will not interfere with any vested water right, permit, or water right application with a senior priority. Idaho currently has 297 licensed or permitted water rights for minimum stream flow purposes, including six minimum

Page 28 of the Comprehensive State Water Plan.

lake level water rights held by the state. At the legislature's direction, 205 of the minimum stream flow water rights were adopted pursuant to the 2004 Snake River Water Rights Agreement ~~which, as discussed more fully in Policy 6B, provided a programmatic approach to addressing the needs of species listed under the ESA~~. Similarly, the legislature has authorized the Board to appropriate minimum stream flow water rights in the Lemhi and Wood River basins where the rights are maintained through operation of a Water Supply Bank. These locally managed programs are used to ~~maintain or enhance instream flow~~ meet minimum stream flow water rights in a manner that respects water use practices and addresses community concerns.

The Water Supply Bank and local rental pools are tools that can be used to ~~improve instream flows~~ meet minimum stream flow water rights through voluntary cooperation and to meet local needs. It is important to monitor existing mechanisms for establishing local rental pools to determine whether additional strategies are required to meet local needs. It is also important to monitor whether existing mechanisms for meeting ~~instream flow needs~~ minimum stream flow water rights are adequate.

Implementation Strategies:

- Monitor whether existing mechanisms for meeting ~~instream flow~~ minimum stream flow water rights needs are adequate.

- Coordinate with state and federal agencies and stakeholders to identify potential minimum stream flow needs.

- Submit applications for minimum stream flow water rights ~~that are in the public interest~~ pursuant to Chapter 15, Title 42, Idaho Code.

- Monitor existing mechanisms for establishing local rental pools to determine whether additional strategies are required to meet local needs.

- Establish local rental pools to meet ~~instream flow needs as requested~~ minimum stream flow water rights.

Milestones:

- Annual inventories of minimum stream flow water rights completed.

- Minimum stream flow water rights established.

- ~~Instream flow needs~~ Minimum stream flow water rights met.

Policy **2D- STATE PROTECTED RIVER SYSTEM.** Page 28 of the Comprehensive State Water Plan.

The Idaho Water Resource Board will exercise its authority to protect the unique features of rivers where it is in the public interest to protect recreational, scenic, and natural values.

Discussion.

Idaho Code § 42-1734A(1) authorizes the Board to protect highly valued waterways as state protected rivers, subject to legislative approval. The authority to designate "protected rivers" derives from the state's ownership of the beds of navigable streams and the state's right to regulate all

waters within the state. The Idaho Water Resource Board has consistently recognized the value of free-flowing waterways by designating specific streams and rivers as natural or recreational rivers.

Although rivers can be protected under the federal Wild and Scenic Rivers Act, the Board works with federal officials to seek protection of streams and rivers through the Comprehensive State Water Planning process. The state planning process ensures coordinated and efficient water planning for Idaho rivers and streams and avoids potential state/federal sovereignty conflicts.

Implementation Strategies:

~~• Coordinate with local governments and federal agencies to identify specific waterways for consideration as protected rivers.~~

• Develop priority list of potential rivers for consideration in comprehensive basin planning.

• Establish agency policy and procedures to ensure requirements of the protected rivers program are addressed when the Department reviews water right permit applications and stream channel alteration permits.

~~• Ensure that permits issued include provisions for the protection, restoration, or enhancement of designated river reaches.~~

Milestones:

~~• Ongoing review of state rivers and streams to determine whether they should be designated as part of the protected river system.~~

~~• Number of state/federal agreements to coordinate river planning implemented.~~

• Designation of streams or rivers determined to warrant protected status.

Policy **2E- RIPARIAN HABITAT AND WETLANDS.** Page 29 of the Comprehensive State Water Plan.

~~**2E- RIPARIAN HABITAT AND WETLANDS.**~~ (Section number reserved.)

~~Protecting the ecological viability of riparian habitat and wetlands within the state is a critical component of watershed planning.~~

~~**Discussion:**~~

~~Functional riparian zones and wetlands contribute to water quality protection, storm water control, and ground water protection and provide important~~

habitat for fish and wildlife. Riparian and wetlands areas provide support to numerous species across much of the state. Riparian zones and wetlands should be protected to preserve their ecological values and functions. The Board supports voluntary efforts to restore riparian zones and wetlands.

The integration of water resource and land use planning activities that affect riparian zones and wetlands requires coordination among various local, regional, and state authorities. The Department regulates the alteration of stream channels and stream beds

Page 30 of the Comprehensive State Water Plan.

below the mean high watermark.Idaho Code §§ 42-3801 - 42-3812. Local governments are authorized to regulate land use and development. The DEQ administers the state's Nonpoint Source Management Program which is based upon strong working partnerships and collaboration with state, tribal, regional, and local entities, private sector groups, citizens' groups, and federal agencies and the recognition that a successful program must be driven by local wisdom and experience.

In 2008, the Idaho Wetlands Working Group developed a Draft Wetlands Conservation Strategy that sets out a framework for protecting, restoring, and enhancing wetlands through collaborative, voluntary approaches. The Board supports voluntary watershed-based conservation strategies for the protection of riparian and wetland areas above the mean high water mark developed and implemented through collaboration with water users, land managers, local governments, and state and federal agencies.

Implementation Strategies:

- Support collaborative watershed planning and the implementation of voluntary strategies to protect Idaho's wetlands and riparian areas.

- Support the development of guidelines and strategies to assist in the implementation of projects that protect, restore, and enhance wetlands and riparian areas.

- Evaluate whether the Stream Channel Protection Act, [Idaho Code §§ 42-3801 - 42-3812], adequately assists in the protection of wetlands and riparian areas and propose statutory changes as appropriate.

- Assist state and federal agencies and stakeholders in the acquisition of funding for project implementation.

Milestones:

- Project and funding proposals submitted.

- Projects implemented.

Policy **2F- STREAM CHANNEL REHABILITATION.** Page 30 of the Comprehensive State Water Plan.

The Idaho Water Resource Board will support cost-effective stream channel rehabilitation where past activities adversely affect ~~or could affect the ecological goods and services of~~ the state's watersheds.

Discussion:

~~Functional stream channels provide ecological goods and services desired by the public. Ecological goods are those qualities that have economic value, such as timber resources, habitat that supports fishing and hunting, and aesthetic qualities of landscapes that would attract tourists. Ecological services include systems that best manage water resources, such as the regulation of runoff and flood waters, or the stabilization of landscapes to prevent erosion.~~ Damage and destruction of stream channels can result from natural and

Page 31 of the Comprehensive State Water Plan.

human-caused changes and disturbances. Where current practices, legacy effects of past activities, or natural disturbances threaten public safety, private property, or the overall quality and quantity of water produced in the affected watershed, it is in the state's interest to take remedial action in a cost-effective manner. In many instances, historical targets for restoration are not practical and therefore restoration efforts should be designed to be sustainable in a rapidly-changing environment. Preventing damage to a stream channel and adjacent property is more cost effective than restoration. In addition, it is in the state's interest to ensure that the stream channels of the state and their environments are protected and restored through the implementation of voluntary restoration projects. The Department also regulates the alteration of stream channels and stream beds below the mean high watermark. Idaho Code §§ 42-3801 - 42-3812.

Implementation Strategies:

~~• Conduct a statewide inventory of streams where natural events or human activities have altered channels and the disturbances threaten the public safety, private property, or other water resource values.~~

• Conduct cost/benefit analyses for rehabilitation of affected streams.

• Prioritize projects.

~~• Obtain funding for restoration of prioritized streams.~~

Milestones:

~~• Inventory conducted.~~

• Cost/benefit analyses conducted and priorities established.

~~• Funding obtained.~~

• Projects implemented.

Policy **2G- SAFETY MEASURES PROGRAM.** Page 31 of the Comprehensive State Water Plan.

Owners of water distribution and storage facilities are encouraged to establish or continue voluntary safety initiatives including construction and maintenance of safety features and development of public awareness programs to educate residents about hazards associated with these facilities.

Discussion:

Fatal accidents sometimes occur in waterways at or near water distribution and storage facilities in Idaho because of the inherent dangers of these facilities. With the increasing urbanization of rural areas, there has been a greater effort to provide public awareness programs and, where feasible, implement measures designed to ~~prevent~~ reduce such occurrences. The Idaho Water Resource Board supports these voluntary initiatives.

Implementation Strategies:

• ~~Secure and provide funding for the~~ Encourage the continued construction and maintenance of safety features at water distribution and storage facilities.

Page 32 of the Comprehensive State Water Plan.

• Encourage the implementation of public safety awareness programs.

Milestones:

• Reduced number of accidents associated with water distribution and storage facilities.

Policy **3D- FUNDING PROGRAM.** Page 37 of the Comprehensive State Water Plan.

Various f~~F~~unding mechanisms exist to support the development, preservation, conservation, and restoration of the water resources of the state ~~should be based on flexible strategies that provide equitable benefits~~.

Discussion:

The water resources of the state are essential to Idaho's economy and its citizens. There is no single strategy for successfully financing water resource projects. ~~Instead, funding mechanisms for water planning and management should be based on flexible strategies that are broad-based and provide equitable benefits. Strategies for financing water resource programs may include state appropriations, the establishment of water management improvement or conservancy districts, targeted user fees, the development of a state water fund supported by power franchise fees, targeted sales, property, or special product and services taxes, and revenue bonds. While the existing institutional and legal framework may be adequate for some projects, it is important to develop innovative approaches that are responsive to future needs. Transparency and clarity about the intent and limitations of any particular funding strategy will help ensure that a strategy is used and evaluated appropriately. Projects proposed for funding must be in the public interest and in compliance with the State Water Plan.~~

The Board's Revolving Development Fund and Water Management Account are supported by appropriations from the state's general fund, federal funds, and other revenue sources. These programs have and will continue to provide financial assistance to project sponsors for water development and conservation, system rehabilitation, and treatment projects. The Board is also authorized to finance water projects with revenue bonds. The issuance of revenue bonds does not constitute a general obligation of the state or the Idaho Water Resource Board.

~~Sources of funding for programs focused on the protection and restoration of species listed under the ESA include 2004 Snake River Water Rights Agreement appropriations, the Columbia Basin Water Transaction Program, the Pacific Coast Salmon Recovery Fund, and the 2008 Columbia Basin Fish Accords.~~

~~The ESPA CAMP provides for a water-user fee in conjunction with state appropriations. Implementation of strategies for addressing regional water use issues on the Eastern Snake River Plain Aquifer will assist in the development of comprehensive aquifer management implementation plans in other areas of the state.~~

Page 38 of the Comprehensive State Water Plan.

The Board will continue to pursue opportunities for partnerships with the federal government and private entities to determine the feasibility of increasing water supplies through development of additional storage capacity. As discussed in Policy 4E, the Board has entered into agreements with the USACE and the USBOR for studies in the Boise River and Snake River basins. As demands increase on Idaho's water storage and delivery systems, the need for additional water storage feasibility studies and funding partnerships will be assessed.

Implementation Strategies:

~~• Review existing authorities and identify changes needed to optimize financing for water resource projects.~~

• Evaluate Idaho Water Resource Board financial program procedures to determine whether revisions are needed to improve efficiency and accessibility.

~~• Pursue opportunities for private funding partnerships.~~

• Pursue opportunities for local, federal, and ~~intra-state~~ voluntary private funding partnerships and projects.

Milestones:

• Financial programs and funding strategies meet the future water resource needs of the state.

Policy **3E- WATER RESOURCE PLANNING PROGRAM.** Page 38 of the Comprehensive State Water Plan.

Comprehensive water planning will help ensure sufficient water supplies to satisfy Idaho's future water needs.

Discussion:

Idaho Code § 42-1734A(1) directs the Idaho Water Resource Board to formulate and adopt a comprehensive state water plan for conservation, development, management and optimum use of all unappropriated water resources and waterways of the state. The legislature also authorized the Idaho Water Resource Board to develop plans for specific geographical areas. Comprehensive plans for individual hydrologic river basins include state protected river designations and basin-specific recommendations concerning water use and resource values. Basin plans also assure that the state's interests will be considered in federal management agency decisions. Public review and comment ensures that the state water plan serves the public interest.

As demands for water increase, the need for water-related planning escalates. The planning process provides opportunities for involving all affected parties - water users, resource managers, and policymakers, identifies problems, alternatives, and solutions, and allows for continuous updating and revisions in light of new problems and opportunities.

Page 39 of the Comprehensive State Water Plan.

In exercising its responsibilities for water resource planning, the Board will focus on the coordination of local, state and federal planning activities to minimize duplication and to promote the optimum use of Idaho's water resources.

Implementation Strategies:

~~• Review and update existing agreements for coordinated water resource planning.~~

~~• Develop new cooperative planning agreements.~~

• ~~Secure funding to c~~Complete CAMPs for priority aquifers consistent with the schedule established by the Board.

Milestones:

~~• Cooperative planning agreements executed and implemented.~~

~~• Adoption of Treasure Valley and Rathdrum Prairie CAMPs.~~

• ~~Completion and a~~Adoption of CAMPs for remaining priority aquifers.

Policy **3G- CLIMATE VARIABILITY.** Page 40 of the Comprehensive State Water Plan.

~~**3G- CLIMATE VARIABILITY**~~ (Section number reserved.)

~~Preparedness strategies should be developed to account for the impact of climate variability on the state's water supplies.~~

~~**Discussion.**~~

~~Evidence suggests that currently the Earth's climate is warming and that warming may continue into the foreseeable future. While recognizing the uncertainties inherent in climate prediction, it is important to anticipate how a warming climate can potentially affect water supplies and plan accordingly.~~

~~Climate experts are less confident about how continued warming will affect the overall amount of precipitation Idaho receives, but changes in seasonal stream flows and increased annual variability have been documented. It is expected that seasonal flows in snowmelt-fed rivers will occur earlier, summer and fall stream flows will be reduced, and water temperatures will increase. Increased precipitation in the form of rain and fewer, but more intense, storm events are expected to result in more severe droughts and greater flooding. Potential impacts could also include more evaporation, reduced ground water recharge, water quality challenges, reduced productivity of hydropower facilities, and irreversible impacts on natural ecosystems. Water resource managers must evaluate and plan for these possibilities.~~

~~Planning for the potential impacts of climate variability requires increased flexibility in water management and the identification of existing tools that can be adapted to address~~

Page 41 of the Comprehensive State Water Plan.

~~climate-induced changes in water supplies. Increased monitoring and data collection as well as conducting an initial vulnerability analysis for watersheds will help managers develop adaptive approaches to changes in the hydrologic regime that may accompany an increase in climate variability. Increasing public awareness and strengthening community and regional partnerships to manage shared water resources are proactive steps that should be taken now to provide for the optimum use of Idaho's water resources.~~

~~**Implementation Strategies:**~~

~~• Evaluate existing legal and institutional tools and constraints that can be adapted to provide flexibility for water resource managers.~~

~~• Implement a collaborative approach to the analysis of reservoir operation rule curves that adequately considers past and current hydrologic data.~~

~~• Pursue expansion and diversification of water supplies, including increased surface and ground water storage.~~

~~• Develop and update flood-risk assessments and environmental impact mitigation measures.~~

~~• Identify and implement adaptive mechanisms to address the impact of climate variability on water supplies.~~

~~• Establish stakeholder forums involving state and local water supply managers, scientists, state and federal agencies, and water users to enhance understanding about the science of climate variability, to share information about existing and potential tools for ameliorating the impact of climate variability, and to increase understanding of the challenges facing water users and managers.~~

~~**Milestones:**~~

~~• Completion and implementation of updated flood control rule curves.~~

~~• Construction or expansion of water supply projects.~~

~~• Finalization of risk assessment studies.~~

~~• Documentation of legal and institutional framework and water management tools that anticipate and respond to climate variability.~~

~~• Establishment of regional forums that encourage the development of collaborative programs and decision making.~~

~~• Funding mechanisms in place for climate variability preparedness and risk assessment.~~

Policy **4E- SNAKE RIVER BASIN NEW STORAGE.** Page 55 of the Comprehensive State Water Plan.

Development of new on-stream, off-stream, and aquifer storage is in the public interest; provided, however, applications for large surface storage projects in the Milner to Murphy reach of the Snake River should be required to mitigate for impacts on hydropower generation.

Discussion:

ESPA Managed Recharge Pilot Program

Recharging aquifers as a water supply alternative has significant potential to address water supply needs, in addition to addressing conjunctive management issues. Pursuant to the ESPA CAMP, the Board is undertaking a five-year pilot program of managed aquifer recharge to the Eastern Snake Plain Aquifer. One of the potential benefits of managed recharge in the ESPA is increased water storage in the aquifer. Effectiveness monitoring and evaluation results will be used to select and design future managed recharge strategies and projects.

Surface Water Projects

New Snake River surface storage projects should be investigated and constructed if determined to be feasible. Although there are major dams and reservoirs designed for water storage, flow regulation, and flood control on the Snake River and its tributaries, their existing capacity is insufficient to provide the water supply and management flexibility needed for the myriad of existing and future beneficial uses.

Diversion of water from the main stem of the Snake River between Milner and the Murphy Gaging station for storage during the period November 1 to March 31 will have a significant impact on hydropower generation. Thus, any new storage projects in this reach should be coupled with provisions that mitigate for the impact of such storage depletions on hydropower generation. The term "mitigation" is defined as causing to become less harsh or hostile, and is used here rather than "compensate" which connotes equivalence. Methodology will be developed for use in calculating impacts on hydropower generation as part of any application to construct new storage within this reach of the Snake River.

A number of studies focusing on water storage as one potential measure for addressing water supply demand and flood risk reduction are underway. This

section provides a brief description of the most significant studies that have been initiated or are in the planning process.

Henry's Fork Project/Teton River Basins

The Board and the U.S. Bureau of Reclamation are conducting a study of water resources in the Henry's Fork/Teton River Basins to develop alternatives for improving water supply conditions in the Eastern Snake Plain Aquifer and upper Snake River Basin. These alternatives include new water storage projects, enlargement of existing reservoirs,

Page 56 of the Comprehensive State Water Plan.

and conservation and water management strategies, including managed aquifer recharge and automated water delivery systems.

Minidoka Dam Enlargement

In the 1980s, the Bureau of Reclamation and irrigation districts initiated the required planning process and feasibility studies to replace the spillway and two canal headworks due to the state of deterioration and potential for ongoing damage to sections of the Minidoka Dam. In 2008, the Board partnered with the Bureau of Reclamation to also evaluate the structural raising of Minidoka Dam to accommodate a 5-foot rise in normal reservoir surface elevation, in conjunction with planned spillway repairs. The study found that a 5-foot rise is technically feasible, and would provide an additional 67,000 acre-feet of storage with an average annual yield of 33,000 acre-feet. Funding for the enlargement of Minidoka Dam, however, is currently not available. If economic or other conditions change, the Board will consider further evaluation of this storage option.

~~**ESPA Managed Recharge Pilot program**~~

~~Recharging aquifers as a water supply alternative has significant potential to address water supply needs, in addition to addressing conjunctive management issues. Pursuant to the ESPA CAMP, the Board is undertaking a five-year pilot program of managed aquifer recharge to the Eastern Snake Plain Aquifer. One of the potential benefits of managed recharge in the ESPA is increased water storage in the aquifer. Effectiveness monitoring and evaluation results will be used to select and design future managed recharge strategies and projects.~~

Lower Boise River Interim Feasibility Study

The lower Boise River corridor, from Lucky Peak Dam to its confluence with the Snake River has experienced rapid population growth and significant urban development over the past several decades. As a consequence, there is renewed interest in addressing water supply and flood control issues. Interest has also been expressed in environmental restoration, to include habitat preservation, aesthetics and recreation along the Boise River.

In 2009, the Board and the U.S. Army Corps of Engineers partnered to conduct an Interim Feasibility Study focused on water storage potential and flood reduction in the Boise River Basin. A preliminary analysis ranked an enlargement of Arrowrock Reservoir as the highest priority alternative, followed by the construction of a new reservoir at the Alexander Flat site and a new reservoir at the Twin Springs site. A preliminary analysis completed in 2011 concluded that based on existing information, raising Arrowrock Dam is technically feasible. The evaluation identified a number of uncertainties that will be addressed during future study and data collection efforts, as funding becomes available.

Weiser-Galloway Gap Analysis, Economic Evaluation and Risk-Based Cost Analysis (Gap Analysis)

Water storage on the Weiser River and at the Galloway site has been studied for decades. In 1954, the Corps received a study authorization resolution for the Galloway Project

Page 57 of the Comprehensive State Water Plan.

from the U.S. Senate Public Works Committee. In the early 1970s, federal lands for the potential Galloway dam and reservoir site were classified and withdrawn for hydropower purposes by the Federal Power Commission (now FERC). In 2008, Idaho House Joint Memorial 8 directed the Board to investigate water storage projects statewide, including the Weiser-Galloway Project. The Board and the Corps partnered to conduct a "Gap Analysis" which was completed in March 2011. The Gap Analysis was designed to inform decision makers of critical information gaps that need to be addressed before deciding whether to move forward with comprehensive new environmental, engineering, and economic feasibility studies. The analysis identified two critical information gaps that must be resolved before moving forward:

1. Determine the safety, suitability, and integrity of geologic structures at the potential dam and reservoir site.

2. Evaluate whether basin and system benefits would be realized by analyzing a series of system operating scenarios with a range of new storage options on the Weiser River. Potential benefits include flood risk reduction, hydropower, additional water storage, pump back, irrigation, recreation, and flow augmentation requirements for anadromous fish recovery. On July 29, 2011, the Idaho Water Resource Board authorized expenditure of up to $2 million to address these questions, and the required studies are currently underway.

Implementation Strategies:

- Implement a long-term managed aquifer recharge program to achieve an average annual recharge of 250,000 - 300,000 acre feet. In recognition that implementation of managed recharge will have an effect on the flow characteristics of the Snake River above and below Milner Dam and in or-

der to confirm the relative merits of managed recharge, the Board's managed recharge program will be limited to not more than 175,000 acre-feet on an average annual basis until January 1, 2019.

• Evaluate the economic, social and environmental benefits and costs of the proposed surface projects.

Milestones:

• Aquifer recharge program implemented.

• Actions taken to determine feasibility of identified storage projects.

Policy **6A- CONSERVATION PLANS IN THE SALMON/CLEARWATER RIVER BASINS.** Page 71 of the Comprehensive State Water Plan.

Voluntary, community-based conservation plans and strategies for the benefit of ~~ESA-listed~~ aquatic species ~~and other species of concern are key~~ are a component~~s~~ of water planning and management in the Salmon and Clearwater River Basins.

Discussion:

The Salmon and Clearwater River basins support a thriving agricultural industry and significant tourism. Because a number of fish species in the Salmon and Clearwater River basins have been listed as threatened or endangered under the ESA, numerous programs are being implemented to improve fish habitat, while protecting existing water rights. A significant portion of freshwater habitat important to ~~ESA-listed fish~~ aquatic species is located on private lands. As a consequence, local support is key to implementing conservation measures that advance species' recovery. Federal agencies are encouraged to cooperate with state and local landowners to develop voluntary, incentive-based conservation plans. Any water required for instream uses must be obtained in compliance with state law.

In the Snake River Basin Adjudication, the state entered into two agreements that provide for water management within the basin that supports agricultural-based communities, while encouraging the voluntary implementation of flow-related conservation measures ~~that improve instream conditions for ESA-listed fish~~. The agreements ~~are based upon improving instream flow conditions pursuant to state law~~ address instream uses through state minimum stream flow water rights and other provisions of state law.

• **Snake River Water Rights Agreement**

The 2004 Snake River Water Rights Agreement resolved all of the issues related to the Nez Perce Tribe's water right claims in the SRBA. In the Salmon and Clearwater basins, ~~the primary~~ a goal of the settlement agreement provi-

sions is to ~~conserve and enhance fish habitat in order to~~ address ~~ESA~~ aquatic species concerns. There are three cornerstones to such efforts: the establishment of state minimum stream flow~~s~~ water rights, the establishment of a voluntary forestry program with standards to improve fish habitat, and the establishment of voluntary programs by irrigators and other water users to ~~improve instream flow~~ address aquatic species concerns.

The state and local water users are working with the federal agencies, tribes, and other stakeholders to advance the recovery of listed species through the development of conservation agreements under Section 6 of the ESA. In coordination with the OSC, the state has begun early implementation of voluntary conservation measures that provide immediate benefits to ~~ESA-listed fish~~ aquatic species and provide the foundation for implementation of long-range plans.

As a result of the 2004 Snake River Water Rights Agreement, the Idaho Water Resource Board holds minimum stream flow water rights on 205 streams that provide significant protection for steelhead, salmon, and bull trout. Most of the streams flow through federal public lands and have minimal use. Twenty-four streams, however, are in basins with

substantial private ownership and significant private water use. The flows for those streams were established after consultation with local communities. Where the minimum stream flow water rights are higher than existing flows, the Idaho Water Resource Board works with water users on a voluntary basis to rent or otherwise acquire water to return to streams, in accordance with state law.

- **Wild and Scenic Rivers Agreement**

The Wild and Scenic Rivers Agreement resolved issues related to federal reserved water right claims filed by the federal government under the Wild and Scenic Rivers Act. The agreement provides for the quantification of the wild and scenic federal reserved water rights and state administration of those rights. To protect existing rights and allow for some future development, the United States agreed to subordinate the federal rights to ~~certain~~ existing and certain future water right uses.

Implementation Strategies

- Ensure that the water right application and transfer review process considers basin conservation plans ~~and limiting factors for ESA-listed fish~~.

- Ensure that the stream channel alteration permit process considers basin conservation plans ~~and limiting factors for ESA-listed fish~~.

~~• Develop flow-limited reach GIS maps for use in water administration.~~

~~• Continue early implementation of conservation measures.~~

• Develop and implement conservation projects and plans based on local problem-solving and support.

Milestones

• Conservation measures implemented.

• Conservation plans approved pursuant to Section 6 of the ESA and implemented.

• Approved water right applications and transfers address ~~limiting factors for ESA-listed fish~~ conservation plans.

~~• Water right permits address limiting factors for ESA-listed fish.~~

~~• Flow-limited reach GIS maps completed and in use.~~

Policy **6B- ~~INSTREAM FLOW PROGRAM~~ MINIMUM STREAM FLOW WATER RIGHTS AND OTHER INNOVATIVE MEASURES TO ADDRESS AQUATIC SPECIES CONCERNS IN THE SALMON/CLEARWATER RIVER BASINS.** Page 72 of the Comprehensive State Water Plan.

The Idaho Water Resource Board will promote, provide, and where possible, expand opportunities for voluntary, market-based transactions to ~~improve instream flow for the benefit of ESA-listed~~ address aquatic species concerns.

Page 73 of the Comprehensive State Water Plan.

Discussion:

The Idaho Water Resource Board administers and participates in a variety of programs to ~~improve instream flows~~ address aquatic species concerns throughout the Salmon and Clearwater River basins. This programmatic approach to addressing the needs of ~~ESA-listed and other sensitive~~ aquatic species includes a suite of water supply acquisition tools ~~including short and long-term leases, permanent purchases, partial season leases, diversion reduction agreements, and water use efficiency measures~~, all of which are market-based and voluntary. The Board works collaboratively with organizations committed to voluntary, market-based conservation strategies~~, such as conservation easements, to maximize instream flow programs~~. These partnerships benefit ~~targeted fish~~ aquatic species and support local economies.

~~**• Columbia Basin Water Transaction Program**~~

~~The Columbia Basin Water Transactions Program was initiated in 2002 to support innovative, voluntary, grassroots strategies to improve flows in the Columbia River Basin's streams and rivers. The majority of funding is provided by the Bonneville Power Administration in cooperation with the Northwest Power and Conservation Council. Continued implementation of the Columbia Basin Water Transactions Program in the Salmon and Clearwater basins will keep agriculture productive and improve instream flows for ESA-listed and other sensitive fish species.~~

- ~~**Section 6 Conservation Fund**~~

~~Section 6 of the ESA directs "that Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species." 16 U.S.C.A. § 1531(C)(2). Pursuant to the 2004 Snake River Water Rights Agreement of 2004, in addition to the establishment of minimum stream flow water rights, the state agreed to work with local stakeholders and communities to develop work plans for addressing limiting factors for fish on streams with degraded habitat. The state also agreed to develop cooperative agreements under Section 6 of the ESA with the assistance of local land owners, federal agencies, and tribes to establish long-term conservation goals and conservation measures that will contribute to the recovery of anadromous and resident fish in the Upper Salmon River Basin. The Board's instream flow programs are central to the development and implementation of Section 6 Conservation Plans.~~

- ~~**Pacific Coast Salmon Restoration Fund**~~

~~The Pacific Coast Salmon Restoration Fund provides grants to state agencies and treaty Indian tribes for salmon recovery efforts. The Idaho Water Resource Board works with agencies, tribes, and stakeholders to use Pacific Coast Salmon Restoration Fund monies for early implementation of conservation measures in the basins.~~

- ~~**2008 Columbia Basin Fish Accords**~~

~~The Columbia Basin Fish Accords are designed to supplement biological opinions for listed salmon and steelhead and the Northwest Power and Conservation Council's fish and wildlife program. The agreement between the state of Idaho, the Bonneville Power Administration, the USACE, and the USBOR addresses issues associated with the direct and indirect effects of construction, inundation, operation and maintenance of the Federal~~

Page 74 of the Comprehensive State Water Plan.

~~Columbia River Power System, and USBOR's Upper Snake River Project on the fish and wildlife resources in the Columbia River Basin.~~

~~Under the agreement, the Bonneville Power Administration committed to funding a suite of habitat quality improvement projects designed to address limiting factors within the basins affecting ESA-listed salmon and steelhead.~~

~~The Idaho Water Resource Board uses these funds to develop projects that improve instream flow and freshwater survival of ESA-listed salmon and steelhead. The program targets flow-related projects that reconnect tributaries and increase flow in the mainstem Lemhi and Pashimeroi rivers to improve fish passage conditions and increase the quantity and quality of fish habitat.~~

Implementation Strategies:

- Continue implementation of programs to ~~improve instream flows~~ address aquatic species concerns in the Salmon and Clearwater River basins.

- Pursue opportunities for partnerships with local water users and other stakeholders to implement programs that ~~improve instream flows~~ address aquatic species concerns and support local economies.

Milestones:

- Number ~~and scope of instream flow~~ of aquatic species improvement projects implemented.

~~• Number of participants in instream flow improvement projects.~~

- Degree of ~~habitat~~ improvement resulting from ~~instream flow~~ aquatic species programs.

SECTION 2. Pursuant to Section 42-1734B(4), Idaho Code, all state agencies shall exercise their duties in a manner consistent with the Comprehensive State Water Plan, as amended.

SECTION 3. An emergency existing therefor, which emergency is hereby declared to exist, this act shall be in full force and effect on and after its passage and approval.

State of Idaho

THE STATE WATER PLAN

C.L. "Butch" Otter, Governor

Idaho Water Resource Board

Terry T. Uhling
Chairman

Roger W. Chase
Vice-Chairman

Robert Graham
Secretary

Vince Alberdi
Leonard Beck
Charles "Chuck" Cuddy
Peter Van Der Meulen
Jeff Raybould

Idaho Water Resource Board
Adopted November 2012

Idaho House Resources and Conservation Committee
Amended 2013

Former members of the Idaho Water Resource Board

Vic Armacost, New Meadows
Robert M. Bandy, Priest River
Brent J. Bell, Rexburg
Mary T. Brooks, Boise
Jack Buell, St. Maries
Gary Chamberlain, Challis
George Crookham, Caldwell
Sally L. Cupan, Sandpoint
J. David Erickson, Buhl
Leonard E. Graham, Rigby
Gene M. Gray, Payette
Robert M. Hammes, St. Maries
M. Reed Hansen, Idaho Falls
Kenneth E. Hungerford, Moscow
Franklin Jones, Boise
Joseph L. Jordan, Boise
Dr. Evan Kackley, Soda Springs
Donald R. Kramer, Castleford
Ferris M. Kunz, Montpelier
William J. Lanting, Twin Falls
Charles J. Marshall, Jerome
Herman J. McDevitt, Pocatello
Joe Nettleton, Murphy
Thomas Olmstead, Twin Falls
Arlie Parkins, Marsing
Clarence Parr, Heyburn
William S. Platts, Boise
Erval Rainey, Sandpoint
Scott Reed, Coeur d'Alene
Edward Reichert, Filer
Jerry Rigby, Rexburg
F. Dave Rydalch, St. Anthony
D. Mike Satterwhite, Lewiston
Edwin Schlender, Malta
James Shawver, Eden
LeRoy Stanger, Idaho Falls
Claude Storer, Idaho Falls
John F. Streiff, Lewiston
Richard W. Wagner, Lewiston
J.D. Williams, Boise
D. Richard Wyatt, Lewiston
George L. Yost, Emmett

IDAHO WATER RESOURCE BOARD

To the Citizens of Idaho:

Water is the lifeblood of Idaho. The optimum use of our water will keep Idaho a vital and prosperous state as we grow and change in the future. The Idaho State Water Plan is a dynamic set of policies which guides our use, management, development, and conservation of water for all citizens.

This is the fifth revision of the State Water Plan since the first plan was adopted in 1976. Each revision reflects the changing landscape of water in Idaho. Many changes have occurred since the last Plan was adopted in 1996 and this revision reflects those changes. For the first time, this Plan includes implementation strategies and milestones which will guide the execution of the policies and evaluate the effectiveness of each policy.

Competing demands for water has increased conflicts, with a positive result of innovative solutions. These solutions demonstrate that the water resources of Idaho can meet emerging water demands while respecting existing water users. As water demands increase, it is critical that we use the technical tools available to assess strategies to plan for meeting our water needs. Understanding the complexity and interaction of our water resources and using that knowledge to manage water is crucial to using our water resources effectively.

The policies and actions in this Plan reflect a keen awareness of the uncertainty of future conditions of water supply and demand. The intent of the Plan is to establish policies and actions which can adapt to changing circumstances.

Public involvement has been and continues to be a cornerstone of developing the Idaho State Water Plan. The Idaho Water Resource Board appreciates your participation and interest in ensuring that Idaho's water is meeting our needs and making our state the best it can be.

Sincerely,

Terry Uhling
Chairman

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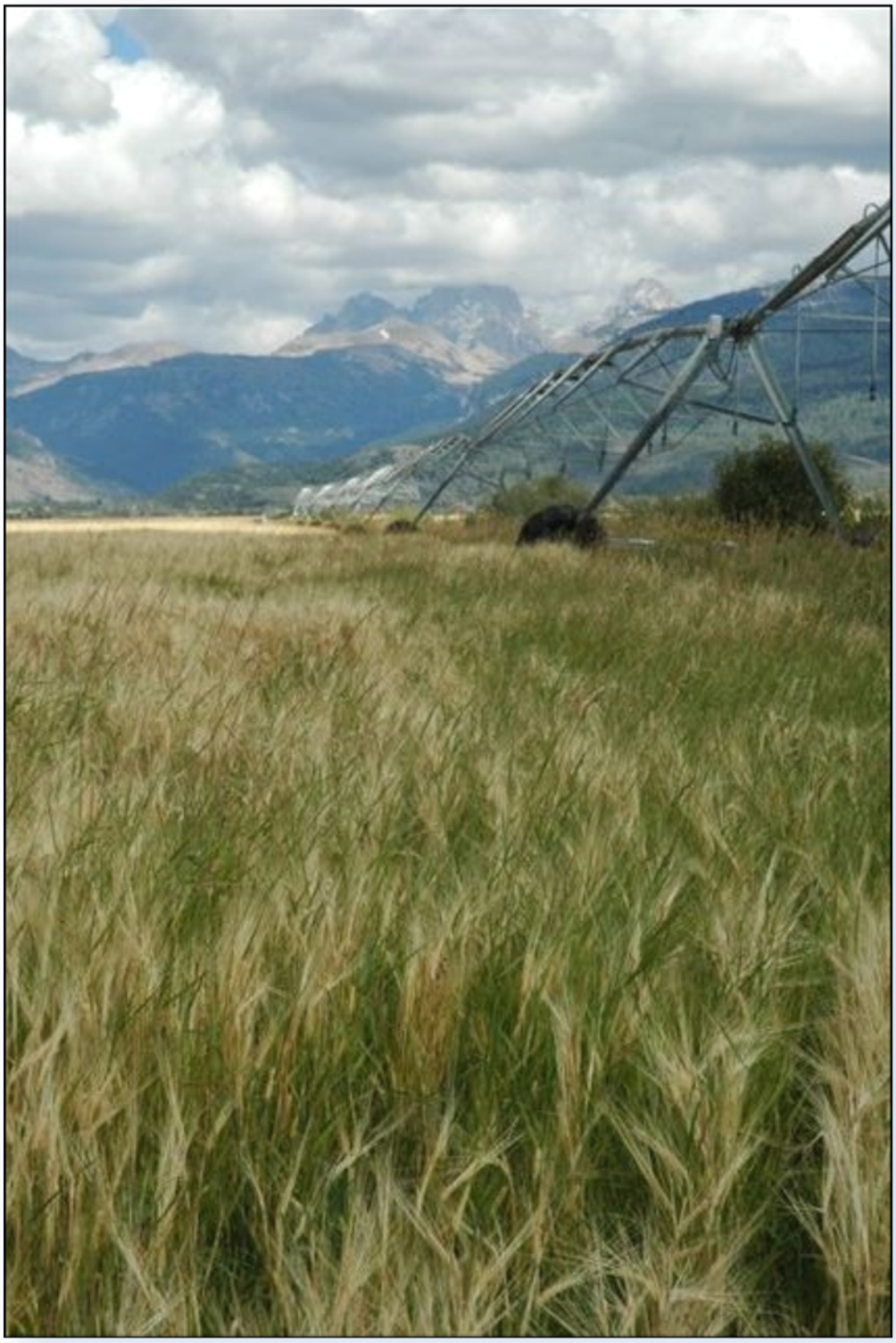

Photo: Wheat Field
Photo Courtesy of Idaho Department of Agriculture

THE WATER PLANNING PROGRAM

The Idaho Comprehensive State Water Plan ("State Water Plan" or "Plan") was adopted by the Idaho Water Resource Board ("Idaho Water Resource Board" or "Board") to guide the development, management, and use of the state's water and related resources. The wise use and management of the state's water is critical to the state's economy and to the welfare of its citizens. The Plan seeks to ensure that through cooperation, conservation, and good management, future conflicts will be minimized and the optimum use of the state's water resources will benefit the citizens of Idaho. The Plan is subject to change so as to be responsive to new opportunities and needs.

Constitutional Authority

Article XV, section 7 of the Idaho Constitution provides the authority for the preparation of a State Water Plan. This constitutional amendment was adopted in November 1964 following a statewide referendum and states:

> *There shall be constituted a Water Resource Agency, composed as the Legislature may now or hereafter prescribe, which shall have power to formulate and implement a state water plan for optimum development of water resources in the public interest; to construct and operate water projects; to issue bonds, without state obligation, to be repaid from revenues of projects; to generate and wholesale hydroelectric power at the site of production; to appropriate public waters as trustee for Agency projects; to acquire, transfer and encumber title to real property for water projects and to have control and administrative authority over state land required for water projects; all under such laws as may be prescribed by the Legislature.*

Article XV, section 3 of the Idaho Constitution provides for the appropriation and allocation of water. Section 3 provides that:

> *The right to divert and appropriate the unappropriated waters of any natural stream to beneficial uses, shall never be denied, except that the state may regulate and limit the use thereof for power purposes. Priority of appropriation shall give the better right as between those using the water; but when the waters of any natural stream are not sufficient for the service of all those desiring the use of the same, those using the water for domestic purposes shall (subject to such limitations as may be prescribed by law) have the preference over those claiming for any other purpose; and those using the water for agricultural purposes shall have preference over those using the same for manufacturing purposes. And in any organized mining district those using the water for mining purposes or milling purposes connected with mining have preference over those using the same for manufacturing or agriculture purposes. But the usage by such subsequent appropriators shall be subject to such provisions of law regulating the taking of private property for public and private use, as referred to in section 14 of article I of this Constitution.*

Legislative Authority

Article XV, section 7 of the Idaho Constitution provided for the creation of a "Water Resource Agency" but did not establish the agency. In 1965, the 38th legislature established the Idaho Water Resource Board, and directed that (as amended):

> *The board shall, subject to legislative approval, progressively formulate, adopt and implement a comprehensive state water plan for conservation, development, management and optimum use of all unappropriated water resources and waterways of this state in the public interest… In adopting a comprehensive state water plan the board shall be guided by these criteria:*
>
> > *(a) Existing rights, established duties, and the relative priorities of water established in article XV, section 3, of the constitution of the state of Idaho, shall be protected and preserved;*
> > *(b) Optimum economic development in the interest of and for the benefit of the state as a whole shall be achieved by integration and coordination of the use of water and the augmentation of existing supplies and by protection of designated waterways for all beneficial purposes;*
> > *(c) Adequate and safe water supplies for human consumption and maximum supplies for other beneficial uses shall be preserved and protected;*
> > *(d) Subject to prior existing water rights for the beneficial uses now or hereafter prescribed by law, minimum stream flow for aquatic life, recreation and aesthetics and the minimization of pollution and the protection and preservation of waterways in the manner hereafter provided shall be fostered and encouraged and consideration shall be given to the development and protection of water recreation facilities;*
> > *(e) Watershed conservation practices consistent with sound engineering and economic principles shall be encouraged.*

Idaho Code § 42-1734A(1).

These criteria recognize that exclusive authority over the appropriation of public surface and ground waters of the state is vested in the Department of Water Resources ("Department") [Idaho Code § 42-201(7)] and require that the Plan be consistent with state law.

To assist the Board in its duties, the legislature also provided for the Director of the Department:

> *To perform administrative duties and such other functions as the Board may from time to time assign to the Director to enable the Board to carry out its powers and duties.*

Idaho Code § 42-1805(6).

Article XV, section 7 was amended by the electorate during the general election of November 6, 1984. The amendment provides that:

> *The Legislature of the State of Idaho shall have the authority to amend or reject the state water plan in a manner provided by law. Thereafter any change in the state water plan shall be submitted to the Legislature of the State of Idaho upon the first day of a regular session following the change and the change shall become effective unless amended or rejected by law within sixty days of its submission to the Legislature.*

Chapter 17 of Title 42, Idaho Code, was amended in 1988 to designate the Plan as the Comprehensive State Water Plan Part A. Plans developed for specific geographic areas became components of the Comprehensive State Water Plan Part B.

> *The board may develop a comprehensive state water plan in stages based upon waterways, river basins, drainage areas, river reaches, ground-water aquifers, or other geographic considerations.*

Idaho Code § 42-1734A(2).

> *As part of the comprehensive state water plan, the board may designate selected waterways as protected rivers as provided in this chapter.*

Idaho Code § 42-1734A(1).

Legislation in 2008 provided for the development of a statewide comprehensive aquifer management planning and management effort and fund. Idaho Code §§ 42-1779 and 42-1780.

> *Pursuant to the provisions of Idaho law and legislative funding approval, the Idaho water resource board and the Idaho department of water resources shall conduct a statewide comprehensive aquifer planning and management effort over a ten (10) year period of time beginning in fiscal year 2009.*

Idaho Code § 42-1779.

Idaho Water Resource Board Programs

Pursuant to its constitutional and statutory authorities, the Board:

1. Formulates, adopts, and implements the State Water Plan, River Basin Plans, and Comprehensive Aquifer Management Plans ("CAMPs").

2. Designates natural and protected rivers and files applications for and holds minimum stream flow water rights.

3. Provides financial assistance for water development and conservation projects in the form of revenue bonds, loans, and grants.

4. Establishes programs that address specific water resource issues at the direction of the Idaho legislature.

5. Adopts rules governing:
    - Well Construction
    - Well Driller Licensing
    - Construction and Use of Injection Wells
    - Drilling for Geothermal Resources
    - Mine Tailings Impoundment Structures
    - Safety of Dams
    - Stream Channel Alteration

    The Department administers these programs.

6. Hears appeals challenging the Department's administrative decisions pursuant to programs administered under the Board's administrative rules.

7. Administers the Idaho Water Supply Bank.

8. At the request of the Governor, appears on behalf of and represents the state in proceedings, negotiations, or hearings involving the federal government, Indian tribes, or other states.

9. Files applications and obtains permits to appropriate, store, or use unappropriated waters, and acquires water rights subject to the provisions of applicable law.

10. Investigates, undertakes, and promotes water resource projects deemed to be in the public interest. While all state agencies are required to exercise their duties in a manner consistent with this Plan [Idaho Code § 42-1734B], the Plan contemplates the implementation of water resource projects through cooperation and collaboration with the numerous units of state and local governments with statutory responsibilities for the conservation of Idaho's water resources.

11. Cooperates and enters into contracts with federal, state, and local units of governmental and private entities for water studies, planning, research, and activities.

12. Studies water pollution and advises the Idaho State Board of Environmental Quality regarding the establishment of water quality criteria in the context of the optimum development of the state's water resources.

13. Formulates and recommends legislation for water resource conservation, development, and utilization.

Comprehensive State Water Plan Formulation

Formulation of the State Water Plan is a dynamic process. Adoption of The State Water Plan – Part One, The Objectives, in 1974, and The State Water Plan - Part Two, in 1976,

provided an initial state water policy. The purpose of Part One was to identify and define policies and objectives adopted by the Board to govern the planning, development, and conservation of the state's water and related lands. Part Two identified and evaluated projects and programs necessary to implement the objectives of Part One and delineated those areas where legislative action was required, identified the programs to be implemented by the Board, and described programs requiring the cooperation of public and private interests. The Plan was updated and re-adopted in 1982 and was amended in 1985 in connection with the Swan Falls settlement. The Plan was revised in 1986, 1992, and 1996 to reflect changing social and economic conditions and water resource needs. The Plan continues to evolve and provides a framework for the adoption and implementation of policies, programs, and projects that develop, utilize, conserve, and protect the state's water supplies.

Planning Process

The planning process encompasses five steps:

1. A comprehensive public involvement program to determine public views and interests regarding resource problems, needs, and opportunities as they relate to water use and management;

2. An ongoing evaluation of the state's water resources and uses and estimation of the future availability and demands on the resource;

3. A comprehensive evaluation of the effects resulting from the development and protection of the state's water resources;

4. Adoption of the Plan by the Board as required by Article XV, section 7 of the Idaho Constitution; and

5. Approval by the Idaho legislature as provided by law.

Public involvement is an essential part of the planning process. Scoping meetings, comment periods, and formal hearings provide opportunity for public input during plan development. After adoption and approval, public comment on the effectiveness of the Plan is encouraged.

COMPREHENSIVE STATE WATER PLAN

The Comprehensive State Water Plan represents the state's position on water development, management, and conservation. Accommodating Idaho's growing and changing water needs and the increasing demands on both surface and ground water presents a significant challenge. The Plan seeks to meet that challenge through the establishment of policies on water development, management, and conservation with accompanying strategies that may be implemented as funds become available and milestones which will assist in ongoing Plan review.

Objectives

The following objectives of the State Water Plan are formulated for the conservation, development, management, and optimum use of all unappropriated water resources and waterways of this state in the public interest. Idaho Code § 42-1734A.

1. **Water Management** - Encourage the quantification of water supplies, water uses, and water demands for all water rights within the state. Encourage integrated, coordinated, and adaptable water resource management and the prudent stewardship of water resources.

2. **Public Interest** - Ensure that the needs and interests of the public are appropriately considered in decisions involving the water resources of the state.

3. **Economic Development** - Encourage and support economic development through the optimum use of water resources. Promote the integration and coordination of the use of water, the augmentation of existing supplies, and the protection of designated waterways for all beneficial purposes. Idaho Code § 42-1734A(1)(b).

5. **Environmental Quality** - Maintain, and where possible enhance water quality and water-related habitats. Study and examine the quality of rivers, streams, lakes, and ground water [Idaho Code § 42-1734(15)], and ensure that due consideration is given to the needs of fish, wildlife, and recreation in managing the water resources of the state. Where appropriate, initiate state protection of waterways or water bodies with outstanding fish and wildlife, recreation, geologic, or aesthetic values.

6. **Public Safety** - Encourage programs ensuring that life and property within the state are not threatened by the management or use of the state's water resources.

Policies

A main goal of this document is to help water managers, planners, and users formulate management strategies and policies needed to meet growing and changing water use needs.

The Board adopts the following policies for the conservation, development, management, and optimum use of all the unappropriated water resources and waterways of this state in the public interest. Idaho Code § 42-1734A.

Photo: Falls on the Teton River in Eastern Idaho (*IDWR Photo*)

1. OPTIMUM USE

It is in the public interest to establish policies, initiatives, and programs that lead to optimum use of the water resources of the state. Water is essential to the vitality and prosperity of the state.

1A - STATE SOVEREIGNTY

The State asserts sovereignty over the development and use of Idaho's water resources for the benefits of its citizens. Any action by the federal government or other states that would impair Idaho's sovereignty over its water resources is against state policy.

Discussion:

The Idaho Water Resource Board is responsible for the formulation of state water policy through the State Water Plan. The state's position on existing and proposed federal policies and actions affecting Idaho's waters is coordinated by the Board to ensure the state retains its sovereign right to control its water resources. Idaho Code § 42-1734B(4). The State Water Plan is filed with the Federal Energy Regulatory Commission ("FERC"), the Pacific Northwest Electric Power and Conservation Planning Council, and other federal agencies as Idaho's plan for the conservation, development, management and optimum use of the state's water resources. Idaho Code § 42-1734C.

Implementation Strategies:

- Take legal action when necessary to protect the state's sovereignty over its water resources.
- Implement and maintain cooperative water resource agreements and partnerships with neighboring states, the federal government, and Indian tribes for the benefit of Idaho's citizens.
- Work with the office of the Governor, state agencies, and the legislature to ensure the development and implementation of a unified state position on water resource issues.

Milestones:

- Partnerships established with neighboring states, federal agencies, and Indian tribes to anticipate and plan for water resource conflicts that may occur.
- Protocols established ensuring coordination of the state's position on water resource issues.

1B - BENEFICIAL USE OF WATER

The concept of beneficial use must necessarily evolve with changing conditions.

Discussion:

Idaho Code § 42-104 provides that an appropriation of water must be for "some useful or beneficial purpose" but does not define beneficial purpose. Except for the constitutionally protected beneficial uses which are domestic, agricultural, manufacturing, and mining, the concept of what constitutes a beneficial use of water has evolved over time based upon societal needs. For example, use of water for hydropower, the protection of fish and wildlife habitat, aquatic life, recreation, aesthetics, municipalities, navigation, water quality, and managed ground water recharge are recognized as beneficial uses. A broad definition of beneficial use has and will continue to allow for the optimum use of the state's water resources.

Implementation Strategies:

- Review existing state policies and programs to ensure that traditional and emerging water use needs are recognized as beneficial uses of water.
- Establish or participate in local and regional advisory groups to formulate recommendations regarding traditional and emerging water use needs and priorities.

Milestones:

- Policies and rules revised to accommodate emerging water use needs.
- Reports submitted on advisory group recommendations.
- Statutory and/or regulatory changes made to accommodate emerging beneficial uses of water.

1C – CHANGE IN USE

Changes in the use of a water right should be allowed to meet changing needs and to provide for optimum use of the state's water resources.

Discussion:

The demand for water increases every year while the volume of unappropriated water within the state continually decreases. Many basins do not provide a dependable water supply for current uses. Allowing for changes in the use of water rights provides flexibility in water allocation to meet changing conditions. Idaho Code §§ 42-108 and 42-222 provide for changes in point of diversion, place of use, period of use, or nature of use with the approval of the Department, while also providing for the protection of other water users, the agricultural base of a region, and the local public interest. Pursuant to state law, priority dates are retained when other water right holders are not injured. The Board is responsible for the implementation of voluntary programs also designed to meet changing water use needs.

Implementation Strategies:

- Review existing statutes and regulations and recommend revisions as necessary to establish a more efficient process for changes in the use of water rights.
- Review Department policies and procedures and recommend revisions as necessary to implement a more efficient process for changes in the use of water rights.

Milestones:

- Number of changes in the use of water rights that meet emerging needs.

1D - WATER SUPPLY BANK

The sale or lease of water is critical to the efficient management and optimal use of the state's water resources. Thus, use of the state's Water Supply Bank should be expanded to meet traditional and emerging needs for water.

Discussion:

As the state approaches the time when there is little or no unappropriated water, the Water Supply Bank, established by Idaho Code § 42-1761, provides an efficient mechanism for the sale or lease of water from natural flow and storage. The purpose of the Water Supply Bank is to obtain the highest duty of water, provide a source of adequate water supplies to benefit new and supplemental water users, and provide a source of funding for improving water use facilities and efficiencies. By aggregating water available for lease, rental pools operating under the authority of the Water Supply Bank can supply the water needs of many users, provided there is no injury to other right holders, or enlargement of the use of the water rights, and the change is in the local public interest. Idaho Code § 42-1763.

Photo: Shoshone Falls near Twin Falls (*IDWR Photo*)

The Idaho Water Resource Board has adopted rules governing the sale or lease of water through the Water Supply Bank. IDAPA 37.02.03. Pursuant to state law, the Board has authorized local entities to operate storage and natural flow rental pools in numerous water districts that meet regional needs. The Shoshone-Bannock Tribes are also authorized by the state to operate a storage water rental pool.

The scope of existing and future water use needs requires further development of flexible water banking systems that address local water use needs and ensure the optimum use of the state's water resources. The Water Supply Bank should provide for efficient mechanisms that are responsive to traditional and emerging needs for water.

Implementation Strategies:

- Monitor existing procedures, statutes, and rules of the Water Supply Bank to determine whether additional strategies are needed to meet current and future water use demands.
- Establish through state action, natural flow and storage rental pools in basins where local water users have identified the need for rental pools.
- Develop a public information and education program to promote use of the Water Supply Bank.

Milestones:

- Increased use of the Water Supply Bank.
- New storage and natural flow rental pools established.
- Efficient mechanisms in place that facilitate the optimum use of water.

1E - CONJUNCTIVE MANAGEMENT

Where a hydraulic connection exists between ground and surface waters, they should be conjunctively managed to maintain a sustainable water supply.

Discussion:

Region-specific factors impact the available supply of ground and surface water and effect changes in regional water budgets. This can result in insufficient water supplies to satisfy beneficial uses and may result in increased administrative curtailment, conflict among water users, and litigation.

This policy addresses conjunctive management and not water rights administration. Water rights administration is the enforcement of the relative rights of water right holders under the prior appropriation doctrine. By comparison, conjunctive management encompasses actions other than water rights administration that can be taken to optimize the benefits and value of Idaho's water resources. While conjunctive management is not a substitute for water rights administration, the legislature has determined that it is in the public interest to adopt plans and policies that facilitate and encourage a resolution of

conflicts that occur in water basins where there is a hydraulic connection between ground and surface waters. Quantification and monitoring is a key component of conjunctive management and necessary for the development of plans and projects designed to maintain a stable balance between supply and demand.

Implementation Strategies:

- Continue to quantify the hydraulic relationship between ground and surface water supplies in designated river basins.
- Develop prioritized list of basins where additional technical information is needed to assess ground and surface water interaction.
- Develop enhanced technical tools for evaluating the interaction between surface and ground water resources for use in planning.
- On a continuing basis, assess conditions and trends of ground water levels in primary aquifers to estimate the rate of future aquifer recharge and withdrawal under various climatic conditions.
- Procure funding for studies and project implementation.

Milestones:

- Number of studies initiated and completed to quantify ground water/surface water relationships.
- Increased effectiveness of technical tools used to evaluate the hydraulic relationship between ground water and surface water and other water supply data.
- Region-specific projects implemented that contribute to a stable balance between supply and demand.

1F - GROUND WATER WITHDRAWAL

Withdrawals from an aquifer should not exceed the reasonably anticipated average rate of future natural recharge to that aquifer.

Discussion:

Idaho Code § 42-226 protects senior ground water appropriators in the maintenance of reasonable pumping levels in order to obtain full economic development of the state's underground water resources. The Director of the Department is authorized to establish reasonable ground water pumping levels when necessary to protect prior appropriations of ground water. Idaho Code § 42-237a provides that the Director may prohibit or limit the withdrawal of water from a well if withdrawal would result in diversion of the ground water supply at a rate beyond the reasonably anticipated average rate of future natural recharge. The Director may allow withdrawals to exceed natural recharge if a program exists to increase recharge or decrease withdrawals and senior water rights are protected. Idaho Code §§ 42-233a and 42-233b authorize the Director to designate areas as either Critical Ground Water Areas or Ground Water Management Areas. Designating a ground water basin as a Critical Ground Water Area or Ground Water Management Area

provides management options to prevent excessive withdrawals from an aquifer. Where such designations are made, the Department requires additional measurement and reporting to determine available ground water supplies and use.

The comprehensive aquifer management planning initiated by the Idaho Water Resource Board discussed in Policy 1E provides opportunities for stakeholder participation in ground water management. Local advisory committees help the Board establish goals, objectives, and strategies to maximize available water supplies and assist with plan implementation. Public participation is key to the development of innovative approaches for meeting current and future demands on the state's ground water resources.

Implementation Strategies:

- Monitor ground water levels to estimate the rate of future natural aquifer recharge and withdrawal under various climate conditions.
- Develop region-specific water budgets for aquifers.
- Establish local advisory committees and solicit recommendations for ground water management.
- Identify opportunities for conducting cooperative ground water studies with state, federal and local agencies.
- Implement management strategies to maximize available water supply.

Milestones:

- Number of water budgets developed.
- Number of advisory committees active in ground water management and critical ground water areas.
- Number of ground water management plans adopted for all administratively designated areas.
- Number of basins with adequate monitoring networks.

Photo: Alfalfa field near Glenns Ferry
Photo Courtesy of Idaho Department of Agriculture

1G - INTERSTATE AQUIFERS

Cooperative arrangements with neighboring states should be developed for shared aquifers to avoid water supply conflicts and to optimize utilization of the resource for the citizens of Idaho.

Discussion:

The growing demand for water increases competition between states with shared aquifers. Cooperative agreements to jointly develop, manage, and protect shared aquifers are necessary to avoid water supply conflicts, to ensure economic development, and to provide a mechanism for the exchange of technical information.

Implementation Strategies:

- Establish cooperative agreements with neighboring states to gather data and conduct studies to assess ground water conditions and trends.
- Develop coordinated aquifer management plans with neighboring states that resolve interstate conflict and protect Idaho's water supplies.

Milestones:

- Approval and implementation of cooperative agreements, which may include coordinated aquifer management plans, that ensure Idaho's water supply meets current and future needs.
- Cooperative technical studies conducted.

1H - QUANTIFICATION AND MEASUREMENT OF WATER RESOURCES

Quantification and measurement of Idaho's water supply and use is essential for sound water resource planning, management, and administration.

Discussion:

The Director of the Department is required to maintain an inventory of the state's water resources. Idaho Code § 42-1815. The measurement of water availability and use is necessary to administer and regulate existing water uses and to promote optimal water resource planning and management.

Chapters 6 and 7, Title 42, Idaho Code, provide for water use measurement and reporting throughout the state. New instrument technologies for the measurement of water availability and use will continue to improve the accessibility and reliability of data collection and interpretation. These new technologies, such as automated electronic data recording equipment and transfer of data through wireless systems provide transparency and instantaneous access to data, improve calibration of models used for administration and planning, and educate the public about regional and statewide water use.

Implementation Strategies:

- Assess existing measurement network and facilities and develop plan for improving data collection and reporting.
- Prioritize projects for conversion to automated electronic data collection and reporting systems.
- Provide technical assistance and participate in securing funding for improved measurement and reporting systems.

Milestones:

- Number of assessments completed.
- Number of automated data collection systems in use.
- Number of improved measurement and reporting strategies implemented.

1I - AQUIFER RECHARGE

Aquifer recharge should be promoted and encouraged, consistent with state law.

Discussion:

Managed aquifer recharge: Managed recharge projects can~~may~~ be an appropriate means for enhancing ground and surface water supplies, providing mitigation to senior water right holders for junior ground water depletions, or to help maintain desirable aquifer levels. In addition, managed recharge may help optimize existing water supplies by changing the timing and availability of water supplies to meet demand. ~~Managed recharge may also be used as an adaptive mechanism for minimizing the impacts of variability in climate conditions.~~ Idaho Code § 42-234(4) requires that managed recharge projects do not injure existing water rights and gives the Director authority to approve, disapprove, or require alterations in the methods employed to achieve ground water recharge. The effects on ground water and surface water budgets from managed recharge projects should ~~must~~ be monitored to determine the effectiveness of such projects after implementation.~~.~~

The Board supports and assists in the development of managed recharge projects that further water conservation and increase water supplies available for beneficial use. Projects involving the diversion of natural flow water appropriated pursuant to Idaho Code § 42-234 for managed recharge in excess of ten thousand (10,000) acre-feet on an average annual basis must be submitted to the Idaho Water Resource Board for approval prior to construction. Idaho Code § 42-1737.

Aquifer storage and recovery: The use of managed recharge to store surface water in a confined underground area could be an important element in meeting future water use needs. Further understanding of the economic, legal, ecological, and technical feasibility of using confined underground aquifers for water storage in Idaho is required for the purpose of policy development and planning and to avoid injury to existing water rights.

Incidental aquifer recharge: The incidental recharge of aquifers occurring "as a result of water diversion and use that does not exceed the vested water right of water right holders is in the public interest." Idaho Code § 42-234(5)]. Incidental recharge is~~may be~~ an important component of some aquifer water budgets.~~.~~ and should be maintained and encouraged consistent with state law.

Implementation Strategies:

- Cooperate with public and private entities to develop, implement, and evaluate managed recharge projects.
- ~~Identify and propose changes to statutes, rules, and policies that will assist the development and implementation of managed recharge projects.~~
- Identify river basins where the use of managed recharge projects should be evaluated as a potential strategy for addressing increased demand on water supplies.
- Monitor and evaluate managed recharge projects to document effects. ~~on water supply and water quality.~~
- ~~Measure, quantify, and assess the benefits~~Monitor and evaluate ~~of~~ incidental recharge projects to document effects. ~~Appoint an Aquifer Storage and Recovery Task Force.~~

Milestones:

- Managed recharge projects that optimize water supplies implemented.
- Effects of managed recharge projects ~~on water supply and water quality~~ documented.
- Benefits of incidental recharge documented. ~~Aquifer Storage and Recovery Task Force recommendations submitted.~~

1J - WATER QUALITY

The citizens of Idaho will be best served by a cooperative effort involving public and private entities to assure that the state's surface and ground water sources meet state water quality standards and maintain designated beneficial uses.

Discussion:

Water quality impacts the usability of water for a variety of purposes and it is essential that the quality of Idaho's water resources be protected for public safety and economic stability and growth. The Department of Environmental Quality ("DEQ") is the lead state agency charged with maintaining and improving surface and ground water quality through regulatory and permitting programs and coordination with other state agencies. DEQ's Surface Water Program measures and assesses the levels of pollutants in surface waters. Pursuant to the Ground Water Quality Protection Plan, adopted by the legislature

in 1992, the Department administers a statewide ambient ground water quality monitoring network and the Environmental Data Management System. The system collects, and makes available to the public, data obtained from ground water monitoring networks across the state.

When water quality fails to meet state standards, DEQ works with communities, industry, agricultural interests, state and federal agencies, and other stakeholders to develop water quality improvement plans, known as total daily maximum loads or TMDLs. These plans outline actions needed to restore impaired water bodies so that they support designated uses.

The use of water flow to dilute pollution is not a substitute for adequate water quality treatment. The Idaho Agriculture Pollution Abatement Plan ("Ag Plan") is a guidance document that describes the state's process for the control and abatement of agricultural nonpoint source pollution as it relates to water quality. The Ag Plan provides for the review and identification of specific watershed management strategies that contribute to the full support of beneficial uses through enhancement and maintenance of the quality of surface and ground water, to the extent they are impacted by nonpoint source agricultural pollutants. Water quality improvement strategies for non point sources are implemented through voluntary programs. Numerous state agencies and local units of government participate in plan implementation, including: the Idaho Soil and Water Conservation Commission, DEQ, Soil Conservation Districts, Idaho State Department of Agriculture ("ISDA"), University of Idaho – Cooperative Extension System, the Department, the Board, IDFG, the Idaho Department of Lands, and the Office of Species Conservation ("OSC"). Where the quality of surface and ground water depends on land and water-use practices within a watershed, water users, land managers, state and federal agencies, and other units of local government are working together to implement through voluntary mechanisms best management practices and other strategies that reduce impairments to beneficial uses.

Implementation Strategies:

- Coordination and integration of monitoring programs with public and private entities.
- Ongoing analysis of statewide water quality monitoring programs to identify need for modifications.
- Participate with state agencies to integrate water management programs and policies that promote the improvement of the quality of the state's surface and ground water through voluntary mechanisms.
- Ongoing monitoring of baseline conditions and trends.

Milestones:

- Collaborative projects implemented that protect and enhance the water quality of the state's surface and ground water.

1K - COMPREHENSIVE AQUIFER MANAGEMENT PLANS

The Idaho Water Resource Board will complete and implement comprehensive aquifer management plans ~~as~~ as required by the legislature. ~~to address the changing demands on the state's water supply~~.

Discussion:

Idaho Code §§ 42-1779 and 42-1780 established the Statewide Comprehensive Aquifer Planning and Management Program and the Aquifer Planning and Management Fund, which are designed to provide the Board and the Department with the necessary information to develop comprehensive aquifer management plans, ("CAMPs") throughout the state. The program will be implemented in three phases. First, technical information describing the hydrology of the ground and surface water systems and the relationship between surface and ground water in a designated basin will be compiled. Second, the Board, with the assistance of an advisory committee, will develop a management plan, based on an assessment of current and projected water uses and constraints, to address water supply and demand issues specific to each basin. Finally, the Board will be responsible for implementing the CAMPs to obtain sustainable water supplies and provide for the optimum use of a region's water resources.

Idaho's first CAMP was developed for the Eastern Snake River Plain Aquifer ("ESPA CAMP"). The ESPA CAMP was adopted by the Idaho Water Resource Board and approved by the legislature in 2009. The ESPA CAMP sets forth actions designed to stabilize and improve spring flows, aquifer levels, and river flows across the Eastern Snake River Plain. The ESPA CAMP uses a phased approach to achieve a designated water budget change through a mix of management actions, including but not limited to, aquifer recharge, ground-to-surface water conversions, and demand reduction strategies. The Board is responsible for implementation of the plan with the assistance of an advisory committee made up of representatives of stakeholders who rely upon the Eastern Snake River Plain Aquifer to supply water for beneficial use.

Statewide comprehensive aquifer planning was initiated in 2008 and~~.~~ t~~T~~he Rathdrum Prairie plan was completed in 2011. ~~and the Treasure Valley plan is expected to be completed in 2012.~~ Additional aquifers will be designated for the development of comprehensive plans as funding and conditions allow.

Implementation Strategies:

- Develop and implement CAMPs for selected basins that establish goals, objectives, and implementation strategies to maximize available water supplies.
- ~~Secure funding for technical studies and planning activities.~~

Milestones:

- Number of CAMPs completed.
- Number of CAMPs implemented.

1L - SURFACE WATER SUPPLY ENHANCEMENT

Surface water development will continue to play an important role in meeting Idaho's future water needs.

Discussion:

Future economic development, population growth, and evolving priorities will bring additional demands on Idaho's water resources, and surface water development will continue to play an important role in the state's future. The construction of new reservoirs, enlargement of existing reservoirs, and development of off-stream storage sites could increase water supplies necessary to meet increased demand. These strategies are also important for flood management, hydropower generation, and recreation use.

Engineering, economic, legal, political, and environmental issues associated with water development projects affect decisions concerning the construction of reservoir facilities. In addition, changes in climate conditions will likely be an important factor in determining the costs and benefits of additional storage. As required by Idaho Code § 42-1736B(3)(c), the Idaho Water Resource Board maintains an inventory of potential storage sites. An inventory of reservoir sites with apparent high potential for development is set forth in Table 1.

Implementation Strategies:

- Concentrate assessment and evaluation of potential storage facilities on projects with the highest potential for development. Major considerations in defining high-potential projects are: cost per unit of storage, extent of public support, environmental considerations, adequacy of existing information and studies, extent and availability of funding sources for evaluation and assessment, and expected benefits that would accrue from the development of additional storage.
- Review inventory and prioritize potential projects annually.
- Initiate feasibility/construction design studies for sites determined to be high priority.
- Identify potential funding sources for project evaluation and construction.
- Develop collaborative processes and partnerships with private entities, concerned stakeholders, local governments, and federal agencies to evaluate, design, and construct water storage projects.
- Provide recommendations regarding potential storage sites to private and public entities to ensure that land and resource development associated with these sites is consistent with the State Water Plan.

Milestones:

- Complete annual review of potential storage site inventory and revise as appropriate.
- Initiate construction of additional storage to meet current and expected needs by 2025.

Table 1 Reservoir Sites with Apparent High Potential for Development

Potential Reservoir	Stream	Reservoir Capacity (AF)	Potential Purpose	Status of Study
Upper Snake Minidoka (enlargement)	Snake River	67,000	Irrigation, Power, Flood Control, Flow Augmentation, Recharge, Recreation	*Minidoka Dam Raise Special Study* (USBOR, Dec. 2009). Raise determined to be feasible. No action by the IWRB at this time.
Teton (or alternative)	Teton River	300,000	Irrigation, Power, Flood Control, Flow Augmentation, Recreation	*Henrys Fork Basin Study* ongoing. Multiple on- and offstream sites within basin under consideration.
Southwest Idaho Twin Springs (or alternative)	Boise River	70,000 to 300,000	Irrigation, Power, Flood Control, Flow Augmentation, Recreation	*Lower Boise Interim Feasibility Study* ongoing. Three sites prioritized for further analysis: (1) replacement of existing Arrowrock Dam, (2) new dam at Alexander Flats site, and (3) new dam at Twin Springs site.
Lost Valley (enlargement)	Lost Valley Creek	20,000 (increase)	Irrigation, Recreation	Not currently under investigation.
Galloway	Weiser River	900,000	Irrigation, Power, Flood Control, Flow Augmentation, Recreation	Weiser-Galloway Studies currently ongoing: *Geologic Investigation and Analysis Project* and *Snake River Operational Analysis Project.*
Bear Caribou	Bear River	48,000	Irrigation, Power, Flood Control, Recreation	Last study update completed in 1996. Not currently under investigation.

1M - WEATHER MODIFICATION

Weather modification offers the possibility of augmenting water supplies.

Discussion:

Weather modification, primarily winter cloud seeding to increase snowpack, has been practiced in Idaho and across the western states for many years. Increasing challenges, including a changing climate, growing population, and water allocation conflicts related to the presence of threatened and endangered species magnify pressures on a variable water supply. While the specific water quantities resulting from weather modification remain unknown, additional investigation should be conducted and pilot projects implemented to determine where and under what circumstances weather modification is a feasible strategy for increasing water supplies. A number of cloud seeding programs and studies have been conducted in Idaho with positive overall results, including programs funded by the Board and Idaho Power Company.

Weather modification has the potential to raise legal issues related to the effect of weather modification activities outside state boundaries, potential adverse environmental effects, and intergovernmental conflicts where projects occur on or near public lands. Addressing these issues through legislation, rulemaking, and interstate agreements will help avoid future conflicts and litigation.

Under Idaho law, any person who intends to conduct weather modification activities is required to register with the ISDA and file a log of activities upon completion of the program. Idaho Code §§ 22-3201, 22-3202. Idaho law also provides for the creation of weather modification districts. Idaho Code §§ 22-4301, 22-4302.

Implementation Strategies:

- Support the continued evaluation of existing weather modification projects.
- Develop criteria for the development and implementation of additional weather modification projects.
- Collect baseline data and continue effectiveness research.
- Coordinate weather modification research and pilot projects with neighboring states.
- Ensure that state-funded projects are scientifically sound and include robust monitoring and evaluation components.

Milestones:

- Number of weather modification projects implemented that increase water supply.
- Increase in annual runoff resulting from weather modification projects.

- Increase in baseline data and effectiveness research.
- Agreements in place with neighboring states and federal agencies addressing research and implementation of weather modification projects.

1N - HYDROPOWER

Appropriation of water for hydropower should be subordinated to subsequent upstream beneficial uses to assure an adequate supply of water for all future beneficial uses and minimum stream flows for hydropower projects should be established by state action.

Discussion:

The relationship of hydropower water rights to future upstream uses was the subject of an ongoing debate from statehood until the 1985 Swan Falls Settlement, when the Idaho legislature enacted Idaho Code § 42-203B to resolve the debate. Pursuant to section 3 of Article XV of the Idaho Constitution, the legislature determined that it was in the public interest to specifically implement the state's power to regulate and limit the use of water for power purposes. Through enactment of Idaho Code § 42-203B, the legislature sought to avoid future Swan Falls-like controversies by creating a framework for balancing the use of water for hydropower and other beneficial uses. This framework provides for the subordination of appropriations of water for hydropower purposes to assure an adequate supply of water for all future upstream beneficial uses. The framework also provides for protection of base flows for hydropower and other instream uses through minimum stream flows established by state action. The establishment of minimum stream flows through an open and transparent public process ensures a balance between sustaining economic growth, maintaining reasonable electric rates, protecting and preserving existing water rights, and protecting water quality and other environmental values.

Small hydropower projects using existing water flows and infrastructure can be cost-effective and provide for the optimum utilization of the water resource. Recognizing the benefits of such projects, loans are available through the Board's programs to study the feasibility and for development of such projects. The FERC provides a permitting exemption to certain qualifying facilities. The National Hydropower Association's Small Hydro Council recently issued a set of recommendations that would streamline FERC's conduit and small hydropower permitting process.

Implementation Strategies:

- Ensure that all future applications, permits and licenses for the appropriation of water for hydropower purposes contain a subordination provision.
- Establish minimum stream flows through state action to protect base flows for future hydropower water rights as necessary.
- Define, through agreements with the holders of existing hydropower water rights, the relationship between such rights and existing and future depletionary water rights.

Milestones:

- Execution of subordination agreements and establishment of minimum stream flows through state action for existing hydropower facilities.
- Loans provided to study the feasibility and development of small hydropower projects.

Photo: Swan Falls Dam (*photo by IDWR Dam Safety Program)*

2. CONSERVATION

The Conservation policies focus on careful planning and prudent management of Idaho's water. The policies in this section encourage water conservation practices and efficient management of water resources for the benefit of Idaho citizens. Conservation and water efficiency practices should be implemented through voluntary, market-based programs, when economically feasible.

2A - WATER USE EFFICIENCY

Water conservation and water use efficiency should be promoted.

Discussion:

The legislature, in Idaho Code § 42-250(1) determined that voluntary water conservation practices and projects can advance the policy of the state to promote and encourage conservation, development, augmentation, and utilization of Idaho's water resources. "Water conservation practice" means any practice, improvement, project, or management program that results in the diversion of less than the authorized quantity of water while maintaining the full beneficial use(s) of the water right. Idaho Code § 42-250(2). Water conservation practices include, but are not limited to, practices that reduce consumptive use as defined in Idaho Code § 42-220B, reductions in conveyance losses, and reductions in surface and seepage losses occurring at the place of use. Idaho Code § 42-223 encourages conservation of water resources by providing that no portion of any water right shall be lost or forfeited for nonuse if the nonuse results from a water conservation practice which maintains the full beneficial use(s) authorized by a water right. As water efficiencies increase, conserved water may be available to supply existing uses, new demands, or improve instream flows. Conservation and water efficiency practices may offset the need for new water supply enhancement projects. Policies that promote water conservation and efficiency should be encouraged, where such practices do not result in adverse consequences to other users of the resource.

Photo: Idaho Irrigation (*IDWR Photo*)

Implementation Strategies:

- Review existing laws and regulations and identify inconsistencies or constraints to implementing water efficiency practices.
- Develop partnerships with local, state, and federal governments and non-governmental organizations to coordinate and support water conservation programs.
- Establish a public information program and conservation guidelines for a range of water uses.
- Evaluate opportunities for conservation and water efficiency practices in conjunction with the evaluation of new water supply enhancement facilities, including existing and new water metering for all municipalities that provide public drinking water and water for other uses.
- Identify localized opportunities for water conservation.

Milestones:

- Number of conservation guidelines implemented.
- Number of partnerships developed to coordinate water conservation.
- Number of water use efficiency practices implemented.
- Effects of conservation efforts quantified.

2B - FEDERALLY LISTED AND OTHER AQUATIC SPECIES

The state asserts primacy over the management of its fish and wildlife and water resources. Accordingly, any reintroduction or introduction of federally listed species or other aquatic species without state consultation and approval is against the policy of the State of Idaho because it would impair or impede the state's primacy over its water resources.

Discussion:

The intersection between state water rights and the Endangered Species Act ("ESA") requires development of integrated solutions to water allocation conflicts. Pursuant to Idaho Code § 36-103, the Idaho Fish and Game Commission, through the IDFG, is responsible for the preservation, protection, perpetuation, and management of all wildlife, including aquatic species, within Idaho. ~~IDFG also maintains a list of Species of Greatest Conservation Need, species that are low in numbers, limited in distribution, or have suffered significant habitat losses.~~ The OSC is responsible for the coordination of all state activities affecting endangered, threatened, and candidate species, and species petitioned to be listed under the ESA, and rare and declining species. Idaho Code § 67-818. OSC coordinates state implementation and response to federal recovery plans and participates in regional efforts with state and federal agencies and tribes on issues related to such species. Idaho Code § 67-818. Pursuant to Chapter 19, Title 22, Idaho Code, the ISDA is responsible for the regulation of aquatic invasive species. All activities related to the introduction or reintroduction of aquatic species that would affect Idaho's fish and

wildlife and water resources should be coordinated through these agencies, including species listed under the ESA.

In enacting the ESA, Congress contemplated a state-federal alliance to advance the recovery of listed species and provided for the development of state-led recovery efforts. Congress has directed federal agencies to "cooperate with state and local agencies to resolve water resource issues in concert with conservation of endangered species." 16 U.S.C. § 1531(c)(2). Cooperative community-based conservation programs can be more effective in providing on-the-ground habitat benefits than enforcement actions. With site-specific information about water and land use practices and habitat requirements, targeted and effective conservation strategies can be developed and implemented that protect private property rights and assure state primacy over water resources while, at the same time, providing natural resource protection.

The Idaho Water Resource Board holds minimum stream flow water rights for 205 river reaches important to ESA-listed species and established as part of the Snake River Water Rights Settlement Act of 2004 ("2004 Snake River Water Rights Agreement"). The minimum stream flow water rights provide significant protection for aquatic~~ESA-listed~~ species in the Salmon and Clearwater River basins. The water rights for streams in watersheds with substantial private land ownership and private water use were established after consultation with local communities. Where the minimum stream flow water rights are higher than existing flows, the state works with water users on a voluntary basis to rent or otherwise acquire water to return to the streams. ~~The Water Supply Bank and Idaho Water Transactions Program are used to achieve these objectives.~~ In conjunction with the minimum stream flows, the state agreed to work with local stakeholders and communities to address habitat concerns on a limited number of streams with degraded habitat. ~~The work plans include measures to remove barriers to fish passage, revegetate stream banks, and restore wetlands to proper functioning.~~ These programs also assist in the implementation of the Columbia Basin Fish Accords in which the state, the Bonneville Power Administration, and the U.S. Army Corps of Engineers ("USACE") agreed to address issues associated with the direct and indirect effects of the Federal Columbia River Power System and U.S. Bureau of Reclamation's ("USBOR") Upper Snake River Project on the fish and wildlife resources in the Columbia River Basin. ~~As discussed in Policy 6B, these projects target flow-related limiting factors in the Lemhi and Pashimeroi rivers.~~

The 2004 Snake River Water Rights Agreement also provides for the development of agreements to assist in the recovery of ESA-listed species, under Section 6 of the ESA. The plans are to be developed in collaboration with local landowners and water users, affected Indian tribes, and state and federal natural resource agencies. Section 6 agreements will provide incentives for conservation through the granting of incidental take coverage to participants in the program. Such agreements would provide participating water users with protection against uncertainty and regulatory delays while contributing to the recovery of listed species. Section 6 of the ESA may also provide opportunities for the implementation of voluntary conservation plans developed in collaboration with local water users and stakeholders in other regions of the state. The Board, in collaboration with other state agencies and local units of government, develops local and regional conservation strategies that contribute to the protection and recovery of

aquatic species.~~recovery of ESA-listed species and Species of Greatest Conservation Need.~~

Implementation Strategies:

- Participate in the development and implementation of ~~habitat conservation plans pursuant to~~ Section 6 agreements.
- ~~Collaborate with OSC, IDFG, other state and federal agencies, affected Indian tribes, local units of government and local stakeholders to develop and implement conservation programs that preclude the need for listing of species and contribute to listed species' recovery.~~
- Coordinate with OSC and IDFG on species conservation issues.~~to integrate water resource programs with species protection and recovery, including the establishment of minimum stream flows and state designation of protected rivers.~~

Milestones:

- Number of Section 6 agreements implemented.
- ~~Number of voluntary conservation agreements and measures implemented.~~
- Number of strategies implemented in coordination with OSC and IDFG that preclude the need for listing under the ESA and result in listed species' recovery.

2C – MINIMUM STREAM FLOWS

The Idaho Water Resource Board will exercise its authority to establish and to protect minimum stream flow water rights on those water bodies where it is in the public interest to protect and support instream uses.

Discussion:

Minimum stream flows protect and support many nonconsumptive beneficial uses of water such as fish and wildlife habitat, aquatic life, recreation and aesthetic values, transportation, navigation, hydropower generation, and water quality. These uses contribute to Idaho's economy and the well being of its citizens.

In 1925 and 1927, the legislature declared that the preservation of certain lakes for scenic beauty, health, and recreation was a beneficial use of water. In 1971, the legislature authorized the first formal appropriation of minimum stream flows by directing the Idaho Department of Parks and Recreation to appropriate a specific reach of Niagara Springs in the Malad Canyon area for instream flow purposes. The 1976 State Water Plan called for, and eventually legislation was enacted, creating a state-wide minimum stream flow program. Chapter 15, Title 42, Idaho Code, authorizes the Idaho Water Resource Board to appropriate the minimum flow of water required to protect designated uses if the appropriation is in the public interest and will not interfere with any vested water right, permit, or water right application with a senior priority. Idaho currently has 297 licensed or permitted water rights for minimum stream flow purposes, including six minimum

lake level water rights held by the state. At the legislature's direction, 205 of the minimum stream flow water rights were adopted pursuant to the 2004 Snake River Water Rights Agreement. ~~which, as discussed more fully in Policy 6B, provided a programmatic approach to addressing the needs of species listed under the ESA.~~ Similarly, the legislature has authorized the Board to appropriate minimum stream flow water rights in the Lemhi and Wood River basins where the rights are maintained through operation of a Water Supply Bank. These locally managed programs are used to maintain~~for~~ minimum stream flow water rights ~~to maintain or enhance instream flow~~ in a manner that respects water use practices and addresses community concerns.

The Water Supply Bank and local rental pools are tools that can be used to maintain ~~to improve instream flows~~~~for~~ minimum stream flow water rights through voluntary cooperation and to meet local needs. It is important to monitor existing mechanisms for establishing local rental pools to determine whether additional strategies are required to meet local needs. It is also important to monitor whether existing mechanisms for meeting minimum stream flow water rights ~~instream flow needs~~ are adequate.

Implementation Strategies:

- Monitor whether existing mechanisms for meeting ~~instream flow~~minimum stream flow water rights needs are adequate.
- Coordinate with state and federal agencies and stakeholders to identify potential minimum stream flow needs.
- Submit applications for minimum stream flow water rights ~~that are in the public interest~~pursuant to Chapter 15, Title 42, Idaho Code.
- Monitor existing mechanisms for establishing local rental pools to determine whether additional strategies are required to meet local needs.
- Establish local rental pools to meet ~~instream flow needs as requested~~minimum stream flow water rights.

Milestones:

- Annual inventories of minimum stream flow water rights completed.
- Minimum stream flow water rights established.
- ~~Instream flow needs~~Minimum stream flow water rights met.

2D - STATE PROTECTED RIVER SYSTEM

The Idaho Water Resource Board will exercise its authority to protect the unique features of rivers where it is in the public interest to protect recreational, scenic, and natural values.

Discussion:

Idaho Code § 42-1734A(1) authorizes the Board to protect highly valued waterways as state protected rivers subject to legislative approval. The authority to designate "protected rivers" derives from the state's ownership of the beds of navigable streams and the state's right to regulate all waters within the state. The Idaho Water Resource Board has consistently recognized the value of free-flowing waterways by designating specific streams and rivers as natural or recreational rivers.

Although rivers can be protected under the federal Wild and Scenic Rivers Act, the Board works with federal officials to seek protection of streams and rivers through the Comprehensive State Water Planning process. The state planning process ensures coordinated and efficient water planning for Idaho rivers and streams and avoids potential state/federal sovereignty conflicts.

Implementation Strategies:

- ~~Coordinate with local governments and federal agencies to identify specific waterways for consideration as protected rivers.~~
- Develop priority list of potential rivers for consideration in comprehensive basin planning.
- Establish agency policy and procedures to ensure requirements of the protected rivers program are addressed when the Department reviews water right permit applications and stream channel alteration permits.
- ~~Ensure that permits issued include provisions for the protection, restoration, or enhancement of designated river reaches.~~

Milestones:

- ~~Ongoing review of state rivers and streams to determine whether they should be designated as part of the protected river system.~~
- ~~Number of state/federal agreements to coordinate river planning implemented.~~
- Designation of streams or rivers determined to warrant protected status.

~~2E - RIPARIAN HABITAT AND WETLANDS~~

> ~~**Protecting the ecological viability of riparian habitat and wetlands within the state is a critical component of watershed planning.**~~

~~Discussion:~~

~~Functional riparian zones and wetlands contribute to water quality protection, storm water control, and ground water protection and provide important habitat for fish and wildlife. Riparian and wetlands areas provide support to numerous species across much of the state. Riparian zones and wetlands should be protected to preserve their ecological values and functions. The Board supports voluntary efforts to restore riparian zones and wetlands.~~

~~The integration of water resource and land use planning activities that affect riparian zones and wetlands requires coordination among various local, regional, and state authorities. The Department regulates the alteration of stream channels and stream beds below the mean high watermark. Idaho Code §§ 42-3801 – 42-3812. Local governments are authorized to regulate land use and development. The DEQ administers the state's Nonpoint Source Management Program which is based upon strong working partnerships and collaboration with state, tribal, regional, and local entities, private sector groups, citizens' groups, and federal agencies and the recognition that a successful program must be driven by local wisdom and experience.~~

~~In 2008, the Idaho Wetlands Working Group developed a Draft Wetlands Conservation Strategy that sets out a framework for protecting, restoring, and enhancing wetlands through collaborative, voluntary approaches. The Board supports voluntary watershed-based conservation strategies for the protection of riparian and wetland areas above the mean high water mark developed and implemented through collaboration with water users, land managers, local governments, and state and federal agencies.~~

~~**Implementation Strategies:**~~

- ~~Support collaborative watershed planning and the implementation of voluntary strategies to protect Idaho's wetlands and riparian areas.~~
- ~~Support the development of guidelines and strategies to assist in the implementation of projects that protect, restore, and enhance wetlands and riparian areas.~~
- ~~Evaluate whether the Stream Channel Protection Act, [Idaho Code §§ 42-3801 – 42-3812], adequately assists in the protection of wetlands and riparian areas and propose statutory changes as appropriate.~~
- ~~Assist state and federal agencies and stakeholders in the acquisition of funding for project implementation.~~

~~**Milestones:**~~

- ~~Project and funding proposals submitted.~~
- ~~Projects implemented.~~

2E~~F~~ - STREAM CHANNEL REHABILITATION

The Idaho Water Resource Board will support cost-effective stream channel rehabilitation where past activities adversely affect ~~or could affect the ecological goods and services~~ of the state's watersheds.

Discussion:

~~Functional stream channels provide ecological goods and services desired by the public. Ecological goods are those qualities that have economic value, such as timber resources, habitat that supports fishing and hunting, and aesthetic qualities of landscapes that would~~

~~attract tourists. Ecological services include systems that best manage water resources, such as the regulation of runoff and flood waters, or the stabilization of landscapes to prevent erosion.~~ Damage and destruction of stream channels can result from natural and human-caused changes and disturbances. Where current practices, legacy effects of past activities, or natural disturbances threaten public safety, private property, or the overall quality and quantity of water produced in the affected watershed, it is in the state's interest to take remedial action in a cost-effective manner. In many instances, historical targets for restoration are not practical and therefore restoration efforts should be designed to be sustainable in a rapidly-changing environment. Preventing damage to a stream channel and adjacent property is more cost effective than restoration. In addition, it is in the state's interest to ensure that the stream channels of the state and their environments are protected and restored through the implementation of voluntary restoration projects. The Department also regulates the stream channels and stream beds below the mean high watermark. Idaho Code § 42-3801 – 42-3819(a).

Implementation Strategies:

- ~~Conduct a statewide inventory of streams where natural events or human activities have altered channels and the disturbances threaten the public safety, private property, or other water resource values.~~
- Conduct cost/benefit analyses for rehabilitation of affected streams.
- Prioritize projects.
- ~~Obtain funding for restoration of prioritized streams.~~

Milestones:

- ~~Inventory conducted.~~
- Cost/benefit analyses conducted and priorities established.
- ~~Funding obtained.~~
- Projects implemented.

2~~F~~G - SAFETY MEASURES PROGRAM

Owners of water distribution and storage facilities are encouraged to establish or continue voluntary safety initiatives including construction and maintenance of safety features and development of public awareness programs to educate residents about hazards associated with these facilities.

Discussion:

Fatal accidents sometimes occur in waterways at or near water distribution and storage facilities in Idaho because of the inherent dangers of these facilities. With the increasing urbanization of rural areas, there has been a greater effort to provide public awareness programs and, where feasible, implement measures designed to ~~prevent~~ reduce such occurrences. The Idaho Water Resource Board supports these voluntary initiatives.

Implementation Strategies:

- ~~Secure and provide funding for the~~ Encourage the continued construction and maintenance of safety features at water distribution and storage facilities.
- Encourage the implementation of public safety awareness programs.

Milestones:

- Reduced number of accidents associated with water distribution and storage facilities.

2G~~H~~ - FLOOD HAZARD AREAS

Protection of floodplains through effective floodplain management and pre-disaster mitigation is essential to reducing and preventing flood damages.

Discussion:

Floods are the most frequent and costly disasters in Idaho and can occur in most any area of the state. With population growth, there will be increased interest in the development of lands subject to periodic flooding. The Federal Emergency Management Agency ("FEMA") administers the National Flood Insurance Program ("NFIP"), which many Idaho communities have joined by adopting and enforcing flood damage prevention ordinances. Although FEMA has prepared Flood Insurance Rate Maps ("FIRMs") for some of the waterways within Idaho, the majority of FIRMs are more than 20 years old and require updating. In order to create safer communities and reduce the loss of life and property due to flood events, local governments are encouraged to use land use controls, building practices, and other tools to protect the natural function of floodplains. Land use controls on additional development in flood plains can also preserve storage water supplies by reducing the need for additional flood control releases.

Implementation Strategies:

- Assist local governments in securing funding to update or develop digital FIRMs.
- Provide technical information on flood plain management and flood risk to elected officials, public and private organizations, and land developers.

Milestones:

- Increased participation in NFIP by communities.
- Decreasing trends in annual flood damages.

2~~H~~I - FLOOD DAMAGE REDUCTION LEVEE REGULATION

Levees should be designed, constructed, and maintained to meet the intended purpose of reducing water and flood damage for the useful life of the levee.

Discussion:

Pursuant to Idaho Code § 42-1717, the Department regulates nearly 600 water storage dams and more than 20 mine tailing impoundment structures throughout the state. Levees are exempted by statute from the Department's dam safety regulations, and the construction, maintenance, and safety of levees is, for the most part, left to local entities. Presently, there is no state agency that is authorized to regulate levees for the protection of public health or safety.

The Board supports the development of a comprehensive state program governing the design, construction, and maintenance of new flood reduction levees, and the periodic safety inspection of existing levees. A state flood reduction levee program should focus on the use of sound technical practices in levee design, construction, and operation. This should include the establishment of a safety program that helps ensure public education and awareness of the capacities and limitations of levees during flood events.

Implementation Strategies:

- Develop a state safety program to regulate the design, construction, and maintenance of new flood reduction levees.
- Investigate the implementation of a state levee safety program consistent with the standards and guidelines recommended by the Draft National Levee Safety Program.
- Provide testimony upon request to the legislature regarding the benefits offered to Idaho citizens resulting from implementation of a state levee safety inspection program.
- Participate in the development of a National Levee Safety Program with other state and federal agencies, as appropriate.
- In the event a National Levee Safety Program is adopted, obtain certification as a state levee safety program and assist with development of levee criteria for use by the states and the federal government.

Milestones:

- State levee safety program established.
- Levee failures in Idaho decreased.
- Reduction in property loss resulting from levee failures.

3. MANAGEMENT

The Management policies focus on maintaining and enhancing administrative programs and practices related to current and future demands on Idaho's water and energy resources.

3A - REVIEW OF FEDERAL RESERVOIR WATER ALLOCATION

It is in the state's interest that proposed water allocations and reallocations of water in federal reservoirs be consistent with the State Water Plan.

Discussion:

Historically, the Board has reviewed federal water allocations proposed by the USBOR to determine whether the proposed allocations are consistent with state water resource planning and management objectives. In 1988, this cooperative arrangement was formalized through an agreement providing for Idaho Water Resource Board review of proposed water allocations from federal reservoirs in excess of 500 acre-feet annually, within an existing approved water right not otherwise reviewable by the Department. This state and federal partnership ensures that water resource and management issues are addressed in a comprehensive way, thereby providing for optimal use of the state's resources. It will become even more important to coordinate state and federal management strategies as demands on the state's water supply increase.

Implementation Strategies:

- Review status of existing cooperative agreements related to review of proposed allocations and revise accordingly.
- Identify opportunities for additional agreements providing for review of proposed allocations.
- Work with the USACE to determine if cooperative agreements addressing water allocations in other parts of the state would be in the state's interest.

Milestones:

- Existing agreements maintained and revised as necessary.
- Additional cooperative agreements executed that promote optimal use of the state's water resources.

Photo Courtesy of Idaho Department of Agriculture

3B - HYDROPOWER SITING

The expansion of hydropower capacity and generation consistent with the state water plan can help meet the need for affordable and renewable energy resources.

Discussion:

Hydropower provides a clean, efficient, and renewable energy source and has contributed significantly to the state's energy supply. The state and region's power demand is expected to increase substantially over the next several decades as the population continues to grow. Although most cost effective and flexible sites have been developed, there will be opportunities for increasing hydroelectric generating capacity, while preserving environmental protection. These include enhancing incremental capacity at existing sites through new technologies that yield greater energy efficiency, adding generation capacity at existing dams, and the development of generation capacity in conjunction with the construction of new water storage projects. Development of small hydropower generation at existing facilities is also an important strategy for contributing to the state's energy supply. The Board provides loans to assist irrigation entities interested in studying the feasibility and development of such projects.

The 2012 Idaho Energy Plan recommends that energy conservation and energy efficiency should be the highest priority resource. The 2012 Idaho Energy Plan also recommends development of in-state renewable resources that will contribute to a secure, reliable energy system for the state. The Board supports the promotion of a more efficient use of energy throughout Idaho's economy, implementation of efficiency improvements at existing sites, and retrofitting existing dams. Hydropower development should be considered when planning new water storage projects. Feasibility studies for new storage projects should include evaluation of the costs, benefits, and adverse consequences of hydropower generation.

Under 16 U.S.C. § 803, the FERC must determine that proposed projects are consistent with Idaho's comprehensive water plans when making licensing decisions. The Board will review hydropower development proposals to determine whether they are consistent with the State Water Plan, including the comprehensive basin and river plans, which address region-specific siting issues. The Board agrees with the 2012 Idaho Energy Plan recommendation to establish an Energy Facility Site Advisory Team that would provide technical expertise and assistance upon request from local officials considering energy facility siting proposals.

Implementation Strategies:

- Provide information and technical assistance to local communities through participation in an Energy Facility Site Advisory Team.
- Include evaluation of hydropower generation potential in feasibility studies for water storage projects.

- Provide information and technical assistance to proponents of projects that increase energy efficiency, increase generation capacity, or retrofit existing dams or other facilities for hydroelectric generation.

Milestones:

- Hydropower siting proposals and projects comply with the State Water Plan.
- Efficiency improvements implemented at existing hydropower facilities.
- Generation capacity increased at existing hydropower projects, while protecting the environment.
- Existing dams retrofitted with generation capacity, while protecting the environment.
- Development of small hydropower generation at existing facilities, while protecting the environment.

3C - RESEARCH PROGRAM

Focused research is necessary to support water resource planning and collaborative solutions that address changing demands on the state's water supplies.

Discussion:

Research and data gathering are essential to the state's efforts to meet future water challenges in a sustainable way. Adequate data on water availability, use and efficiencies, surface and ground water interaction and relationships, and emerging water management technologies is needed to help water managers and end users make sound decisions and develop adaptive strategies for responding to the impacts of climate variability. Data collection and research is conducted by numerous public and private entities. A cooperative exchange of information contributes to more efficient use of limited financial resources for research and monitoring necessary to further the state's water supply objectives. Research priorities include: water use efficiency; water use monitoring; ground and surface water relationships, specifically the timing and spatial distribution of pumping and recharge efforts; ground water flow models; and system operation modeling methods for Idaho river basins. Environmental considerations should be addressed as studies are designed and implemented.

Implementation Strategies:

- Facilitate coordination and dissemination of research and data among state and federal agencies, local units of government, universities, and private entities.
- Identify and prioritize research needs.
- Identify dedicated funding sources for basic and applied research.

Milestones:

- Cooperative research activities implemented.
- Completed research projects.
- Application of research results to planning and management.

3D - FUNDING PROGRAM

Various f~~F~~unding mechanisms exist to support the development, preservation, conservation, and restoration of the water resources ~~of the state should be based on flexible strategies that provide equitable benefits~~.

Discussion:

The water resources of the state are essential to Idaho's economy and its citizens. There is no single strategy for successfully financing water resource projects. ~~Instead, funding mechanisms for water planning and management should be based on flexible strategies that are broad-based and provide equitable benefits. Strategies for financing water resource programs may include state appropriations, the establishment of water management improvement or conservancy districts, targeted user fees, the development of a state water fund supported by power franchise fees, targeted sales, property, or special product and services taxes, and revenue bonds. While the existing institutional and legal framework may be adequate for some projects, it is important to develop innovative approaches that are responsive to future needs. Transparency and clarity about the intent and limitations of any particular funding strategy will help ensure that a strategy is used and evaluated appropriately. Projects proposed for funding must be in the public interest and in compliance with the State Water Plan.~~

The Board's Revolving Development Fund and Water Management Account are supported by appropriations from the state's general fund, federal funds, and other revenue sources. These programs have and will continue to provide financial assistance to project sponsors for water development and conservation, system rehabilitation, and treatment projects. The Board is also authorized to finance water projects with revenue bonds. The issuance of revenue bonds does not constitute a general obligation of the state or the Idaho Water Resource Board.

~~Sources of funding for programs focused on the protection and restoration of species listed under the ESA include 2004 Snake River Water Rights Agreement appropriations, the Columbia Basin Water Transaction Program, the Pacific Coast Salmon Recovery Fund, and the 2008 Columbia Basin Fish Accords.~~

~~The ESPA CAMP provides for a water-user fee in conjunction with state appropriations. Implementation of strategies for addressing regional water use issues on the Eastern Snake River Plain Aquifer will assist in the development of comprehensive aquifer management implementation plans in other areas of the state.~~

The Board will continue to pursue opportunities for partnerships with the federal government and private entities to determine the feasibility of increasing water supplies through development of additional storage capacity. As discussed in Policy 4E, the Board has entered into agreements with the USACE and the USBOR for studies in the Boise River and Snake River basins. As demands increase on Idaho's water storage and delivery systems, the need for additional water storage feasibility studies and funding partnerships will be assessed.

Implementation Strategies:

- ~~Review existing authorities and identify changes needed to optimize financing for water resource projects.~~
- Evaluate Idaho Water Resource Board financial program procedures to determine whether revisions are needed to improve efficiency and accessibility.
- ~~Pursue opportunities for private funding partnerships.~~
- Pursue opportunities for local, federal, and ~~intra-state~~voluntary private funding partnerships and projects.

Milestones:

- Financial programs and funding strategies meet the future water resource needs of the state.

3E - WATER RESOURCE PLANNING PROGRAM

Comprehensive water planning will help ensure sufficient water supplies to satisfy Idaho's future water needs.

Discussion:

Idaho Code § 42-1734A(1) directs the Idaho Water Resource Board to formulate and adopt a comprehensive state water plan for conservation, development, management and optimum use of all unappropriated water resources and waterways of the state. The legislature also authorized the Idaho Water Resource Board to develop plans for specific geographical areas. Comprehensive plans for individual hydrologic river basins include state protected river designations and basin-specific recommendations concerning water use and resource values. Basin plans also assure that the state's interests will be considered in federal management agency decisions. Public review and comment ensures that the state water plan serves the public interest.

As demands for water increase, the need for water-related planning escalates. The planning process provides opportunities for involving all affected parties – water users, resource managers, and policymakers, identifies problems, alternatives, and solutions, and allows for continuous updating and revisions in light of new problems and opportunities.

In exercising its responsibilities for water resource planning, the Board will focus on the coordination of local, state and federal planning activities to minimize duplication and to promote the optimum use of Idaho's water resources.

Implementation Strategies:

- ~~Review and update existing agreements for coordinated water resource planning.~~
- ~~Develop new cooperative planning agreements.~~
- ~~Secure funding to complete~~ Complete CAMPs for priority aquifers consistent with the schedule established by the Board.

Milestones:

- ~~Cooperative planning agreements executed and implemented.~~
- ~~Adoption of Treasure Valley and Rathdrum Prairie CAMPs.~~
- ~~Completion and adoption~~ Adoption of CAMPs for remaining priority aquifers.

3F - WATER RIGHTS ADJUDICATION

Adjudication of water rights through the state courts should be completed to fully define and quantify all state, tribal, and federal water rights.

Discussion:

The purpose of a general stream adjudication is to provide certainty and predictability in the administration and distribution of water diverting from hydraulically connected water sources. "A general adjudication is an action for both the judicial determination of the extent and priority of the rights of all persons to use water from any water system within the state of Idaho that is conclusive as to the nature of all rights to the use of water in the adjudicated water system, except as provided in section 42-1410, Idaho Code and for the administration of those rights." Idaho Code § 42-1401A(5). The need for a general adjudication of water rights in the Snake River Basin became apparent as the spring flows in the Thousand Springs reach began to decline and disputes arose over the availability of water supplies on the Snake River Plain. As part of the 1984 Swan Falls Agreement, the state agreed to commence the Snake River Basin Adjudication ("SRBA"), the largest legal proceeding in the history of the state. The SRBA is the cornerstone for the long-term management of the Snake River Basin within Idaho. At the conclusion of the SRBA, the state will have a listing of all water rights within the basin, which is the predicate for establishing water districts to administer all water rights. Pursuant to Idaho Code § 42-1734(3), the Idaho Water Resource Board is authorized to represent the state, when requested to do so by the Governor, in proceedings, negotiations, and hearings involving the federal government. In the SRBA, the Board coordinated state participation in the negotiation of federal reserved water rights, including tribal claims. Successful agreements were negotiated resolving federal reserved water right claims including those filed by the Shoshone-Bannock, Nez Perce, and Shoshone-Paiute tribes as well as the claims of numerous federal agencies. The final settlement of the Nez Perce

Tribe's claims reflected the tribe's and the state's shared interest in addressing environmental concerns and addressed the conflicting demands for consumptive and nonconsumptive uses. Consistent with state law, the Board should serve as the lead agency for coordinating state participation in all general stream adjudications.

On November 12, 2008, the district court ordered the commencement of an adjudication in the Coeur d'Alene Spokane River water system. Like the SRBA, the determination of all existing water rights from the water basins in Northern Idaho will provide the basis for administration of water rights.

Implementation Strategies:

- As requested by the Governor, provide coordination and negotiation of adjudication activities.
- As determined by state and local support, encourage general adjudications in unadjudicated basins in northern Idaho and the Bear River Basin in eastern Idaho.

Milestones:

- Issuance of final unified decree in the SRBA.
- Coeur d'Alene Spokane River Basin adjudication completed.

~~3G - CLIMATE VARIABILITY~~

~~**Preparedness strategies should be developed to account for the impact of climate variability on the state's water supplies.**~~

~~**Discussion:**~~

~~Evidence suggests that currently the Earth's climate is warming and that warming may continue into the foreseeable future. While recognizing the uncertainties inherent in climate prediction, it is important to anticipate how a warming climate can potentially affect water supplies and plan accordingly.~~

~~Climate experts are less confident about how continued warming will affect the overall amount of precipitation Idaho receives, but changes in seasonal stream flows and increased annual variability have been documented. It is expected that seasonal flows in snowmelt-fed rivers will occur earlier, summer and fall stream flows will be reduced, and water temperatures will increase. Increased precipitation in the form of rain and fewer, but more intense, storm events are expected to result in more severe droughts and greater flooding. Potential impacts could also include more evaporation, reduced ground water recharge, water quality challenges, reduced productivity of hydropower facilities, and irreversible impacts on natural ecosystems. Water resource managers must evaluate and plan for these possibilities.~~

~~Planning for the potential impacts of climate variability requires increased flexibility in water management and the identification of existing tools that can be adapted to address~~

climate-induced changes in water supplies. Increased monitoring and data collection as well as conducting an initial vulnerability analysis for watersheds will help managers develop adaptive approaches to changes in the hydrologic regime that may accompany an increase in climate variability. Increasing public awareness and strengthening community and regional partnerships to manage shared water resources are proactive steps that should be taken now to provide for the optimum use of Idaho's water resources.

Implementation Strategies:

- Evaluate existing legal and institutional tools and constraints that can be adapted to provide flexibility for water resource managers.
- Implement a collaborative approach to the analysis of reservoir operation rule curves that adequately considers past and current hydrologic data.
- Pursue expansion and diversification of water supplies, including increased surface and ground water storage.
- Develop and update flood-risk assessments and environmental impact mitigation measures.
- Identify and implement adaptive mechanisms to address the impact of climate variability on water supplies.
- Establish stakeholder forums involving state and local water supply managers, scientists, state and federal agencies, and water users to enhance understanding about the science of climate variability, to share information about existing and potential tools for ameliorating the impact of climate variability, and to increase understanding of the challenges facing water users and managers.

Milestones:

- Completion and implementation of updated flood control rule curves.
- Construction or expansion of water supply projects.
- Finalization of risk assessment studies.
- Documentation of legal and institutional framework and water management tools that anticipate and respond to climate variability.
- Establishment of regional forums that encourage the development of collaborative programs and decision making.
- Funding mechanisms in place for climate variability preparedness and risk assessment.

4. SNAKE RIVER BASIN

The Snake River was described in the 1960s as "A Working River" by Senator (and former Idaho Governor) Len B. Jordan. This description accurately portrays the development of the river since the earliest settlement and irrigation of the semiarid lands of southern Idaho.

The Snake River has had – and continues to have – many competing demands for its water that affect the management of the river, among them: irrigation, hydroelectricity, municipal supply, flood control, recreation, fish, and wildlife management. Multiple governmental agencies regulate activities that affect the use of the waters of the Snake River, among them: the Idaho Water Resource Board (water policy), Idaho Department of Water Resources (water administration), U.S. Bureau of Reclamation (irrigation, water storage, and hydroelectricity), U.S. Army Corps of Engineers (flood control), National Marine Fisheries Service (anadromous fisheries management), U.S. Fish and Wildlife Service (resident fisheries), Bonneville Power Administration (federal power), and the Federal Energy Regulatory Commission (hydropower). The Snake River policies in this Plan provide essential guidance for the management of the Snake River in the public interest. When competing demands for Idaho's unappropriated water resources arise, the laws of the State of Idaho and the policies in this Plan establish the blueprint for management of the resource.

This plan sets forth ten Snake River Basin policies. Policy 4A describes the minimum stream flow management framework that provides for the optimum development of the water resources of the Snake River Basin. Policy 4B reaffirms the Milner Zero minimum average daily flow policy that guides the optimum development of unappropriated flows of the Snake River Basin above Milner Dam. Policy 4C addresses reallocation of Snake River trust water in the Milner to Murphy reach of the Snake River Basin. Policy 4D addresses conjunctive management of the Eastern Snake Plain Aquifer and the Snake River. Policy 4E addresses the need for development of storage in the Snake River Basin. Finally, Policies 4F through 4J set forth policies for agriculture, DCMI (domestic, commercial, municipal and industrial), hydropower, navigation, fish, wildlife, recreation, and scenic values.

Photo: Milner Dam
Photo Courtesy of IDWR Dam Safety Program

4A - SNAKE RIVER MINIMUM STREAM FLOWS

The main stem Snake River above Hells Canyon Dam will be managed to meet or exceed the following minimum average daily flows at the designated stream gaging stations:

Gaging Station	Minimum Average Daily Flow
Milner	0 cfs
Murphy	3,900 cfs (4/1 through 10/31) 5,600 cfs(11/1 through 3/31)
Weiser	4,750 cfs
Johnson Bar	5,000 cfs
Lime Point	13,000 cfs

These minimum stream flows provide the management framework for the optimum development of water resources of the Snake River Basin. The minimum stream flow water rights shall be administered in priority with other water rights.

Discussion:

Approximately 57%[1] of the surface area of the State of Idaho is within the Snake River Basin. Although the Snake River Basin represents 50% of the water resources of the State, it is the water supply for 76% of Idaho's population. Thus, the Snake River Basin is the backbone of Idaho's economy. Effective management of this resource is essential to protecting existing water rights, supporting agriculture, sustaining economic growth, maintaining base flows for hydropower generation, and preserving fish, wildlife, and other environmental values.

The Milner, Murphy and Weiser minimum stream flows have been an integral part of the State Water Plan since their adoption in 1976. They establish a balance between diversion of water for consumptive uses and preservation of Snake River flows for instream uses. The Johnson Bar and Lime Point minimum flows were added in 1978 and 1985, respectively, to address navigational concerns below the Hells Canyon Complex (HCC).

The Snake River minimum stream flow policy evolved over the course of the 20th Century in connection with efforts to reconcile the conflict between irrigation, which requires diverting water out of the stream, and hydropower, which relies on retaining water in the stream. A brief overview of the evolution of the Snake River minimum stream flow framework is provided as context for the Snake River policies that follow.

The inherent tension between diversion of water for consumptive uses and retention of flows for instream uses became apparent with the simultaneous development of the irrigable lands within the Snake River Basin and the development of the hydropower

[1] The Salmon and Clearwater Basins are not included in this calculation because they are treated as separate basins for purposes of the State Water Plan.

potential of the main stem Snake River. The inevitable conflict between these two uses was recognized as early as the 1889 Constitutional Convention, and the tension continued through the 20th Century.

The initial effort to create a balance between irrigation and hydropower development arose out of a 1920 plan prepared by the Board of Engineers "for the development of the remaining resources of the Snake River water supply on a broad and comprehensive basis which would insure to the state the maximum utility of the possibilities of the stream." Report of Board of Engineers (dated April 10, 1920). The Board of Engineers consisted of the State Commissioner of Reclamation and engineers representing the U.S. Reclamation Service and private irrigation interests. The plan was based on the physical division of the Snake River Basin at Milner Dam. Upstream from Milner Dam the Snake River is not deeply entrenched, but below the dam the river enters a deep canyon. This physical characteristic of the Snake River led the Board of Engineers to propose that the Snake River above Milner Dam be dedicated to irrigation because of the ease of diverting the flow through gravity irrigation. The Board of Engineers proposed that the main stem Snake River below Milner Dam should be devoted to hydropower because the flow of the river was largely inaccessible for agricultural development at that time.

The Board of Engineers' plan proposed the construction of storage capacity, to the extent economically feasible, to capture flows above Milner Dam for existing and future agricultural development. Because it would take a number of years to develop the water supply above Milner Dam for agricultural purposes, the Board of Engineers' report recommended hydropower water rights be conditioned to prevent them from interfering with future upstream development. This limitation on hydropower water rights was integral to the Board of Engineers' plan for the "maximum utility" and "greatest use" of the water resources of the Snake River. The Board of Engineers' viewed the plan as not greatly impacting hydropower development because the Snake River soon reconstituted itself downstream from Milner Dam from irrigation return flows, tributary springs, and surface water sources.

The physical differences in the reaches above and below Milner Dam, and the corresponding differences in existing and anticipated development above and below Milner Dam, evolved over time to the commonly-held view of the Snake as consisting of "two rivers." The "two rivers" concept recognizes that separating water administration at Milner Dam and precluding downstream calls for the water above Milner, the optimum development of the water supply above Milner Dam can be achieved. The "two rivers" concept has been repeatedly reaffirmed as part of every major Snake River water project and resolution of every major water controversy. For example, Idaho Power Company's "HCC" water rights were subordinated to upstream consumptive uses, consistent with the "two rivers" concept.

The "two rivers" concept was formally recognized in the 1976 State Water Plan, which set a "protected flow" of zero cfs at the Milner U.S.G.S. Gaging Station. The purpose for establishing a zero flow at Milner Dam was to allow for existing uses to be continued and for some new uses to be developed. The 1986 State Water Plan, however, recognized that the Milner zero minimum average daily flow policy meant "that river flows downstream from that point to Swan Falls Dam may consist almost entirely of ground-

water discharge during portions of low-water years." The 1992 State Water Plan further clarified that the Milner zero minimum stream flow "is not a target or goal to be achieved, and may not necessarily be desirable." The 1996 State Water Plan was amended by the Idaho Legislature to provide that "the exercise of water rights above Milner Dam has, and may reduce flow at the dam to zero."

The 1976 State Water Plan established minimum average daily flows[2] at the Murphy gage of 3,300 cfs, and the Weiser gage of 4,750 cfs "to maintain water for production of hydropower and other main stem uses." In 1985, the Murphy minimum stream flow was increased to an average daily flow of 3,900 cfs during the irrigation season and 5,600 cfs during the non-irrigation season as part of the resolution of the Swan Falls controversy, which dealt with whether Idaho Power Company's hydropower water rights were subordinate to upstream uses. The 1986 State Water Plan described the Murphy and Weiser minimum stream flows as "management constraints" to "insure that minimum flow levels of Snake River water will be available for hydropower, fish, wildlife and recreational purposes." The 1986 Plan also recognized the hydraulic connection between the Eastern Snake Plain Aquifer and directed that it "be managed as an integral part of the river system."

In 1978, the Idaho Legislature established a minimum stream flow of 5,000 cfs at the Johnson Bar Gaging Station "to retain the stream flows and hydro-base." Chapter 345, 1984 Idaho Sess. L. 884, 886. As part of the Swan Falls Settlement, a minimum flow of 13,000 cfs was established at the Lime Point Gaging Station. These minimum stream flows were initially established to protect navigational flows below the HCC, but now serve to protect flows of the main stem Snake River below the HCC for instream uses. As discussed in Policy 4I, however, the Johnson Bar and Lime Point minimum stream flows are not enforceable against water rights diverting from the waters of the Snake River or surface or ground water tributary to the Snake River upstream of the HCC. Additionally, the Lime Point minimum stream flow cannot be enforced against water rights diverting waters of the Salmon River or surface or ground water tributary to the Salmon River.

To summarize, the Milner, Murphy and Weiser minimum stream flows establish the management framework for optimum development of the water resources of the Snake River Basin above the HCC. The Johnson Bar and Lime Point minimum stream flows protect main stem Snake River flows below the HCC for instream uses.

Implementation Strategies:

- Develop a monitoring program by 2014 to account for fluctuations resulting from the operation of Idaho Power Company's hydropower facilities in the calculation of the Murphy minimum average daily flow.
- Develop tools to predict Snake River flows at the Murphy Gage based on ESPA ground water level trends, precipitation patterns, new appropriations, and changes in conservation practices.

[2] An average daily flow is the average of multiple flow measurements taken during a 24-hour period.

- Develop by 2014 management scenarios to ensure that Snake River flows at the Murphy and Weiser Gages remain above established minimum stream flow levels.

Milestones:

- Snake River minimum stream flows maintained.
- Tools developed to predict Snake River flows at the Murphy Gage.
- Management strategy developed to ensure that Snake River minimum stream flows at the Murphy and Weiser Gages are maintained.

4B - SNAKE RIVER MILNER ZERO MINIMUM FLOW

Water resource policy, planning, and practice should continue to provide for full development of the Snake River above Milner Dam recognizing that the exercise of water rights above Milner Dam has and may reduce flow at the Dam to zero.

Discussion:

Idaho Code § 42-203B(2) provides that "[f]or the purpose of the determination and administration of rights to the use of the waters of the Snake River or its tributaries downstream from Milner Dam, no portion of the waters of the Snake River or surface or ground water tributary to the Snake River upstream from Milner Dam shall be considered." This provision was enacted in 1986 to confirm and clarify the Milner zero minimum stream flow and the "two rivers" concept. Policy 4B reaffirms the Milner zero minimum stream flow and the "two rivers" concept, which have appeared in each successive revision of the Idaho State Water Plan.

Figure 1 shows the annual volume of natural flow passing Milner Dam from 1980 through 2011. Because of year-to-year variability of the natural flow passing Milner Dam, the optimum development of the natural flow will be achieved through storage in surface water reservoirs above Milner Dam and in the ESPA.

Implementation of managed recharge will have an effect on the flow characteristics of the Snake River above and below Milner Dam. Accordingly, while the Eastern Snake Plain Aquifer Comprehensive Management Plan established a long-term annual hydrologic target of 150,000 to 250,000 acre-feet of managed recharge, this target should be phased in to allow for informed water management and planning." The Phase I managed recharge hydrologic target for the Snake River Basin above Milner is to recharge between 100,000 and 175,000 acre-feet on an average annual basis. Based upon data gathered during this initial phase of managed recharge, the Board will consider in 2019 whether to implement the ESPA long-term managed recharge hydrologic target.[3]

[3] The Board entered into a Memorandum of Agreement with Idaho Power Company as part of the 2009 Framework Reaffirming the Swan Falls Settlement dated May 6, 2009, that sets forth additional understandings between the Idaho Power Company and the Board regarding implementation of managed recharge.

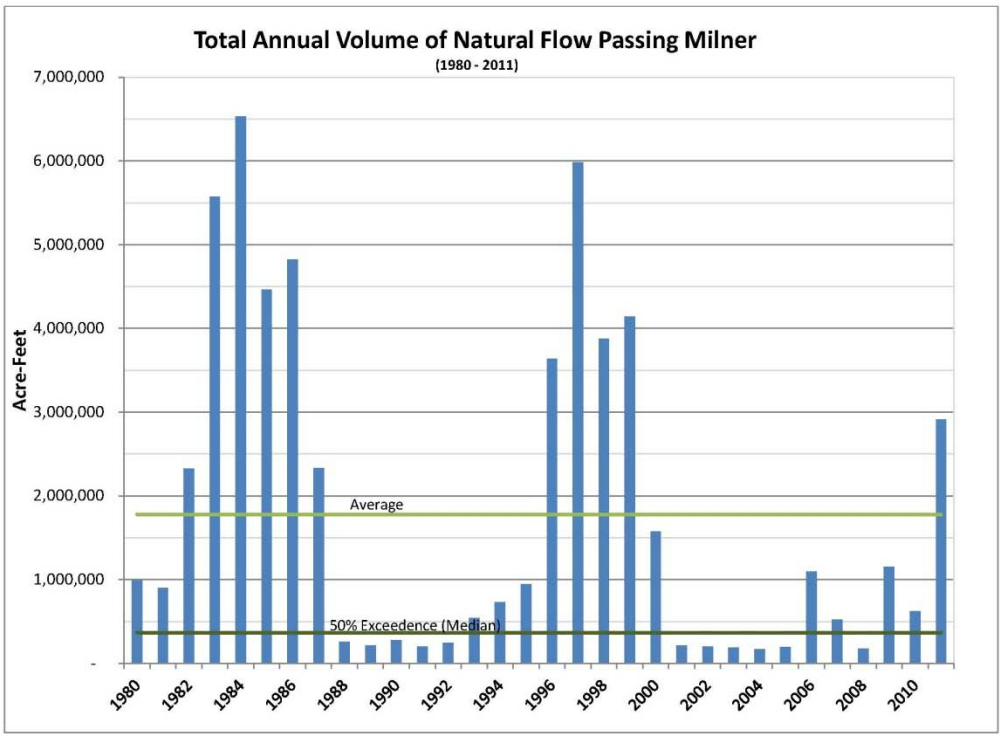

Figure 1 Total Annual Volume of Natural Flow Passing Milner Dam

As discussed in Policy 4E, development of new surface storage will take time. In the interim, the Board will cooperate with stakeholders to explore ways to optimize the management of flows that are currently passing over Milner Dam to first meet water supply needs above Milner Dam, and second to shape any remaining unappropriated flows for hydropower and other uses below Milner Dam.

Consistent with Idaho Code § 42-203B(2), no use of unappropriated flows passing Milner Dam by downstream users establishes a right to call on such flows now or in the future.

Implementation Strategies:

- Develop and maintain a reliable supply of water for existing uses and future beneficial uses above Milner Dam.
- Assess the feasibility of construction of new on-stream and off-stream storage in the Snake River Basin above Milner Dam.
- Implement a sustainable aquifer recharge program.
- Address water management and reservoir operation needs through the Upper Snake River Advisory Committee.
- Measurement and Monitoring Implementation Strategy:
    - Continuously improve the Eastern Snake River Aquifer Model ("ESPAM"), the Snake River Planning Model ("SRPM"), and the Snake River Water Right Accounting Program.

  - Promote linkage of the models and their use in evaluation of impacts of various management decisions on Snake River flows, aquifer levels, and reservoir operations.
  - Undertake measurement and monitoring of the combined river and aquifer system to facilitate water management and planning in the Snake River Basin above Milner Dam.
  - Investigate, test, and adopt new water measurement and modeling methods and technologies that improve water management capabilities.
- Implement and maintain cooperative water resource agreements and partnerships with neighboring states, the federal government, and Indian tribes in managing the water resources of the Snake River above Milner Dam.

Milestones:

- Process in place that provides recommendations to optimize the management of the water resources and the reservoir system above Milner Dam.
- A managed aquifer recharge program above Milner Dam implemented that recharges between 100,000 and 175,000 acre-feet on an average annual basis by 2019 and data gathered to assess the efficacy of the program.
- Projects implemented that enhance the water supply above Milner Dam.

4C - REALLOCATION OF SNAKE RIVER TRUST WATER

Water made available for reallocation to new uses in the Snake River trust water area pursuant to Idaho Code § 42-203B shall be allocated in accordance with criteria established by Idaho Code §§ 42-203A and 42-203C.

Discussion:

The term “trust water” refers to water made available for future development as a result of the 1984 Swan Falls Settlement, which resolved the long-standing conflict between use of the flow of the Snake River for hydropower purposes and for agriculture and other depletionary uses. The details of this century-long conflict are chronicled in two Idaho Supreme Court decisions and the SRBA District Court’s Memorandum Decision and Order on Cross-Motions for Summary Judgment dated April 18, 2008, and therefore, are not repeated here. A brief overview of the trust created by Idaho Code § 42-203B(2), however, is provided as context for this policy.

A core principle of the Swan Falls Settlement is that flows of the Snake River downstream from Milner Dam in excess of the Murphy minimum average daily flow of 3,900 cfs during the irrigation season and 5,600 cfs during the non-irrigation season are available for future development in accordance with state law. The Settlement, however, recognized development would occur over time and that in the interim it was in the public interest to allow Idaho Power Company to continue to use such flows up to the licensed amount of the hydropower water rights “pending approval of depletionary future beneficial uses.”

These dual objectives were implemented through, a trust, established by Idaho Code § 42-203B(2), which operates for the joint benefit of Idaho Power Company and the people of the State of Idaho. The statutory trust consists of twenty-five hydropower water rights originally appropriated by Idaho Power Company for flows in excess of the Murphy minimum flow, and now held by the State, by and through the Governor. Idaho Power Company uses the flows available under the water rights held in trust for hydropower purposes until those flows are appropriated to new uses approved pursuant to state law, including Idaho Code §§ 42-203A and 42-203C. The "reallocation" is accomplished through subordination of the hydropower water rights held in trust to the new uses, pursuant to Idaho Code § 42-203B(2).

While the water made available for future development as a result of the trust is often referred to as "trust water," this term is a misnomer. The trust consists of "water rights" as opposed to "water." Trust Water is simply a shorthand term referring to flows above the minimum stream flow at the Murphy Gage, which were originally appropriated under water rights for hydropower generation at Idaho Power Company's facilities located between Milner Dam and the Murphy Gage. Additionally, the term refers only to water sources tributary to the Snake River below Milner Dam, as shown on Figure 2 (the "Trust Water Area").[4]

The Swan Falls Settlement and the implementing statutes did not attempt to define the specific amount of trust water available for future development. Rather, the availability of trust water is linked to the Murphy minimum flow and a number of other statutory factors. "The actual amount of development that can take place without violation of the [Murphy] minimum stream flows will depend on the nature and location of each new development, as well as the implementation of new practices to augment the stream flow."

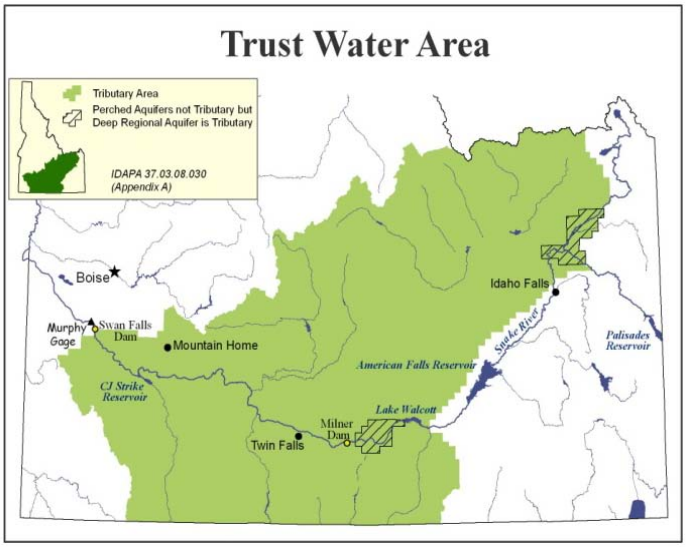

Figure 2 Trust Water Area

[4] Pursuant to the Swan Falls Settlement and Idaho Code § 42-203B(2) "water rights for hydropower purposes on the Snake river or its tributaries downstream from Milner dam shall not place in trust any water from the Snake river or surface or ground water tributary to the Snake river upstream from Milner Dam." Thus, the hydropower water rights held in trust carry no right to seek administration of the rights to the use of the waters of the Snake or its tributaries upstream from Milner Dam.

Figure 3 shows the portions of the hydrograph at Murphy deemed to be "minimum stream flows" and "trust water." [5] A similar hydrograph was prepared in 1988 in connection with the implementation of the Swan Falls Settlement, and included the 1961 average daily flow at the Murphy Gage as representative of the then-existing low flow year. Figure 3 includes average daily flow data from 1984 through 2011 to show the relative change in flow at the Murphy Gage since implementation of the Swan Falls Settlement.

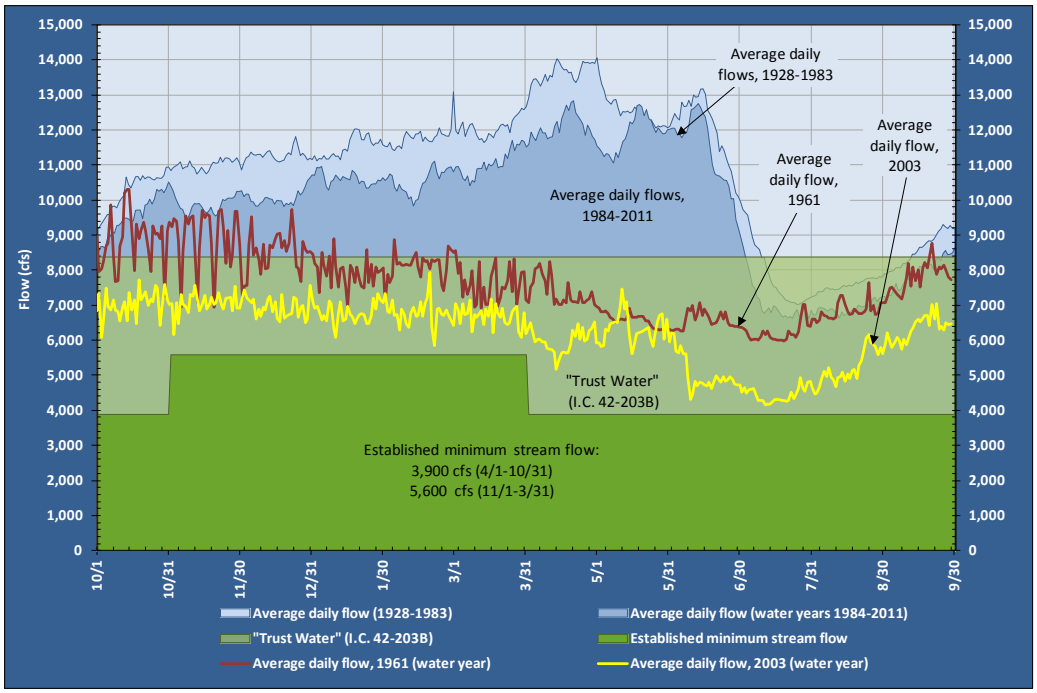

Figure 3 Swan Falls Trust Water Flows

While flows are beginning to approach the minimum average daily flow at the Murphy Gage at certain times in low flow years, Snake River flows in most years are significantly above the Murphy minimum average daily flow.

[5] Figure 3 updates Figure 3 contained in the IDWR Policy and Implementation Plan for Processing Water Right Filings in the Swan Falls Area, dated November 3, 1988, which depicted water made available for appropriation above the Murphy Gage as a result of the Swan Falls Settlement. The 1988 graph plotted average monthly flows, but since that time, technology has made it easier to graph average daily flows. Thus, Figure 3 uses average daily flows as reported by the USGS to provide a more accurate depiction of flow conditions at the Murphy Gage. Specifically, Figure 2 shows average daily flows for 1961 and 2003 and the average of the average daily flows for the years 1928 through 1983 and 1984 through 2010. (The Swan Falls Settlement excludes fluctuations resulting from the operation of Idaho Power Company facilities from the calculation of the minimum average daily flow at Murphy. The methodology for calculating the minimum average daily flow is currently being refined.) The upper limit of the "trust water" portion of the hydrograph at any given location between Milner and Murphy is defined by the hydropower water rights held in trust by the State for the corresponding Idaho Power Company facility. Figure 3 applies only to Murphy, where trust water is limited to that flow between the Murphy minimum stream flow and 8,400 cfs, the amount of the Swan Falls hydropower water right held in trust. The "trust water" available at locations upstream from Murphy is the difference between the Murphy minimum stream flow and the amount of the water rights held in trust for each upstream facility.

The opportunity for further development of trust water is currently limited by three factors. First, there is uncertainty regarding the administration of surface and ground water rights other than hydropower. While the Swan Falls Settlement subordinated the use of the flows of the Snake River for hydropower purposes, it did not address the rights of other senior water right holders. Second, the amount of trust water that remains to be developed is uncertain because some trust water rights were issued for a term of years. Those permits are nearing the end of their terms and are subject to review by the Director. Third, in almost all cases, a moratorium precludes issuance of new water rights within the trust water area. Until these issues are resolved, it is not possible to make informed decisions regarding the allocation of any remaining trust water.

Implementation Strategies:

- Conduct hydrologic studies to determine the amount of additional development possible within the Murphy minimum stream flow constraint.
- Develop a conjunctive management plan setting forth measures necessary for future development of trust water.
- Review term limited trust water rights.

Milestones:

- Quantification of the amount of additional development possible within the Milner to Murphy reach of the Snake River consistent with maintaining the Murphy minimum stream flow.
- Adoption of a conjunctive management plan for the Milner to Murphy reach of the Snake River.
- Complete review term limited trust water rights.

4D - CONJUNCTIVE MANAGEMENT OF THE ESPA AND SNAKE RIVER

The Eastern Snake Plain Aquifer and the Snake River below Milner Dam should be conjunctively managed to provide a sustainable water supply for all existing and future beneficial uses within and downstream of the ESPA.

Discussion:

The ESPA is approximately the size of Lake Erie and underlies more than 10,800 square miles of southern Idaho, stretching from St. Anthony to King Hill. It is one of the largest and most productive aquifers in the world, estimated to contain 1 billion acre feet of water. Most of the ESPA is in direct hydraulic connection with the Snake River. The Snake River alternately contributes water to and receives water from the ESPA.

The volume of water stored in the ESPA derives from natural inputs (precipitation, tributary underflow, seepage from rivers) and from irrigation related inputs (seepage from canals and farm fields). The volume of water stored in the ESPA increased dramatically during the first half of the 20th century as large irrigation canals transported millions of

acre feet of water from the Snake River out on to the Eastern Snake River Plain. Crops were irrigated by flood irrigation, and the water not consumed by the crops percolated into the ESPA as "incidental recharge. As a result, the groundwater table rose across the ESPA by as much as 30-50 feet. The flow of springs near American Falls and in the Thousand Springs reach also increased dramatically. Thousand Springs flows increased from 4,200 cfs prior to irrigation to about 6,800 cfs by the late 1950s. Since then spring flows have declined as a result of more efficient surface water irrigation practices, the termination of winter canal flows, ground water pumping, and drought. Spring flows in the Thousand Springs reach currently are about 5,200 cfs, a decline of just over 20% over the past sixty years. While spring discharges from the ESPA remain above pre-irrigation levels, the decline from peak levels has created conflicts between surface and groundwater users, and in some instances between senior and junior groundwater users.

In most years when irrigation demands exceed water being accumulated to upstream storage reservoirs, flows at Milner Dam are reduced to zero until the end of the irrigation season. At these times the Snake River flow at the Murphy Gage consists mostly of ESPA discharge from the Thousand Springs area.

Recognizing a hydraulic connection between the ESPA and the Snake River, the 1986 State Water Plan identified the need conjunctive management of ground and surface water resources. In recent years, the State has implemented scientific measures to increase knowledge of the hydraulic connection between the ESPA and the Snake River, and implemented measures to improve aquifer conditions in, and spring discharge from, the ESPA. Continuation of these efforts is fundamental to ensuring an adequate water supply for existing and future water demands within the Eastern Snake River Basin.

Conjunctive management of the Snake River Basin water resources is also key to meeting the Murphy minimum stream flows. The 1984 Swan Falls Settlement explicitly recognized effective water management of the ESPA and Snake River – and associated policies and recommendations laid out in the State Water Plan – as the means of ensuring the Murphy minimum average daily flow while optimizing the development of the Snake River Basin: “[t]he State Water Plan is the cornerstone of the effective management of the Snake River and its vigorous enforcement is contemplated as a part of the settlement.” [6]

Building on the existing conjunctive management efforts, the Idaho Legislature in 2006, adopted Senate Concurrent Resolution 136, which requested the Idaho Water Resource Board to develop a CAMP for the Eastern Snake River Plain Aquifer. In January 2009, the Board adopted the ESPA CAMP the goal of which is to “[s]ustain the economic viability and social and environmental health of the Eastern Snake Plain by adaptively managing the balance between water use and supplies.” The objectives of the plan are to

[6] This policy addresses conjunctive management of the Eastern Snake River Aquifer and the Snake River and not water rights administration. Water rights administration is the enforcement of the relative rights of water right holders under the prior appropriation doctrine. As noted in Policy 1E conjunctive management is broader and encompasses actions that can be taken to optimize the benefits and value of Idaho’s water resources. While conjunctive management is not a substitute for water rights administration, it is in the public interest to conjunctively manage the ESPA and the Snake River to lessen or obviate the need for broad-scale water rights administration to accomplish general water-management goals.

increase predictability for water users by managing for a reliable supply, creating alternatives to administrative curtailment, managing overall demand for water within the Eastern Snake Plain, increasing recharge to the aquifer, and reducing withdrawals from the aquifer.

The long-term objective of the ESPA CAMP is to effectuate a net annual ESPA water budget change of 600 thousand acre-feet (kaf) by the year 2030. This change is to be achieved through implementation of measures designed to reduce demand on and to augment the water supply of the ESPA. Approximately 100 kaf of demand reduction is to be achieved through groundwater to surface water conversions, and another 250-350 kaf of demand reduction is to be achieved through various measures designed to retire existing water rights. Aquifer recharge is expected to increase the ESPA water supply by 150-250 kaf.

The ESPA CAMP uses a phased approach to achieving the long-term change in the water budget. The goal of Phase I of the ESPA CAMP is to implement measures that will result in a net annual change in the ESPA water budget of between 200 kaf and 300 kaf. The recommended actions to achieve this change include ground- to-surface water irrigation conversions, managed aquifer recharge, and augmentation of supplies through demand reduction and weather modification. ESPA CAMP Phase I strategies are to be implemented by 2018 with ongoing monitoring and evaluation of the intended and unintended effects of the strategies. The Phase I monitoring and evaluation studies will be used to select, design, and implement Phase II strategies that will lead to an additional 300-400 kaf water budget change.

Policy 4D embraces the conjunctive management goals and objectives of the ESPA CAMP. Implementation of the ESPA CAMP will improve the opportunities to adaptively manage and optimize water supplies within and downstream of the ESPA, may result in: increased gains in some river reaches; improved storage carryover; increased aquifer levels; opportunities for municipal and industrial growth; reductions in overall consumptive use; increased spring discharge rates; and an ongoing public process for assessing the hydrologic, economic, and environmental issues related to the implementation of management strategies.

Most of the human made changes to the ESPA water balance during the past decades are reflected in current aquifer levels and spring flows. Continued changes in irrigation practices (e.g., conversion from gravity irrigation to sprinkler irrigation) and future climate variability, however, may create additional impacts to ESPA aquifer levels and aggregate spring discharge. Such impacts affect not only the ESPA area but also the Snake River downstream of the ESPA, because aggregate spring discharge from the Thousand Springs reach is the primary source of river flows in the Milner to Murphy reach during portions of some years.

To date, efforts to monitor and measure ESPA groundwater levels, diversion volumes, and river reach/gains have focused on the ESPA, individual springs discharging water from the ESPA, and reaches of the Snake River hydraulically-connected with the ESPA. Because of the importance of the ESPA discharge on downstream reaches of the Snake River, however, it is imperative that an enhanced spring-flow monitoring program be

developed to provide the information necessary for identifying, tracking, and predicting future spring discharge trends. Such a monitoring program needs to include long-term measurements of aggregate annual spring discharge (as opposed to point-in-time discharge from individual springs) and ESPA ground water levels.

Sustaining Snake River minimum stream flows downstream of the ESPA may require short-term and long-term adaptive management measures. A monitoring program aimed at identifying long-term spring discharge trends in the Snake River Thousand Springs reach should be designed to support the development of one or more adaptive management "triggers" based on pre-determined observed or predicted change in aggregate spring discharge rate, aquifer levels, and/or Snake River flow. The triggers should be used to initiate adaptive management measures that address the cause – or impacts – of any unacceptable decline in Snake River flow downstream of the ESPA.

Monitoring efforts and adaptive management measures are crucial to sustaining the economic viability and social and environmental health of the ESPA and the Snake River. Successful adaptive management strategies, built on the principles of conjunctive management of ground and surface water, supported by scientific understanding and reliable data that take into account the complex and interrelated nature of Snake River subbasins, will accomplish two goals: 1) ensure an adequate and sustainable water supply for existing and future uses, and 2) reduce conflicts between ground and surface water users.

Implementation Strategies:

- Implement actions delineated in the ESPA CAMP that will enhance aquifer levels and spring flows.
- Continue existing efforts to measure and monitor ground and surface water diversions, water levels, spring discharge rates, and Snake River reach gains/losses, and quantify ground and surface water interactions.
- Develop and implement a monitoring program to better predict the occurrence and duration of future low flows in the Snake River.
- Create a working group to assist in the development of a spring monitoring program.
- Update the Snake River: Milner Dam to King Hill Part B State Water Plan to incorporate ESPA CAMP goals and objectives and to account for water management developments since its adoption.

Milestones:

- ESPA CAMP hydrologic conjunctive management targets met or exceeded.
- Snake River flows at the Murphy and Weiser Gages remain at or above established minimum stream flows.
- Reduced water-related conflict in the Snake River Basin.
- Revision of Part B of the State Water Plan.

4E - SNAKE RIVER BASIN NEW STORAGE

Development of new on-stream, off-stream, and aquifer storage is in the public interest; provided, however, applications for large surface storage projects in the Milner to Murphy reach of the Snake River should be required to mitigate for impacts on hydropower generation.

Discussion:

ESPA Managed Recharge Pilot program

Recharging aquifers as a water supply alternative has significant potential to address water supply needs, in addition to addressing conjunctive management issues. Pursuant to the ESPA CAMP, the Board is undertaking a five-year pilot program of managed aquifer recharge to the Eastern Snake Plain Aquifer. One of the potential benefits of managed recharge in the ESPA is increased water storage in the aquifer. Effectiveness monitoring and evaluation results will be used to select and design future managed recharge strategies and projects.

Surface Water Projects

New Snake River surface storage projects should be investigated and constructed if determined to be feasible. Although there are major dams and reservoirs designed for water storage, flow regulation, and flood control on the Snake River and its tributaries, their existing capacity is insufficient to provide the water supply and management flexibility needed for the myriad of existing and future beneficial uses.

Diversion of water from the main stem of the Snake River between Milner and the Murphy Gaging station for storage during the period November 1 to March 31 will have a significant impact on hydropower generation. Thus, any new storage projects in this reach should be coupled with provisions that mitigate for the impact of such storage depletions on hydropower generation. The term “mitigation” is defined as causing to become less harsh or hostile, and is used here rather than “compensate” which connotes equivalence. Methodology will be developed for use in calculating impacts on hydropower generation as part of any application to construct new storage within this reach of the Snake River.

A number of studies focusing on water storage as one potential measure for addressing water supply demand and flood risk reduction are underway. This section provides a brief description of the most significant studies that have been initiated or are in the planning process.

Henry’s Fork Project/Teton River Basins

The Board and the U.S. Bureau of Reclamation are conducting a study of water resources in the Henry’s Fork/Teton River Basins to develop alternatives for improving water supply conditions in the Eastern Snake Plain Aquifer and upper Snake River Basin. These alternatives include new water storage projects, enlargement of existing reservoirs,

and conservation and water management strategies, including managed aquifer recharge and automated water delivery systems.

Minidoka Dam Enlargement

In the 1980s, the Bureau of Reclamation and irrigation districts initiated the required planning process and feasibility studies to replace the spillway and two canal headworks due to the state of deterioration and potential for ongoing damage to sections of the Minidoka Dam. In 2008, the Board partnered with the Bureau of Reclamation to also evaluate the structural raising of Minidoka Dam to accommodate a 5-foot rise in normal reservoir surface elevation, in conjunction with planned spillway repairs. The study found that a 5-foot rise is technically feasible, and would provide an additional 67,000 acre-feet of storage with an average annual yield of 33,000 acre-feet. Funding for the enlargement of Minidoka Dam, however, is currently not available. If economic or other conditions change, the Board will consider further evaluation of this storage option.

~~ESPA Managed Recharge Pilot program~~

~~Recharging aquifers as a water supply alternative has significant potential to address water supply needs, in addition to addressing conjunctive management issues. Pursuant to the ESPA CAMP, the Board is undertaking a five-year pilot program of managed aquifer recharge to the Eastern Snake Plain Aquifer. One of the potential benefits of managed recharge in the ESPA is increased water storage in the aquifer. Effectiveness monitoring and evaluation results will be used to select and design future managed recharge strategies and projects.~~

Lower Boise River Interim Feasibility Study

The lower Boise River corridor, from Lucky Peak Dam to its confluence with the Snake River has experienced rapid population growth and significant urban development over the past several decades. As a consequence, there is renewed interest in addressing water supply and flood control issues. Interest has also been expressed in environmental restoration, to include habitat preservation, aesthetics and recreation along the Boise River.

In 2009, the Board and the U.S. Army Corps of Engineers partnered to conduct an Interim Feasibility Study focused on water storage potential and flood reduction in the Boise River Basin. A preliminary analysis ranked an enlargement of Arrowrock Reservoir as the highest priority alternative, followed by the construction of a new reservoir at the Alexander Flat site and a new reservoir at the Twin Springs site. A preliminary analysis completed in 2011 concluded that based on existing information, raising Arrowrock Dam is technically feasible. The evaluation identified a number of uncertainties that will be addressed during future study and data collection efforts, as funding becomes available.

Weiser-Galloway Gap Analysis, Economic Evaluation and Risk-Based Cost Analysis (Gap Analysis)

Water storage on the Weiser River and at the Galloway site has been studied for decades. In 1954, the Corps received a study authorization resolution for the Galloway Project

from the U.S. Senate Public Works Committee. In the early 1970s, federal lands for the potential Galloway dam and reservoir site were classified and withdrawn for hydropower purposes by the Federal Power Commission (now FERC). In 2008, Idaho House Joint Memorial 8 directed the Board to investigate water storage projects statewide, including the Weiser-Galloway Project. The Board and the Corps partnered to conduct a "Gap Analysis" which was completed in March 2011. The Gap Analysis was designed to inform decision makers of critical information gaps that need to be addressed before deciding whether to move forward with comprehensive new environmental, engineering, and economic feasibility studies. The analysis identified two critical information gaps that must be resolved before moving forward:

1. Determine the safety, suitability, and integrity of geologic structures at the potential dam and reservoir site.
2. Evaluate whether basin and system benefits would be realized by analyzing a series of system operating scenarios with a range of new storage options on the Weiser River. Potential benefits include flood risk reduction, hydropower, additional water storage, pump back, irrigation, recreation, and flow augmentation requirements for anadromous fish recovery. On July 29, 2011, the Idaho Water Resource Board authorized expenditure of up to $2 million to address these questions, and the required studies are currently underway.

Implementation Strategies:

- Implement a long-term managed aquifer recharge program to achieve an average annual recharge of 250,000 - 300,000 acre feet. In recognition that implementation of managed recharge will have an effect on the flow characteristics of the Snake River above and below Milner Dam and in order to confirm the relative merits of managed recharge, the Board's managed recharge program will be limited to not more than 175,000 acre-feet on an average annual basis until January 1, 2019.
- Evaluate the economic, social and environmental benefits and costs of the proposed surface projects.

Milestones:

- Aquifer recharge program implemented.
- Actions taken to determine feasibility of identified storage projects.

4F - SNAKE RIVER BASIN AGRICULTURE

Development of supplemental water supplies to sustain existing agricultural development is in the public interest.

Discussion:

Agricultural use accounts for about 85% of the total diversions of the water of the Snake River Basin. Approximately 3.4 million acres of land are irrigated with surface water and

1.13 million acres of land are irrigated with ground water. As discussed more fully in Policy 4B, it has been the policy of the State since the adoption of the first state water plan to encourage the development of on-stream and off-stream storage above Milner Dam to capture unappropriated flows to the extent economically feasible for existing and future agricultural development and other beneficial uses in the Snake River Basin above the Dam.

As a result of the Swan Falls Settlement, the flow of the Snake River between Milner Dam and the Murphy Gage in excess of the Murphy minimum stream flow is available for future agricultural and DCMI development. As discussed in Policy 4C, however, the opportunity for additional agricultural development of the waters of the Snake River and surface and ground water tributary to the Snake River between Milner Dam and the Murphy Gage is limited because of the conflicts over conjunctive management of Thousand Springs flows and a moratorium on the issuance of new permits within this reach of the Snake River issued on April 30, 1993.

In summary, agricultural development for the foreseeable future is likely to be limited because of the absence of a reliable water supply. To the extent new agricultural development occurs, it is likely to be located on streams tributary to the main stem Snake River. Appropriation of water for agriculture likely will be for a supplemental water supply to address existing water shortages.

Implementation Strategies:

- Identify and develop opportunities to acquire water to address existing agricultural water supply shortages.
- Encourage the more efficient use of existing water supplies where such action will provide water to address existing agricultural water supply shortages.

Milestones:

- Existing water supply maintained.
- Supplemental water supply developed.
- Enrollment of agricultural lands into Conservation Reserve Enhancement Program (CREP).
- Implementation of water conservation projects that reduce demand.
- Acres in agricultural production maintained.

4G - SNAKE RIVER DOMESTIC, COMMERCIAL, MUNICIPAL AND INDUSTRIAL USES (DCMI)

It is in the public interest to ensure the availability of water for future DCMI uses in the Snake River Basin.

Discussion:

While most DCMI water uses are largely nonconsumptive, future growth in Idaho's population and commercial and industrial expansion require a sustainable water supply.

Snake River Above the Murphy Gage

As discussed in Policy 4C, the flow of the Snake River between Milner Dam and the Murphy Gage is approaching the Murphy minimum flow of 3,900 cfs at certain times in low flow years. Implementation of the strategies in Policy 4D is essential to identifying the amount of trust water available to meet future DCMI uses in this reach of the Snake River.

Snake River Below the Murphy Gage

DCMI demands on the Snake River downstream of the Boise River drainage are anticipated to grow at a slow to moderate rate but the increased demands are not as pressing as in the lower Boise River area.

Boise River Basin

As discussed in Policy 4E, the lower Boise River area has experienced rapid population growth over the past several decades with land-use changing from agriculture to urban use. Water supply for DCMI uses is forecasted to be one of the most pressing water supply issues in this area. Additional DCMI demands are particularly pressing upstream of Star located on the Boise River.

The principle source of water for DCMI in the Boise River Basin is ground water, however, there is unappropriated water during the spring runoff that could be captured and stored. Thus, while increased demand for DCMI use may be partially met by water conservation and some decrease in or conversion from agricultural production, additional strategies, such as aquifer and surface water storage, efficient water marketing systems, and water re-use must be evaluated. Because the Treasure Valley water system is a complex system of ground and surface water, further studies are underway to determine the contribution of surface water to aquifer recharge and the importance of aquifer discharge to surface water systems.

Implementation Strategies:

- Maintain existing surface irrigation distribution system and establish dual-use residential systems to preserve incidental recharge to aquifers.
- Develop flexible water marketing tools to facilitate rental and/or acquisition of water rights for new uses on a willing buyer/willing seller basis. Water acquisition strategies, however, must account for any adverse hydrologic, economic, and social impacts.
- Evaluate opportunities to enhance water supplies including but not limited to, ground water conservation, additional storage, and water re-use.
- Support programs that protect water quality for DCMI use.

Milestones:

- Completion of water supply enhancement projects.
- Infrastructure in place to distribute surface irrigation water to lands undergoing conversion from agricultural to residential.

4H - SNAKE RIVER HYDROPOWER USE

Hydropower generation is a beneficial use of the flow of the Snake River, and it is in the public interest to protect the minimum average daily flows set forth in Policy 4A as a base flow for hydropower use.

Discussion:

The Snake River and related tributaries provide Idaho with significant hydropower energy resources. Hydropower generation is a beneficial use of the waters of the Snake River, supplying approximately 65% of the State's energy production and ensuring that Idaho electric rates are among the lowest in the nation. Through enactment of Idaho Code § 42-203B the State established the framework for balancing the use of the flow of the Snake River for hydropower and other instream purposes and the diversion of flow for depletionary uses.

As discussed in Policy 4C, the Swan Falls Settlement recognized the Snake River minimum stream flows set forth in Policy 4A provide an adequate base flow for hydropower use. While hydropower water rights in excess of the Murphy minimum average daily flow are subject to subordination to future consumptive uses approved in accordance with state law, the Swan Falls Settlement allows Idaho Power Company to use up to the decreed amount of the hydropower water rights held in trust by the State of Idaho for power generation pending reallocation of such flows for future consumptive uses.

The HCC, which represents the majority of Idaho Power's hydropower generation capacity, is the largest privately owned hydroelectric project in the United States. The FERC license for the HCC expired in 2005, and Idaho Power is currently operating the project under annual licenses while FERC processes Idaho Power's pending relicense application. The new license for the HCC will determine the operating conditions for the project and address the protection and enhancement of recreational, aesthetic, navigation, and fish and wildlife resources in the reach of the Snake River affected by the project. The Board is participating in the FERC licensing proceeding to ensure the new license for the HCC includes operational conditions that preserve and enhance the generation capacity of the project in a manner consistent with the State Water Plan.

Implementation Strategies:

- Develop technical tools capable of assessing the impact of actions within the Snake River hydrologic system on the minimum stream flows of the Snake River.

- Evaluate management and administrative activities to determine the intended and unintended consequences of meeting the minimum stream flows on the Snake River.

Milestones:

- Minimum flows are maintained for power generation.

4I - SNAKE RIVER NAVIGATION

The minimum stream flows set forth in Policy 4A are sufficient for commercial and recreational navigation on the Snake River.

Discussion:

Above Milner Dam the flow of the Snake River is completely regulated; therefore, no base flow for navigation is proposed for this reach of the Snake River. The Murphy and Weiser minimum stream flows set forth in Policy 4A provide a sufficient base flow for recreational and commercial navigation in the Snake River between Milner Dam and the Hells Canyon Dam.

Below HCC, the Snake River flows into a steep and spectacular gorge that cuts through the Salmon River Mountains and Blue Mountains of Idaho and Oregon. Hells Canyon is one of the most rugged and treacherous portions of the Snake River. The river flows 8,000 feet below the He Devil Peak of Idaho's Seven Devils Mountains. The Salmon River is a major tributary in this reach of the Snake River.

The Hells Canyon reach of the Snake River below the HCC provides unique recreational opportunities, including rafting, fishing, private and commercial jet boating, hiking, camping, and wildlife viewing. The area is a tourist destination that positively contributes to the local and regional economy. As such, providing adequate navigation conditions for private and commercial boating below the HCC is in the public interest.

Photo: Rafting on the Snake River in Hells Canyon
(*Photo Courtesy of IDWR Staff*)

The license issued by the Federal Power Commission for the HCC in 1955 addressed navigational flows below the HCC. Article 43 of the power HCC license provides that:

> *The project shall be operated in the interest of navigation to maintain 13,000 cfs flow in the Snake River at Lime Point (river mile 172) a minimum of 95 percent of the time, when determined by the Chief of Engineers to be necessary for navigation. Regulated flows of less than 13,000 cfs will be limited to the months of July, August, and September, during which time operation of the project would be in the best interest of power and navigation, as mutually agreed to by the Licensee and the Corps of Engineers. The minimum flow during periods of low flow or normal minimum plant operations will be 5,000 cfs at Johnson's Bar, at which point the maximum variation in river stage will not exceed one foot per hour. These conditions will be subject to review from time to time as requested by either party . . . .*

This license article has governed navigation flows since the original licensing of the HCC in 1955.

In the 1976 State Water Plan, the Board concluded that there was sufficient water in excess of the minimum flows established at the Milner, Murphy, and Weiser gaging stations to provide for additional uses and development and also allow for the navigation flow targets in Article 43 of the HCC license to be met without significantly affecting hydropower production. Based upon these conclusions, the 1976 State Water Plan found providing flows consistent with Article 43 was in the public interest. The 1976 Plan, however, did not establish minimum stream flows at Johnson Bar or Lime Point.

In 1978, the Idaho Legislature, through enactment of Idaho Code § 42-1736A, created a minimum stream flow at Johnson Bar to provide for "stream flows and hydro-power base" below the HCC. Through the adoption of the 1986 Idaho State Water Plan a minimum stream flow was established at Lime Point. Both minimum stream flows were recognized as providing a sufficient base flow for recreational and commercial navigation below the HCC. Consistent with the HCC FERC license, the Johnson Bar and Lime Point minimum stream flows, however, are subordinated to upstream consumptive uses above the HCC and carry no right to seek the release of water from the HCC other than that required to be released by the terms of the FERC license.

As discussed in Policy 4F, FERC is in the process of relicensing the HCC. Various state and federal agencies exercise jurisdiction over resources in Hells Canyon and each of these agencies, together with private interests are parties to the HCC relicensing proceedings pending before FERC. Section 10(a)(1) of the Federal Power Act requires that a FERC licensed project "be best adapted to a comprehensive plan for improving and developing a waterway"; which requires a balancing of public interest factors. The FERC will set forth navigational flow conditions in the final license for the HCC. The Board will participate in the FERC relicensing process to ensure navigational flow conditions are consistent with the State Water Plan.

Implementation Strategies:

- Participate with state and federal agencies in FERC relicensing proceedings to ensure the new FERC license for the HCC is consistent with the State Water Plan.

Milestones:

- When issued, FERC license consistent to Idaho State Water Plan.

4J - SNAKE RIVER FISH, WILDLIFE, RECREATION, AND SCENIC RESOURCES

The minimum stream flows set forth in Policy 4A provide adequate flows for Snake River fish, wildlife, recreation, and scenic values in the main stem Snake River below Milner Dam. Protection for fish, wildlife, recreation, and scenic uses in tributaries to the Snake River should be addressed through Part B of the State Water Plan and the establishment of minimum stream flows pursuant to Chapter 15, Title 42, Idaho Code. The Board finds that implementation of the collaborative agreements provide benefits for fish, wildlife, recreation, and scenic values.

Discussion:

In addition to the Policy 4A main stem Snake River minimum stream flows, over fifty minimum stream flows have been established in the Snake River Basin above the HCC and protected rivers have been designated through the adoption of Part B state water plans. Additional protections for fish, wildlife, recreation, and scenic resources in Snake River tributary streams should be pursued through the Board's minimum stream flow and water planning processes.

The State has entered into a number of voluntary agreements that benefit fish, wildlife, recreation, and scenic values while protecting existing water rights and uses and providing for economic stability. The agreements described below.

Snake River Flow Augmentation

The State of Idaho, as part of the 2004 Snake River Water Rights Agreement, established a flow augmentation program that provides water for salmon and steelhead listed under the ESA. Pursuant to the provisions of the biological opinion for the Federal Columbia River Power System ("FCRPS"), and the 2004 Snake River Water Rights Agreement, the U.S. Bureau of Reclamation annually seeks to rent up to 487,000 acre-feet of water from willing lessors in Idaho for Snake River flow augmentation to assist in offsetting the impact of the FCRPS. Although flow augmentation from the upper Snake River has proven to be controversial because of the uncertainty regarding specific benefits to ESA-listed fish, the State of Idaho cooperates with the federal program (see Idaho Code § 42-1763B) as a means of providing incidental take coverage for U.S. Bureau of Reclamation project operations in Idaho.

This flow augmentation program consists of two tiers. Tier 1 minimum flows are those established through implementation of the Swan Falls Settlement. Tier 2 provides for the rental of up to 427,000 acre feet of storage water in accordance with the provisions of Idaho Code § 42-1736B and the Snake River flow component of the 2004 Snake River Water Rights Agreement. The 2004 Snake River Water Rights Agreement also allows for the United States to rent up to 60,000 acre feet of consumptive natural flow water rights through the Board's water bank in accordance with state law. The Board acquired the natural flow water rights of the Bell Rapid's irrigation project and is leasing a portion of those water rights to the U.S. Bureau of Reclamation to provide the 60,000 acre feet of natural flow water. The rental agreement provides that "protection of the Leased Water . . . will result in the protection of 48,320 acre-feet during the period of April 10 through August 31 of each year for the term of the Agreement."

The state agreed to the implementation of the flow augmentation program for the term of the Biological Opinion as a means of protecting existing water rights and uses and providing for economic stability. It is important, however, that evaluation of the efficacy of flow augmentation be conducted in conjunction and/or cooperation with other State and Federal agencies and regional interests.

Hells Canyon National Recreation Area

The early controversy over the development of Hells Canyon gave rise to emerging concerns about the preservation of the region's natural features and ultimately led to enactment of the Hells Canyon National Recreation Area Act of 1975, which precluded future hydropower development in the Hells Canyon reach of the Snake River. The Act also designated the Snake River as "wild" (Hells Canyon Dam to Pittsburg Landing) and "scenic" (Pittsburg Landing to 37 miles south of Lewiston) to preserve the free-flowing character and unique environment while providing for continued public use. While providing protection to these important resources, the Act also protects present and future uses of the waters of the Snake River for consumptive or non-consumptive beneficial uses, including domestic, municipal, stock water, irrigation, mining, power, and industrial uses. The Act specifically provides that no flow requirements of any kind may be imposed on the waters of the Snake River below Hells Canyon Dam under the provisions of the Act, or any rules, regulations, or guidelines adopted pursuant to the Act. Pursuant to an agreement between the state and the federal government, the United States' federal reserved water rights associated with the HCNRA are limited to the tributary streams of the Snake River within the HCNRA. The decrees quantifying the federal reserved water rights on streams tributary to the main stem Snake River contain subordination provisions that protect existing rights and allow for a limited amount of future development on the tributary streams.

Owyhee Initiative

In 2009, Congress enacted the Owyhee Public Land Management Act, Pub. L. 111-11, 123 Stat. 1037. This Act set aside certain lands in southwestern Idaho as wilderness. The Act was the result of a collaborative effort initiated by the Owyhee County Commissioners to resolve decades-old land management issues in Owyhee County. The goal was to develop and implement a landscape-scale program that preserves the natural character of the area while providing for economic stability and growth. Central to local

support for enactment of the Act was the 2006 Owyhee Initiative Water Rights Agreement, which provided for a balance between instream and out-of-stream water uses within the Owyhee River Basin. The 2006 Agreement recognizes the ecological importance of stream and river flows in this arid region and recognizes local citizens' desire to maintain and protect their current way and quality of life. The 2006 Agreement calls for memorializing this balance through subordination language in the decreed federal reserved water rights for the designation of river segments that sets aside a certain amount of water for future development. The Agreement was signed by a local collaborative group that included ranchers, conservationists, landowners, business interests, outfitters, and off-road recreationists. Implementation of this water rights agreement will provide additional fish and wildlife benefits for the Owyhee River Basin.

Implementation Strategies:

- Maintain existing minimum stream flows and evaluate the need for additional minimum stream flows.
- Ensure the flow augmentation plan of the 2004 Snake River Water Rights Agreement is implemented consistent with the Agreement.
- In conjunction and/or cooperation with other state and federal agencies and regional interests, evaluate the efficacy of the flow augmentation program.
- Ensure the federal reserved water rights decreed as part of the implementation of the Owyhee Public Land Management Act contain subordination provisions consistent with the 2006 Owyhee Initiative Water Rights Agreement.
- Ensure new appropriations of water are consistent with the subordination provisions of the reserved water rights for the HCNRA and the Owyhee wild and scenic rivers.

Milestones:

- Minimum stream flows maintained and new minimum stream flows are established as needed.
- Snake River flow augmentation is conducted in accordance with the terms of the 2004 Snake River Water Rights Agreement.
- Flow augmentation evaluation studies underway or completed.
- Federal reserved water rights decreed for Owyhee wild and scenic rivers contain subordination provisions consistent with the 2006 Owyhee Water Rights Agreement.
- New appropriations of water in the streams tributary to the Snake River within the Hells Canyon National Recreation Area satisfy the subordination requirements contained in the federal reserved water right decrees.
- New appropriations within the Owyhee River Basin satisfy the subordination requirements contained in the federal reserved water right decrees for the Owyhee wild and scenic river reaches.

5. BEAR RIVER BASIN

5A - BEAR RIVER COMPACT IN THE BEAR RIVER BASIN

Water use and management in the Bear River Basin shall conform to the allocations agreed to in the Bear River Compact.

Discussion:

The original Bear River Compact was signed into law on March 17, 1958, and amended on February 8, 1980. Idaho Code § 42-3402. The Compact was negotiated to provide for the efficient use of water for multiple purposes, to permit additional development, to promote interstate comity, and to accomplish the equitable apportionment of the waters of the Bear River among Idaho, Utah, and Wyoming. Water allocations for the Bear River Basin were adopted in 1978. The Compact is administered by an interstate administrative agency, the Bear River Commission, which is comprised of three members from each state and a non-voting federal chairman. The Bear River Commission must review the Compact at intervals of not more than twenty years and may propose amendments.

The Compact divides the Bear River into three divisions and treats allocation differently in each. The Upper Division of the river extends from its source in the Uinta Mountains, to and including Pixley Dam Wyoming. The Central Division includes the portion of the Bear River from Pixley Dam to, and including Stewart Dam. The Lower Division of the Bear River includes the flow from Stewart Dam to the Great Salt Lake and encompasses Bear Lake and its tributary drainage. The Compact makes allocations for the diversions of surface water, the storage of water above Bear Lake, ground water depletion, and future development. The allocation provisions for the three divisions of the Bear River apply only during times of shortage.

Idaho and Utah are implementing conjunctive management of surface and ground water. Idaho's Bear River Conjunctive Management Plan guides the development of ground water in the Bear River Ground Water Management Area. Although initial estimates of ground water depletions in the Lower Division indicate equal depletions in Idaho and Utah, the Idaho Water Resource Board encourages the Bear River Commission to prioritize additional studies to determine the effects of ground water use on the Bear River system.

Implementation Strategies:

- Encourage and assist the Bear River Commission to initiate further study and consideration of the effects of ground water use on Bear River surface flow.
- Ongoing review of Bear River Compact implementation and related issues, including depletion calculation procedures.

Milestones:

- Studies completed on the interaction between ground water and surface water in the Bear River Basin.

5B - BEAR RIVER BASIN WATER MANAGEMENT IN THE BEAR RIVER BASIN

The Idaho Water Resource Board supports enhancing water supplies, increasing water use efficiency, and implementing water supply bank mechanisms to help meet future water needs in the Bear River Basin.

Discussion:

The Bear River Compact designates how the undeveloped water supplies of the Bear River are to be allocated among Idaho, Utah, and Wyoming. The Compact allocates a first right to development and depletion of water not currently allocated in the Lower Division to Idaho, in the amount of 125,000 acre feet. In addition to the efficient use of existing developed water supplies, the state should move forward with the development of Idaho's depletion allocations as provided for in the Compact.

Ground water is available for development, but its development cannot injure existing senior water rights. In 2001, the Department established the Bear River Ground Water Management Area and created an advisory committee to provide guidance in the preparation of a ground water management plan. The Bear River Ground Water Management Plan, adopted in 2003, provides for managing the effects of ground water withdrawals to accommodate projected growth and water demand in the Bear River Basin, while protecting senior priority surface and ground water rights from injury. In addition to the use of mitigation plans that protect existing rights, the plan encourages flexible strategies for making water available for new development including new surface storage, ground water recharge projects, and transfers of existing rights through water banking and other marketing mechanisms. The ground water management plan encourages the wise use of available water supplies and continues the involvement of a local advisory committee in the development of management policies for the area. To address declining ground water levels, the Bear River Basin has been designated as a priority basin for the development and implementation of a comprehensive aquifer management plan.

Idaho Code § 42-1765 authorizes the Idaho Water Resource Board to create a local rental pool to facilitate marketing of stored water. A Bear River rental pool would provide the advantage of being locally managed and controlled, with the flexibility to develop specific procedures designed to address special conditions existing in the basin. Use of water supply banks also provides protection from forfeiture for unused water rights in Idaho and a source of funding for improving water management. Cooperation between Idaho, Utah, and PacifiCorp will be required to establish a storage rental pool for Bear Lake.

Implementation Strategies:

- Initiate further discussion concerning the development of a Bear River storage water rental pool with the Bear River Commission, Utah, and PacifiCorp.
- Develop strategies to improve water supplies and reduce demand through the implementation of a CAMP, in coordination with Utah, Wyoming, and PacifiCorp.

Milestones:

- Bear River Basin comprehensive aquifer management planning underway.
- Strategies developed to meet future water needs.
- Local storage rental pool established.
- Development of Idaho's depletion allocation.

5C - INTERSTATE WATER DELIVERY IN THE BEAR RIVER BASIN

Idaho water users in the Lower Division of the Bear River Basin must be protected from inequitable water allocation in the event of a water emergency and the scheduling of interstate water deliveries.

Discussion:

The Bear River Compact authorizes the Bear River Commission to implement a water delivery schedule in the Lower Division without regard to state boundaries if the Bear River Commission finds that a "water emergency" exists. Idaho Code § 42-3402. This provision was intended to apply only to true emergency conditions which must be determined using comprehensive accounting processes. Idaho and Utah have developed separate, but similar water accounting models that incorporate the rights identified in the Commission Approved Lower Division Water Delivery Schedule. Absent a water emergency, Idaho water users are not required to accept delivery based upon interstate accounting allocation. Both states, however, have worked to reconcile their respective accounting models to reduce conflict over water delivery.

The "Bear Lake Settlement Agreement" was signed and voluntarily adopted by Lower Division water users and PacifiCorp in 1995 and amended in 2004. The agreement established, among other things, an "Irrigation Water Allocation and Lake Recovery Proposal" for Bear Lake. The proposal provides for an "Annual Allocation" which represents the total, estimated quantity of water available to be delivered to storage contract holders. This agreement and the state water accounting models have resulted in a process by which Lower Division water users have voluntarily agreed to water delivery by water right priority without regard to state boundaries.

Implementation Strategies:

- Continue work with Utah and Lower Division water users to improve water right accounting models.

- Facilitate and promote improved water delivery and measurement, including gage and diversion automation.

Milestones:

- Continued cooperation in interstate water administration.
- Completion of technical upgrades to water delivery and measurement infrastructure.

5D - BEAR LAKE IN THE BEAR RIVER BASIN

The outstanding recreational, aesthetic, and fish and wildlife resource values of Bear Lake should be preserved, while recognizing the existing storage allocations for irrigation and hydroelectric power generation.

Discussion:

Bear Lake, noted for its unique coloration and endemic fish species, provides an abundance of recreational opportunities. To protect these values, the Idaho Water Resource Board obtained a minimum lake level water right for Bear Lake of 5902 feet.

The 2004 Amended and Restated Bear Lake Settlement Agreement between PacifiCorp and several water users and private interests confirmed that Bear Lake must be operated primarily as a storage reservoir to satisfy contracts for existing irrigation uses and flood control needs in the three states, with the use of water for hydropower generation being incidental to other purposes. Bear Lake storage is allocated based on lake elevation with reduced allocations occurring when Bear Lake falls below the irrigation reserve of 5914.7 feet. The settlement agreement also provides for a portion of the active storage in Bear Lake to be voluntarily retained to enhance recreation and water quality values.

Pursuant to the 2002 Settlement Agreement Resolving the Relicensing of the Bear River Hydroelectric Projects and the FERC licenses issued for PacifiCorp's Bear River projects, protection, mitigation, and enhancement measures are being implemented to benefit fish and wildlife and recreational resources in the Bear River Basin. The settlement agreement established a committee to guide implementation of these measures, with a primary focus on protecting and improving habitat for Bonneville Cutthroat Trout. The settlement agreement confirms that PacifiCorp's ability to regulate Bear Lake reservoir levels and provide instream flows at the projects for these purposes is restricted by and subject to historic practices, water rights, and flood control responsibilities that are memorialized in water contracts, water agreements, and judicial decrees and opinions.

The Bear River Compact provides for cooperation with state and federal agencies in matters relating to water pollution of interstate significance. The Idaho Water Resource Board supports the Bear River Commission's efforts to develop opportunities for more integrated watershed management throughout the basin.

Implementation Strategies:

- Cooperate with the Bear River Commission to address interstate issues of concern related to Bear Lake, including water quality, threatened or endangered species and species of special concern, and recreation.

Milestones:

- Bear Lake operations are consistent with 2004 Bear Lake Settlement Agreement.
- Cooperative programs addressing interstate issues of concern related to water quality, recreation, and sensitive species implemented.

Photo: Last Chance Canal over the Bear River *(Photo Courtesy of Liz Cresto)*

6. SALMON/CLEARWATER RIVER BASINS

6A - CONSERVATION PLANS IN THE SALMON/CLEARWATER RIVER BASINS

Voluntary, community-based conservation plans and strategies for the benefit of ~~ESA-listed~~aquatic species ~~and other species of concern are key~~ are a component~~s~~ of water planning and management in the Salmon and Clearwater River Basins.

Discussion:

The Salmon and Clearwater River basins support a thriving agricultural industry and significant tourism. Because a number of fish species in the Salmon and Clearwater River basins have been listed as threatened or endangered under the ESA, numerous programs are being implemented to improve fish habitat, while protecting existing water rights. A significant portion of freshwater habitat important to ~~ESA-listed fish~~aquatic species is located on private lands. As a consequence, local support is key to implementing conservation measures that advance species' recovery. Federal agencies are encouraged to cooperate with state and local landowners to develop voluntary, incentive-based conservation plans. Any water required for instream uses must be obtained in compliance with state law.

In the Snake River Basin Adjudication, the state entered into two agreements that provide for water management within the basin that supports agricultural-based communities, while encouraging the voluntary implementation of flow-related conservation measures~~ that improve instream conditions for ESA-listed fish.~~ The agreements ~~are based upon improving~~address instream ~~flow conditions pursuant to state law~~uses through state minimum stream flow water rights and other provisions of state law.

- **2004 Snake River Water Rights Agreement**

The 2004 Snake River Water Rights Agreement resolved all of the issues related to the Nez Perce Tribe's water right claims in the SRBA. In the Salmon and Clearwater basins, a ~~the primary~~ goal of the settlement agreement provisions is to ~~conserve and enhance fish habitat in order to~~ address aquatic species ~~ESA~~ concerns. There are three cornerstones to such efforts: the establishment of state minimum stream flow~~s~~ water rights, the establishment of a voluntary forestry program with standards to improve fish habitat, and the establishment of voluntary programs by irrigators and other water users to ~~improve instream flow~~address aquatic species concerns.

The state and local water users are working with the federal agencies, tribes, and other stakeholders to advance the recovery of listed species through the development of conservation agreements under Section 6 of the ESA. In coordination with the OSC, the state has begun early implementation of voluntary conservation measures that provide immediate benefits to ~~ESA-listed fish~~aquatic species and provide the foundation for implementation of long-range plans.

As a result of the 2004 Snake River Water Rights Agreement, the Idaho Water Resource Board holds minimum stream flow water rights on 205 streams that provide significant protection for steelhead, salmon, and bull trout. Most of the streams flow through federal public lands and have minimal use. Twenty-four streams, however, are in basins with substantial private ownership and significant private water use. The flows for those streams were established after consultation with local communities. Where the minimum stream flow water rights are higher than existing flows, the Idaho Water Resource Board works with water users on a voluntary basis to rent or otherwise acquire water to return to streams, in accordance with state law.

- **Wild and Scenic Rivers Agreement**

The Wild and Scenic Rivers Agreement resolved issues related to federal reserved water right claims filed by the federal government under the Wild and Scenic Rivers Act. The agreement provides for the quantification of the wild and scenic federal reserved water rights and state administration of those rights. To protect existing rights and allow for some future development, the United States agreed to subordinate the federal rights to ~~certain~~ existing and certain future water right uses.

Implementation Strategies

- ~~Ensure that the water right application~~ and transfer review process considers basin conservation plans~~. and limiting factors for ESA-listed fish.~~
- Ensure that the stream channel alteration permit process considers basin conservation plans~~. and limiting factors for ESA-listed fish.~~
- ~~Develop flow-limited reach GIS maps for use in water administration.~~
- ~~Continue early implementation of conservation measures.~~
- Develop and implement conservation projects and plans based on local problem-solving and support.

Milestones

- Conservation measures implemented.
- Conservation plans approved pursuant to Section 6 of the ESA and implemented.
- Approved water right applications and ~~water right~~ transfers address ~~limiting factors for ESA-listed fish.~~conservation plans.
- ~~Water right permits address limiting factors for ESA-listed fish.~~
- ~~Flow-limited reach GIS maps completed and in use.~~

6B - ~~INSTREAM FLOW PROGRAM IN THE SALMON/CLEARWATER RIVER BASINS~~MINIMUM STREAM FLOW WATER RIGHTS AND OTHER INNOVATIVE MEASURES TO ADDRESS AQUATIC SPECIES CONCERNS IN THE SALMON AND CLEARWATER RIVER BASINS

The Idaho Water Resource Board will promote, provide, and where possible, expand opportunities for voluntary, market-based transactions to address ~~improve instream flow for the benefit of ESA-listed~~ aquatic species concerns.

Discussion:

The Idaho Water Resource Board administers and participates in a variety of programs to address aquatic species concerns ~~improve instream flows~~ throughout the Salmon and Clearwater River basins. This programmatic approach to addressing the needs of ~~ESA-listed and other sensitive species~~ aquatic species includes a suite of water supply acquisition tools ~~including short and long-term leases, permanent purchases, partial season leases, diversion reduction agreements, and water use efficiency measures,~~ all of which are market-based and voluntary. The Board works collaboratively with organizations committed to voluntary, market-based conservation strategies~~, such as conservation easements, to maximize instream flow programs~~. These partnerships benefit ~~targeted fish~~aquatic species and support local economies.

- ~~**Columbia Basin Water Transaction Program**~~

~~The Columbia Basin Water Transactions Program was initiated in 2002 to support innovative, voluntary, grassroots strategies to improve flows in the Columbia River Basin's streams and rivers. The majority of funding is provided by the Bonneville Power Administration in cooperation with the Northwest Power and Conservation Council. Continued implementation of the Columbia Basin Water Transactions Program in the Salmon and Clearwater basins will keep agriculture productive and improve instream flows for ESA-listed and other sensitive fish species.~~

- ~~**Section 6 Conservation Fund**~~

~~Section 6 of the ESA directs "that Federal agencies shall cooperate with State and local agencies to resolve water resource issues in concert with conservation of endangered species." 16 U.S.C.A. § 1531(C)(2). Pursuant to the 2004 Snake River Water Rights Agreement of 2004, in addition to the establishment of minimum stream flow water rights, the state agreed to work with local stakeholders and communities to develop work plans for addressing limiting factors for fish on streams with degraded habitat. The state also agreed to develop cooperative agreements under Section 6 of the ESA with the assistance of local land owners, federal agencies, and tribes to establish long-term conservation goals and conservation measures that will contribute to the recovery of anadromous and resident fish in the Upper Salmon River Basin. The Board's instream flow programs are central to the development and implementation of Section 6 Conservation Plans.~~

- ~~**Pacific Coast Salmon Restoration Fund**~~

~~The Pacific Coast Salmon Restoration Fund provides grants to state agencies and treaty Indian tribes for salmon recovery efforts. The Idaho Water Resource Board works with agencies, tribes, and stakeholders to use Pacific Coast Salmon Restoration Fund monies for early implementation of conservation measures in the basins.~~

- ~~**2008 Columbia Basin Fish Accords**~~

~~The Columbia Basin Fish Accords are designed to supplement biological opinions for listed salmon and steelhead and the Northwest Power and Conservation Council's fish and wildlife program. The agreement between the state of Idaho, the Bonneville Power Administration, the USACE, and the USBOR addresses issues associated with the direct and indirect effects of construction, inundation, operation and maintenance of the Federal~~

~~Columbia River Power System, and USBOR's Upper Snake River Project on the fish and wildlife resources in the Columbia River Basin.~~

~~Under the agreement, the Bonneville Power Administration committed to funding a suite of habitat quality improvement projects designed to address limiting factors within the basins affecting ESA-listed salmon and steelhead. The Idaho Water Resource Board uses these funds to develop projects that improve instream flow and freshwater survival of ESA-listed salmon and steelhead. The program targets flow-related projects that reconnect tributaries and increase flow in the mainstem Lemhi and Pashimeroi rivers to improve fish passage conditions and increase the quantity and quality of fish habitat.~~

Implementation Strategies:

- Continue implementation of programs to ~~improve instream flows~~address aquatic species concerns in the Salmon and Clearwater River basins.
- Pursue opportunities for partnerships with local water users and other stakeholders to implement programs that ~~improve instream flows~~address aquatic species concerns and support local economies.

Milestones:

- Number ~~and scope of instream flow~~of aquatic species improvement projects implemented.
- ~~Number of participants in instream flow improvement projects.~~
- Degree of ~~habitat~~ improvement resulting from ~~instream flow~~aquatic species programs.

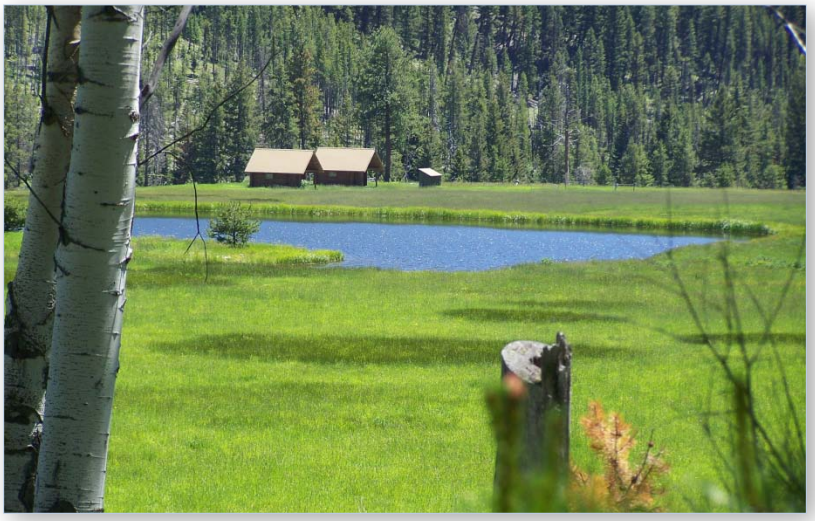

Photo: Scenic Central Idaho near Salmon *(Photo Courtesy of Shari Ferree)*

7. PANHANDLE RIVER BASINS

7A - INTERSTATE AQUIFERS IN THE PANHANDLE RIVER BASINS

Completion of comprehensive aquifer management plans and the Northern Idaho Adjudication and implementation of interstate agreements are central to the optimum use of the Panhandle Basin's water resources.

Discussion:

The Panhandle's rivers and lakes are key to continued economic development and provide for multiple uses of water including irrigation, domestic supplies, mining, and commercial uses. These lakes and rivers also provide significant recreation, fish and wildlife, and aesthetic resources important for the region's economy. In average water years, Idaho's Panhandle region has a stable water supply. A growing population and the urbanization of agricultural lands, however, have resulted in increased ground water use which has resulted in conflicts over water quantity and quality within the region and across state boundaries.

- **Spokane Valley-Rathdrum Prairie Aquifer**

The Rathdrum Prairie Aquifer ("RPA") extends south from Bonner County through Kootenai County toward the cities of Coeur d'Alene and Post Falls and west to the Idaho-Washington state line. The aquifer extends into Washington and becomes part of the larger Spokane Valley-Rathdrum Prairie ("SVRP") Aquifer. The area includes the rapidly growing cities of Spokane, Washington and Coeur d'Alene and Post Falls, Idaho. The SVRP Aquifer was designated a "Sole Source Aquifer" by the U.S. Environmental Protection Agency in 1978 and a sensitive source aquifer by the state of Idaho.

In 2002, the Director of the Department, pursuant to Idaho Code § 42-233b, designated the Rathdrum Prairie Ground Water Management Area and created the Rathdrum Prairie Ground Water Management Area Advisory Committee, composed of members representing the interests of citizen groups, municipalities, counties, and other irrigation, commercial, and industrial water users within the designated area. On September 15, 2005, the Director issued a final order adopting the Ground Water Management Plan for the Rathdrum Prairie Ground Water Management Area. The plan, based in large part on the recommendations of the advisory committee, sets forth goals, strategies, and actions for managing the ground water resources of the SVRP Aquifer. Goals include obtaining adequate technical data and quantification of water availability and water use, managing the ground water resource efficiently and fairly for all users, and encouraging planning and water conservation efforts.

Although the states of Idaho and Washington have primary responsibility for water allocation and water quality, local governments are increasingly being called upon to consider water supply and water quality implications in land use planning. To address these challenges, a study of the SVRP Aquifer was conducted jointly by the Department, the Washington State Department of Ecology, and the United States Geological Service. Begun in 2003 with broad community support, the purpose of the project is to provide a

scientific foundation to assist the states in water administration. The SVRP Aquifer study established a collaborative modeling committee of experts from both states. Significant new information from the study refined earlier estimates of hydrologic information. The data, computer model, water budget, and other information are available to the public and provide a detailed, up-to-date basis for assessing all aspects of ground water use, including water development, establishing well head protection zones, and local and regional land use planning. A 2007 agreement between the Department and the Washington State Department of Ecology establishes a collaborative framework to maintain and enhance the model to inform state management decisions.

Pursuant to Idaho Code § 42-1779, which established the Statewide Comprehensive Aquifer Planning and Management Program, a comprehensive aquifer management plan was adopted on July 29, 2011 for the Rathdrum Prairie Aquifer by the Idaho Water Resource Board. The Board will be responsible for implementing the plan to obtain sustainable water supplies and optimum use of the region's water resources.

- **Palouse Basin Aquifers**

The development of a CAMP for the Palouse Basin is also a priority. The Grande Ronde and Wanapum aquifers underlie the Palouse Basin. The Pullman-Moscow area of eastern Washington and northern Idaho relies almost entirely on ground water for its supply of municipal, institutional, and domestic water. The Palouse Basin Aquifer Committee consists of representatives from the cities of Moscow, Pullman, Colfax, Latah, and Whitman counties, the University of Idaho and Washington State University and was formed to address concerns about declining ground water levels and coordinate studies to further inform water management decisions. In 1992, with the assistance of the states and pursuant to several intergovernmental agreements, a Pullman-Moscow Ground Water Management Plan was completed. The plan provides technical information about the general response of the Wanapum and Grande Ronde aquifers to pumping withdrawals and recommendations for future use that limit ground water depletion and protect water quality through conservation practices and other measures. Additional studies are needed to better understand the hydrology of the aquifers.

Managing cross-boundary conflicts requires an accounting of the state's water resources. Adjudication of water rights in the Panhandle region should therefore be completed to fully define and quantify existing water rights. The determination of all existing water rights from the river basins in northern Idaho will provide the basis for administration of water rights and for interstate cooperation. Pursuant to Idaho Code § 42-1406B, the Director of the Department filed a petition in the district court to commence an adjudication for northern Idaho. On November 12, 2008, the district court ordered the commencement of adjudication in the Coeur d'Alene Spokane River water system. The estimated date for completion of the adjudication is Fiscal Year 2018.

Idaho Code § 42-1734(3) authorizes the Idaho Water Resource Board to appear on behalf of the state in negotiations with the federal government. Consistent with state law, the Idaho Water Resource Board should serve as the lead agency for coordinating state participation in the Northern Idaho Adjudication.

Implementation Strategies:

- Implement the CAMP for the Rathdrum Prairie.
- Evaluate timing for developing a CAMP for the Palouse River Basin that establishes goals, objectives, and strategies to address the increasing demand on water supplies, reduce cross-boundary conflicts, and provide for effective conjunctive management of hydraulically connected water resources.
- Complete the Northern Idaho Adjudication.
- Implement and maintain the cooperative agreement between Idaho and Washington for maintenance of the SVRP Aquifer ground water model.
- Advise and provide technical support to Palouse Basin Aquifer Committee and other stakeholders to promote the wise use of the region's water supply.
- Provide technical support for the completion of aquifer studies that will assist in water management.

Milestones:

- Cooperative agreements approved and implemented by Idaho and Washington.
- Implementation of Rathdrum Prairie CAMP action items.
- Development and implementation of Palouse CAMP.
- Aquifer studies completed.
- Northern Idaho Adjudication completed.

7B - MINIMUM STREAM FLOWS IN THE PANHANDLE RIVER BASINS

The Idaho Water Resource Board will establish and protect minimum stream flow and lake level water rights to preserve the scenic and recreational water bodies in the Panhandle river basins.

Discussion:

The Panhandle contains some of the most significant scenic and recreational water bodies in the state. The Idaho Water Resource Board holds 19 minimum stream flow water rights on reaches of the Pend Oreille, St. Maries, Pack, Moyie, St. Joe, Coeur d'Alene, and Spokane rivers that protect approximately 17,600 cfs total flow. In 1927, the state established minimum lake levels for Priest, Pend Oreille and Coeur d'Alene lakes. These water rights protect and support many beneficial uses of water such as fish and wildlife habitat, aquatic life, recreation and aesthetic values, and navigation in the Panhandle basins and make a significant contribution to the economy of the region and the state.

Population growth and new water demands may increase the need to obtain additional minimum stream flows in the Panhandle region. The establishment and use of local water supply banks and rental pools should be considered as a strategy for addressing the

need for meeting minimum stream flow water rights or new water rights in the Panhandle region, including minimum lake levels for the protection of navigation and transportation, fish and aquatic resources, and aesthetic and recreational values.

Implementation Strategies:

- Coordinate with state and federal agencies and stakeholders to identify potential minimum stream flow needs.
- Submit applications for minimum stream flow water rights that are in the public interest.
- Monitor activities that could impair minimum stream flows.
- Evaluate the need for establishment of local water supply banks.

Milestones:

- Minimum stream flow water rights established.

7C - NAVIGATION, FISHERIES, AND RECREATION IN THE PANHANDLE RIVER BASINS

Water management decisions in the Panhandle Region should minimize, where feasible, adverse effects on navigation, fisheries, and recreation.

Discussion:

The Panhandle's lakes and rivers provide for commercial and recreational navigation and important habitat for numerous fish and wildlife species. These resources are also affected by the operation of private and federal hydropower projects. Avista's Clark Fork projects, located in Montana and Idaho, are operated pursuant to a FERC license based upon a comprehensive settlement agreement executed by Idaho, Montana, federal agencies and Indian tribes, and other stakeholders. The Post Falls project license is also based, in part, upon a settlement agreement between Avista, the IDFG and the Idaho Department of Parks and Recreation. The Post Falls license requires a summer full-pool elevation and fall draw-down protocol for Lake ~~Couer~~Coeur d'Alene that is protective of fishery needs, while providing adequate lake levels for summer recreation activities and navigation.

On the Pend Oreille River, the USACE operates Albeni Falls Dam, which controls the level of Lake Pend Oreille. Lake Pend Oreille has been designated a Special Resource Water, a special body of water recognized by the state as needing intensive protection. Since 1996, consistent with a U.S. Fish and Wildlife Service Biological Opinion on the operation of the Federal Columbia River Power System, winter lake levels have been managed for the protection of the lake's kokanee population, an important forage base for ESA-listed bull trout. Winter lake level management also directly affects the amount of erosion and sedimentation that occurs, waterfowl habitat, water quality, navigation, and shoreline infrastructure. Cooperation between the state and federal government and

community stakeholders is essential for making sound management decisions regarding the operation of Albeni Falls Dam.

In 2003, the Idaho legislature created the Lake Pend Oreille, Pend Oreille River, Priest Lake and Priest River Commission ("Lakes Commission") to address water quantity and water quality issues affecting the state's and local communities' interests, while recognizing existing authorities. The Idaho Water Resource Board supports the Lakes Commission's participation in regional water management decisions and efforts to minimize adverse effects on navigation, water quality, and fish, wildlife, and recreational resources.

Implementation Strategies:

- Identify proposed actions that may affect navigation, water quality, and fish, wildlife, and recreation resources, in coordination with state and federal agencies and stakeholders.
- Provide technical assistance to assist the Lake Commission's participation in regional water management decisions.

Milestones:

- Collaborative water management decisions made that minimize adverse effects on navigation, water quality, and fish, wildlife, and recreational resources.

Photo: Mackay Lost River Range *(Photo Courtesy of Mike McVay)*

C.L. "BUTCH" OTTER

GOVERNOR

September 5, 2012

Idaho Water Resource Board
322 East Front St.
Boise, ID 83720-0098

Chairman Uhling and Board Members,

I want to first and foremost thank you for your hard work and dedication to protecting the precious water resources of the State of Idaho.

The lives and livelihoods of Idahoans depend upon a reliable supply of water. Pre-statehood development along Idaho's vast river valleys and canyons began a dependence on water and reliance on property rights that created a foundation for the economic growth Idahoans have enjoyed for over 120 years. Looking ahead to the future, economic development and job creation is dependent upon the sustainability of our water supply.

The responsibility for planning for the optimum use of Idaho's water resources is constitutionally vested in the Idaho Water Resource Board. By developing visionary procedures and policies that will sustain the reliability of water supplies in the future, the Board can ensure water is available to meet both present and future needs. As an Idahoan, I believe we should never forget where we came from or the values such as property rights that are the backbone of our Idaho way of life.

Therefore, I request that the Idaho Water Resource Board define water sustainability in a way that ensures our values are respected and the unique qualities of our resources are protected. It is my hope that the Board will develop and adopt a policy to guide management and development of Idaho's water resources to maximize their sustainability. The Board's activities should be an inclusive process which involves stakeholders statewide. I will commit my office to assist and participate throughout this very important project.

I believe that formally incorporating such a policy will enable the Board to identify areas in Idaho where achieving sustainability needs more focused attention. Once identified, the Board can recommend activities that will enhance the reliability of water in these areas. The State, through the Idaho Water Resource Board, needs to proactively establish long-term goals to address today's issues and tomorrow's challenges.

Again, thank you for your dedicated service to the State of Idaho and I look forward to working with you as we address this important issue.

As Always – Idaho, "Esto Perpetua"

C.L. "Butch" Otter
Governor of Idaho

CLO/sg

STATE CAPITOL • BOISE, IDAHO 83720 • (208) 334-2100

IDAHO WATER RESOURCE BOARD

June 7, 2013

The Honorable C.L. "Butch" Otter, Governor
State Capitol
P.O. Box 83720
Boise, ID 83720

RE: State Water Plan

Dear Governor Otter,

By letter dated September 5, 2012, you requested that the Idaho Water Resource Board (IWRB) develop a statewide water sustainability policy to assist with enhancing the reliability of water supplies in the future. The IWRB has appointed a committee to work on this important charge. The IWRB anticipates developing this policy in conjunction with other potential amendments to the Idaho State Water Plan.

Over the next year, the IWRB Planning Committee will work on developing the statewide water sustainability policy through the water planning process, with the goal of adding the sustainability policy to the State Water Plan through the amendment process.

Idaho Code section 42-1734A requires publication of any amendments to the state water plan and establishes a time frame for statewide public hearings and receipt of written comments. In light of this public hearing process, any amendments to the State Water Plan including the sustainability policy will be submitted for consideration during the 2015 Legislative Session.

The State Water Plan provides the framework for the conservation, development, management and optimum use of the water resources and waterways of Idaho in the public interest. The IWRB looks forward to working closely with your staff as we continue to plan for the optimum use of Idaho's water resources. Should you have any question or concerns please contact Brian Patton of our staff at 287-4837.

Sincerely,

Roger Chase

Roger Chase, Chairman

CC: Idaho Water Resource Board members
Gary Spackman, Director

IDAHO WATER RESOURCE BOARD

May 28, 2013

The Honorable Scott Bedke
Speaker of the House
Legislative Services Office
PO Box 83720
Boise, ID 83720-0038

The Honorable Brent Hill
President Pro Tempore
Legislative Services Office
PO Box 83720
Boise, ID 83720-0081

The Honorable Lawrence Denney
Chairman, House Resources & Conservation Committee
Legislative Services Office
PO Box 83720
Boise, ID 83720-0038

The Honorable Monty Pearce
Chairman, Senate Resources & Environment Committee
Legislative Services Office
PO Box 83720
Boise, ID 83720-0081

RE: State Water Plan

Dear Senators and Representatives,

The Idaho Water Resource Board (IWRB) submitted the 2012 State Water Plan to the 2013 Legislature for amendment or rejection as required by Article XV, Section 7 of the Idaho Constitution. As you know, the State Water Plan became effective 60 days after its submission to the Idaho Legislature.

Some members of the House Resources & Conservation Committee raised concerns about certain policies within the 2012 State Water Plan. The IWRB established a process for addressing these concerns at a meeting of its Planning Committee on May 8, 2013 and at the regular meeting of the IWRB on May 16 and 17, 2013. On May 17, 2013, the IWRB resolved to review the concerns expressed during the House Resource & Conservation Committee hearings on the State Water Plan through the state water planning process.

Over the next year, the IWRB Planning Committee will prioritize review of those policies of concern, and where appropriate, recommend adoption of amendments by the IWRB. The Committee meetings are open to the public and involve significant public participation and comment. Idaho Code section 42-1734A requires publication of any amendments to the state water plan and establishes a time frame for statewide public hearings and receipt of written comments. As part of the review, the IWRB will consult with the Legislative Natural Resources Interim Committee and keep the Committee informed about its progress. The IWRB will then determine whether the state water plan should be amended, considering public testimony and comments. In light of this public hearing process, any amendments to the State Water Plan will be submitted for consideration during the 2015 Legislative Session.

The State Water Plan provides the framework for the conservation, development, management and optimum use of the water resources and waterways of Idaho in the public interest. The IWRB looks forward to working closely with the Legislature as we continue to plan for the optimum use of Idaho's water resources. Should you have any question or concerns please contact Brian Patton of our staff at 287-4837.

Sincerely,

Roger Chase

Roger Chase, Chairman

CC: Idaho Water Resource Board members
Gary Spackman, Director, IDWR
House Resource & Conservation Committee members:

Marc Gibbs	Judy Boyle
JoAn Wood	John Vander Woude
Lenore Barrett	Terry Gestrin
Mike Moyle	Steven Miller
George Eskridge	Eric Anderson
Dell Raybould	Donna Pence
Ken Andrus	Mat Erpelding
Paul Shepherd	Janie Ward-Engelking
Fred Wood	

Senate Resource & Environment Committee members:

Steve Bair
Dean Cameron
Jeff Siddoway
Bert Brackett
Lee Heider
John Tippets
Michelle Stennett
Roy Lacey

Sustainability Background Paper

Driver:

On September 5, 2012, Governor Otter sent a letter to the Idaho Water Resource Board requesting that the Board incorporate a policy on sustaining the reliability of water supplies in the future. Several key phrases were included in this request. Specifically:

- Economic development and job creation is dependent upon the sustainability of our water supply
- Ensure water is available to meet both present and future needs
- Define water sustainability in a way that ensures our values are respected and the unique qualities of our resources are protected
- A policy to guide management and development to maximize their sustainability
- Property rights are the backbone of Idaho way of life.

Context:

Sustainability is a subjective and value-laden term. It can have different meanings and implications depending on the audience and the context. The policy will need to be designed to address the driver and other considerations. Sustainability does not exist in an isolated. Water sustainability touches on economic, environmental and social aspects which will need to be addressed in the policy. In reality, there are trade-offs and the policy will determine the balance and priority of these aspects of sustainability. The concept of sustainability should be viewed as a *dynamic* condition, in which elements interact with each other, and conditions may change or adjust.

The phrasing of the directive in the Governor's letter suggests that the concepts are broader than strictly sustainability. The letter mentions reliability, economic development, respecting values and maximizing development. When considering a policy, it will be important to consider how the policy is to be implemented and the guidance it will provide. The language in the Governor's letter leads to consideration that rather than simply "sustainability", the policy may be directed to "sustainable development". Water resources in Idaho are encountering increasing demands and pressures beyond merely available supply.

Policies in the State Water Plan are generally not prescriptive. They describe an approach to an issue and provide guidance to prioritize actions. The State Water Plan is also demonstrates a long-range vision which describes how to manage the water resources to accomplish the policy. Key to developing this policy will be deciding what we are trying to sustain.

The IWRB may want to consider how to frame sustainability – from a statewide view or from a watershed (basin) perspective. Since the pressures may be different in different regions, it may be useful to articulate a general statewide policy, but allow for basin-specific sustainability concepts to be

incorporated into the basin sections. These basin-specific policies may be developed during the current process or delayed if the need doesn't currently exist.

SELECTED DEFINITIONS OF SUSTAINABILITY:

"Sustainability is an expression of people's basic values and concerns. It reflects our desires for the good life and our hopes that it will endure for future generations. (Heintz)

Ecology defines sustainability in terms of "carrying capacity." "The population of a given species must of necessity 'live within the carrying capacity' afforded it by the ecosystem of which it is a part. That carrying capacity results from the flows of food, water, light and shelter needed by the individual species. These flows are provided by processes that are cyclical and renewable." *(Heintz)*

"Resource sustainability has proven to be an elusive concept to define in a precise manner and with universal applicability." (USGS Circular 1186)

"There is no universally accepted scientific definition of ground water sustainability that is applicable in all situations." (NGWA)

"[G]round water sustainability is the development and use of ground water to meet both current and future beneficial purposes without causing unacceptable consequences." (NGWA)

"Defining ground water sustainability for a particular situation is a policy question that requires not only incorporating scientific information and principles, but also legal, social, environmental, and economic considerations." (NGWA)

Other terms which may be considered:

SUSTAINABLE DEVELOPMENT

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. ("Our Common Future, Brundtland Commission, 1983)

Sustainable development is the use of water "in a manner that can be maintained for an indefinite time, without causing unacceptable environmental, economic, or social consequences." "The definition of 'unacceptable consequences" is largely subjective and may involve a large number of criteria." (USGS)

"Sustainable development is development that meets the needs of the current generation without compromising the opportunities of future generations to their needs." "The term has come to encompass the economic, environmental and social realms, focusing particularly on the unintended consequences of economic development. The concept of sustainable development has focused policy, management, and design efforts on the search for ways to increase economic output while

reversing the degradation of environmental resources and making the distribution of economic and environmental outcomes more equitable." (Heintz)

"[A] long-run commitment to achieving sustainability must also recognize the possibility that our early ideas about how best to proceed may not be the most effective." (Heintz)

Reliability

- The ability of a system to maintain its functions.
- Dependable; capable of being relied on.

CONJUNCTIVE USE

USGS defines conjunctive use as the "Joint use and management of surface-water and groundwater resources to maximize reliable supply and minimize damage to the quantity or quality of the resource."

FRAMEWORK FOR SUSTAINABILITY POLICY DEVELOPMENT

The IWRB Water Resource Planning Committee will hold a series of meetings, each with specific goals to be accomplished at each meeting.

November 2013: Preparation for meeting – read background material - key papers and reports (i.e., Heintz, WSWC, WGA, USGS among others)

- Review other western states approach to Sustainability policies
- Invite WSWC representatives to discuss perspective and approach
- Discuss similarities and differences with Idaho

December 2013:

- Describe the goals for Idaho's Sustainability Policy
- Invite selected interest groups to present perspectives
- Brainstorm concepts to be included
- Begin initial language discussion

January 2014:

- Draft general outline of policy
  - May start with concepts to be included in narrative, to lead to policy language

February 2014:

- Refine policy language
  - Identify missing elements
  - Clarify vague language
- Continue writing narrative to accompany policy

March 2014:

- Begin drafting implementation strategies and milestones

April 2014:

- Refine draft policy, narrative, implementation strategies and milestones

May 2014:

- Present draft policy, narrative, implementation strategies and milestones to IWRB
- Prepare for public comment

Summer 2014:

- Hearings and public comment period for Sustainability

Selected References
(CDs with these documents will be provided to the committee members)

Heintz, Jr., H. Theodore, 2004, UCOWR Water Resources Update, Issue 127, Pages 6-10
Applying the Concept of Sustainability to Water Resources Management

National Ground Water Association, undated
Ground Water Sustainability: A White Paper

Western States Water Council, Position Paper No. 344, June 2006
A Vision on Water

Western Governors' Association, June 2006
Water Needs and Strategies for a Sustainable Future

Western Governors' Association, June 2008
Water Needs and Strategies for a Sustainable Future: Next Steps

Western Governors' Association, June 2010
Water Needs and Strategies for a Sustainable Future: 2010 Progress Report

USGS, Alley, William M., Reilly, Thomas E., and Franke, O. Lehn, Circular 1186, 1999
Sustainability of Ground-Water Resources

RHS Ralston Hydrologic Services, Inc.

GROUND WATER CONSULTING AND EDUCATION

1122 East B Street, Moscow, ID USA 83843

Cell 208-699-3989 Home/Fax 208-882-3334 ralston@moscow.com

EVALUATION OF ALTERNATIVE GROUND-WATER PUMPING SCHEMES AS AN APPROACH TO MITIGATING PROBLEMS OF CRITICAL LOW FLOW IN THE SPOKANE RIVER AT SPOKANE, WASHINGTON

Proposal Prepared by

Dale R. Ralston PhD PE PG and Gary S. Johnson PhD PE

Submitted to the Idaho Department of Water Resources

May, 2013

INTRODUCTION

The purpose of this proposal is to evaluate the feasibility of one of several approaches that could be implemented to reduce the severity of extreme low flow in the Spokane River at the Spokane gage during the late summer, fall and early winter. Along with discharge from the Post Falls dam, the Spokane Valley – Rathdrum Prairie (SVRP) aquifer is a primary source of water in the river at the Spokane gage during the critical low-flow period.

Conjunctive management of this ground water/surface water resource is complex because of two major factors.

1. About two-thirds of the aquifer occurs in Idaho while the remaining one-third is in Washington. There is no inter-state compact or agreement relative to administration of this water resource system. While both states manage water based on the Appropriation Doctrine, there are significant differences in management style as well as management laws and rules.
2. Conjunctive management of surface water and ground water is not an issue in the Idaho portion of the SVRP aquifer while it is the dominant issue within Washington. The most significant surface water systems overlying the aquifer are perched within Idaho making them recharge sources that are independent of ground water levels. In contrast, ground water discharge is the primary supply source for the Spokane and Little Spokane Rivers in Washington during the low flow portion of the year. Maintaining target minimum streamflow is a primary driver for water management within the State of Washington.

DESCRIPTION OF THE HYDROLOGIC SYSTEM

The SVRP aquifer underlies a broad valley that extends from northern Idaho into eastern Washington (Figure 1). Recharge occurs in both Idaho and Washington and almost all natural aquifer discharge is to the Spokane and Little Spokane Rivers within Washington.

The aquifer is composed of glacial outwash and flood sediments deposited in a valley eroded into basalt and metamorphic rocks. Kahle and Bartolino (2007, page 12-13) describe the aquifer as follows.

> "The SVRP aquifer consists of unconsolidated, coarse-grained gravel, cobbles, boulders, and some sand primarily deposited by a series of catastrophic glacial outburst floods. The material deposited in this high-energy depositional environment is coarser grained than is typical for most basin-fill deposits and forms one of the most productive aquifers in the United States…The aquifer extends from Lake Pend Oreille through the Rathdrum Prairie and Spokane Valley to near Spokane where it is divided by Five Mile Prairie… On the west side of Five Mile Prairie, the Western Arm of the aquifer follows the course of the present-day Spokane River from near downtown Spokane to the community of Seven Mile. On the east side of Five Mile Prairie, the main body of the aquifer extends through the Hillyard Trough and then west through the Little Spokane River Valley to Long Lake…"

Natural recharge to the aquifer occurs via three primary mechanisms (Kahle and Bartolino 2007, page 21). First, recharge occurs from precipitation and direct infiltration on the glacial sediments (about 16 percent). Second, recharge to the aquifer occurs as underflow from the surrounding tributary valleys and as leakage from the lakes that are present in many of these valleys (about 30 percent). Third, aquifer recharge occurs as leakage from the Spokane River in the reach from Coeur d'Alene Lake to approximately Barker Road in Eastern Washington (about 49 percent). The river is perched above the aquifer throughout this entire reach. The remaining 5 percent is from landscape irrigation and septic systems.

Discharge from the aquifer occurs predominantly to the Spokane and Little Spokane Rivers and ground-water pumping. Kahle and Bartolino (2007, page 21) indicated that these percentages are approximately 59 percent, 16 percent and 22 percent respectively. The remaining discharge is subsurface outflow and infiltration of ground water into sewers. All of the natural discharge from the aquifer occurs within Washington. The total estimated discharge from the aquifer is 1,468 cubic feet per second (ft^3/s).

IMPACTS ON THE HYDROLOGIC SYSTEM

Other than ground-water pumping and the operation of the dam on the Spokane River at Post Falls, human development has done relatively little to change the natural hydrologic system in the area. Surface water was diverted for irrigation from the Spokane River and some of the adjacent lakes starting in the early 1900's but has largely been eliminated in recent decades because of urban development. Ground water based irrigation occurs in dominantly in Idaho but is gradually decreasing with time because of urban pressure.

The largest impact on the hydrologic system stems from the withdrawal of ground water in both Idaho and Washington mostly for municipal and private water supply. Figure 2, taken from Hsieh and others (2007 page 23), shows the combined monthly withdrawal rate from all wells (water purveyor, irrigation, domestic and industrial) in the SVRP aquifer from 1990 to 2005. The figure also shows the relative amounts of withdrawal by the various types of wells. The total ground-water withdrawal is composed mostly of pumpage by water purveyors' wells followed by irrigation wells. The average combined withdrawal rate is 317 cfs (Hsieh and others, 2007, page 23). The summer peaks of the combined withdrawal generally range from 600 to 800 cfs. Figure 3 shows the locations of water purveyor wells and service areas based on 2000 to 2002 data (Hsieh and others, 2007, page 21). Most of the water purveyors' wells are located in Washington. Figure 4 shows the locations of lands irrigated using ground and the irrigation densities (percentage of land irrigated in each area) (Hsieh and others, 2007, page 25). Almost all of the irrigated areas are in Idaho.

Ground-water pumping impacts surface water systems via declining ground-water levels. Lower ground-water levels cause greater losses in hydraulically connected losing stream reaches and reduced gains in gaining reaches. It is important to remember that ground-water level changes only impact flow in streams where there is saturated hydraulic connection between ground water and the stream.

The locations of three wells that have long-term water-level records (two wells in Idaho and one in Washington) are shown on Figure 5. The wells located near Post Falls, Idaho (51N 5W 33bba1/33cba1) and Liberty Lake, Washington (25N 45E 16C01) have the longest records, dating back into the 1920's. Well 53N 4W 28cab1 located near Spirit Lake, Idaho has records starting in the 1970's. Hydrographs for these three wells are presented in Figures 6, 7 and 8. Data were taken from the USGS websites for water resource data from Idaho and Washington with a limited number of additional data points obtained from the Idaho Department of Water Resources (Ken Neely, personal communication, 2013). The lowest levels on record for the wells near Post Falls and Liberty Lake occurred in the early 1930's with the highest records in the mid 1990's. The hydrograph for the well near Spirit Lake is similar in that the highest water level occurred in the 1990's. There is no evidence of long-term water-level decline in any of the three wells.

Flow data taken at the USGS gaging station on the Spokane River at Spokane as analyzed by Barber and others (2011) show that the maximum and average flow of the river have not been impacted by development but that the minimum flow of the river has been impacted. Barber and others (2011, page 6) describe the low-flow characteristics of the river as follows (see Figure 9).

"As illustrated... summer low flows at the USGS gage near downtown Spokane .... are often less than 1,000 ft^3/s, particularly in the last 40 years. It is this disturbing trend in low flows that raises concerns among water resource agencies. A regression analysis of the minimum annual daily flow data indicates a statistically significant ... decrease in low flow between 1900 and 2007. While the rate of decline was steepest from 1900 through 1950.....the downward trends has still continued since that time.....The combined effects of changes in reservoir operations associated with the Post Falls Dam, changes in water use patterns from irrigation of orchards and row crops to suburban residential uses, increases in municipal pumping as the regions' populations has grown and changes in runoff patterns due to climate change... are creating severe low flow conditions that threaten water users and the environment."

Hortness and Covert (2005) show that the annual 7-day low flow of the Spokane River near Post Falls (the discharge from the Post Falls Dam) and at Spokane both have a downward trend for the period of 1968 – 2002 (Figure 10). They state the following based on a comparison of the streamflow data from the Post Falls gage and the Spokane gage (page 14).

"Differences in monthly mean streamflow between the Post Falls and Spokane gaging stations for the months of July through December during 1968 – 2002 were analyzed for trends. Although the upper parts of this reach generally lose streamflow to the aquifer, the overall reach historically has gained streamflow. Trends detected for the months of September, October, and November were statistically significant. The analyses showed that the streamflow gains within this reach decreased over time during the period 1968-2002."

IDENTIFICATION OF MITIGATION ALTERNATIVES

Three approaches can be identified to reduce the problems of extreme low flow in the Spokane River at the Spokane gage in the late summer and fall.

- The first approach is to reduce and/or relocate ground-water pumpage from the SVRP aquifer at strategic locations in Washington and Idaho and at specific times to allow greater flow in the river in the reaches in question during the critical low flow period.
- The second approach is to increase the discharge from the Post Falls Dam at specific times to allow greater flow in the river in the reaches in question during the critical low flow period.
- The third approach is to construct the facilities necessary to artificially recharge the SVRP aquifer at selected areas such that the positive impacts from recharge would result in greater discharge from the aquifer to the river in the reaches in question during the critical low flow period.

The first approach presented above is the subject of this proposal. The second and third approaches are briefly described below.

There are a number of constraints relative to using the storage behind Post Falls Dam within Lake Coeur d'Alene to mitigate low flow problems within the Spokane River at the Spokane gage. Two physical constraints are important: 1) the outlet channel immediately north of Coeur d'Alene Lake is the hydraulic control for water discharging from the lake to the river during both extreme low flow and extreme high flow and 2) a significant portion of the discharge from the Post Falls Dam infiltrates into the aquifer in the river reach from the dam to approximately Barker Road. Other constraints include maintaining a designated lake level during the summer recreational period and satisfying existing streamflow rights in the river. The alternative of using water from Coeur d'Alene Lake to aid in meeting minimum streamflow

targets in the Spokane River is a subject that needs additional research.

The alternative of using the SVRP aquifer for water storage with later recovery via the discharge to the Spokane River was the subject of an extensive study by Barber and others (2011). The following quotes provide an overview that their study.

> "Using Visual MODFLOW with the regionally-approved 1990-2005 MODFLOW-2000 model data, a comprehensive aquifer recharge and natural recovery feasibility study involving two water sources, multiple injection sites, and timing considerations was conducted with withdrawals occurring during periods of excess river flows in the Spokane and Pend Oreille watersheds. One of the primary project constraints involved the influence of injection on flows in the Spokane River. The optimized artificial recharge was designed to improve low flows in the months of August, September, and October ....
>
> MODFLOW modeling results showed increases in head by artificial recharge produce increased flows into gaining reaches and decreased flow out of losing reaches.... Surface water diversions from the Spokane River proved to be problematic due to excessive treatment costs and groundwater extraction from the Washington side of the aquifer to the injection sites created large depressions that had to fill prior to any river benefit. Therefore, the optimum solution was to take water from the Lake Pend Oreille area during high flow periods. This increases the net recharge already occurring from that area....
>
> The two best alternatives involve 300 ft^3/s of extraction/injection via a 72-inch pipeline for four months (April – July) originating from near Lake Pend Oreille and terminate near the intersection of N. Ramsey and E. Diagonal Road.... or at Rathdrum" (pages x-xii).

DESCRIPTION OF THE PROPOSED PROJECT

Introduction

The proposed project addresses whether changing the amount, timing and location of ground-water pumping within the SVRP aquifer in Washington and Idaho can be used as a management approach to mitigate the problems associated with critical low flow in the Spokane River at the Spokane gage during late summer and fall months. We know that ground-water pumping in both states impacts the flow of the river. We also know that the time lag between operation of a given well and the associated impacts on the river is controlled by the distance to the river and the hydraulic properties of the aquifer. A well located very near a reach of the river where there is saturated hydraulic connection of ground water and surface water obviously has a greater and more immediate impact on the flow of the river than a well located at a greater distance from the river.

The focus of the proposed project is the analysis and development of a water management program that includes staged operation and possible relocation of production wells based on the amount and timing of impacts on the Spokane River at the Spokane gage. At least four major questions need to be addressed relative to this water management program.

- First, what criteria would be used to select wells to be part of the management program?
- Second, how would the program of staged operation of production wells operate in order to meet target discharge rates within the river?
- Third, how would impacts from decreased water supply for users of the wells included in the program be mitigated?
- Fourth, how would the proposed management program be administered within the constraints of the water-right systems of both Washington and Idaho?

The proposed project is designed to address technical issues associated with the first three questions posed above.

Problems associated with conjunctive management of water resources in the SVRP aquifer/Spokane River system are similar to those currently being addressed in the Eastern Snake Plain Aquifer/Snake River system in Idaho. Both aquifers have high transmissivity and both aquifers act as unconfined ground-water systems. The primary water management issues in both areas are impacts of ground-water pumping on surface water systems. The primary issue in the Snake Plain aquifer is decreased discharge rates from springs, many of which are located topographically above the Snake River. The primary issue in the SVRP aquifer is the decreased discharge of ground water into the Spokane River.

Conjunctive management of surface water and ground water in the Snake Plain aquifer has been based in part on using steady state and transient response functions in conjunction with the existing aquifer numerical model to predict impacts of wells in different areas on groups of springs. Cosgrove and Johnson (2004, page 1470) describe the response function approach as follows.

> "Response functions are mathematical descriptions of the relationship between a unit stress to an aquifer at a specified location and an impact elsewhere in the aquifer system. The impact could be stream depletion at a hydraulically connected river reach or change in aquifer water level at a location other than the pumping location. The response function, for example, could be a curve describing stream depletion over time, resulting from a unit stress. Each response function models the response of a specific river reach or aquifer water level to a unit stress at a specified location....
>
> Response functions can be generated using either analytical techniques or a numerical model..... Generating response functions using a numerical ground water model enables the representation of complex system heterogeneities and anisotropies."

The response function approach has been applied to a limited extent in the SVRP aquifer/Spokane River system. Taylor, Contor and Johnson (2007) used the model of Hsieh and others (2007) to develop a series of contour maps illustrating the effect of pumping or recharge in the SVRP aquifer on different reaches of the Spokane and Little Spokane rivers and on Pend Oreille and Coeur d'Alene lakes. They also developed a spreadsheet that was capable of estimating river depletion for a series of SVRP zones with user entered pumping rates. Both of these efforts on the SVRP involved transient capture response functions determined on a monthly basis. Johnson, Contor and Taylor (2009) determined that non-linearity did not create significant error with SVRP response functions provided the functions were determined using an unconfined version of the SVRP aquifer model.

This proposal includes expansion of the Taylor, Contor and Johnson (2007) work by development of transient response functions on a daily basis. We propose to use the response function approach to analyze the timing and amounts of impacts of individual wells and groups of wells within the SVRP aquifer on the flow of the Spokane River as measured at the Spokane gage. We will be using MODFLOW with the regionally-approved 1990-2005 MODFLOW-2000 model developed by Hsieh and others (2007).

Purpose, Objectives and Scope of Work

The purpose of the project is to assess whether a program of reduced or relocated pumping from specific wells at specific times within the SVRP aquifer can be an important component in mitigating critical low-flow conditions in the Spokane River as measured at the Spokane gage. The general objective of the project is to use transient response functions in conjunction with investigations of the surface water – ground water system to assess changes in

the flow of the Spokane River at the Spokane gage resulting from a program of reductions or relocations in pumping from selected wells during selected periods.

The following are a list of specific objectives along with a description of the proposed work and the proposed product. Products A and B constitute Phase I of the project and products C and D constituted Phase II of the project.

- ***Product A. Gain an improved understanding of low-flow conditions in the Spokane River from the Post Falls gage to the Spokane gage in order to better understand the surface water/ground water system and provide a basis to evaluate the results of the transient the response function analysis.*** The river reach from the Post Falls gage to the Spokane gage includes both losing and gaining segments. Hortness and Covert (2005) provide a temporal analysis of the net changes in flow between these stream gaging stations for the July through December period through 2002. Two previously operated gaging sites below Post Falls were reinitiated in 1999. These stations are the Spokane River above Liberty Bridge near Otis Orchards (USGS 12419500) and the Spokane River at Greenacres (USGS 12420500). Only about three years of record for these sites were included in the analysis by Hortness and Covert (2005). We believe that analysis of an additional 10 years of record (through 2012) for all four of the gaging stations will provide very useful results in support of the response function analysis.
    - Project work would involve compilation and analysis of U.S. Geological Survey streamflow data in the period of approximately 1999 through 2012 for gaging stations at Post Falls (USGS 12419000), Otis Orchards, Greenacres and Spokane (USGS 12422000). The focus would be on describing flow rates during the months of July through December for each year. These results would be compared to the analysis presented in Hortness and Covert (2005).
    - The analysis will also summarize calculated daily Spokane River gains and losses (water budget determinations) for river reaches between the gages identified.
    - As pumping decreases during September and October due to decreased lawn watering and irrigation, river depletion may be noticeably diminished. Gain and loss estimates for the August through December period will be compared to pumping volumes and pumping effects as presented in Hsieh and others (2007) to identify possible correlation. Significant correlation would support the hypothesis that aquifer pumping is a substantial contributor to river depletion.
    - The product of this work would be: 1) a memo report that describes the stream loss and/or gain between these stations, the range of river discharges during the critical low-flow periods from 1999 through 2012 period and the possible temporal correlation to changes in pumping amounts and 2) a presentation/discussion meeting if desired.
- ***Product B: Conduct a Reconnaissance Transient Response-Function Analysis of Pumping Effects on the flow of the Spokane River at the Spokane Gage.*** The purpose of is effort is to do a reconnaissance-level analysis of the magnitude and timing of ground water pumping effects on depletion of the Spokane River.
    - A transient response function analysis on a daily time increment will be conducted to create a series of graphs that illustrate river depletion from a one day pumping event at 10 to 15 selected locations at varying distances from the Spokane River. The graphs, similar to that shown on Figure 11, will illustrate river depletion (as a percent of pumped volume) over a period of one month resulting from the one day pumping event. These graphs will be created using the SVRP aquifer model by Hsieh and others (2007).
    - The graphs will provide the basis for developing the detailed procedure to

accomplish Product C below. The degree to which pumping location affects the timing and magnitude of Spokane River depletion will influence the selection and number of locations included in the spreadsheet of Product C. For example, if depletion lags pumping effects by less than one day at all locations within two miles of the river, then the spreadsheet may aggregate these areas together in a zone of near immediate response. Conversely, evidence of significant lag times between pumping and river depletion will require representation of unique pumping locations throughout the area of concern.

- Application of the graphs will be demonstrated by several hypothetical scenarios of reducing pumping rates or altering the areal distribution of pumping to achieve the objective of having additional flow within the river. These examples will illustrate how Products C and D will be developed and applied.
- The product of this work would be: 1) a memo report that describes the preliminary transient response function analysis and the associated graphs and 2) a presentation/discussion meeting if desired.

- ***Product C: Create a River Depletion Spreadsheet.*** The purpose of the River Depletion spreadsheet is two-fold. First, the spreadsheet will provide the computational capability to efficiently complete Product D below. Second, the spreadsheet will allow any water interest to perform independent estimates of pumping impacts of Spokane River depletion and evaluate alternate pumping scenarios.
  - The spreadsheet will contain a large matrix of response function coefficients determined via numerous simulations using the SVRP aquifer model by Hsieh and others (2007). Users will be able to enter actual or hypothetical daily pumping volumes at any of a series of locations representing either: a) identified locations of wells with significant pumping rates, or b) non-pumping sites with potential to delay effects of river depletion. It is expected that a maximum of 50 sites will be included. The location of these sites will be identified in collaboration with IDWR using Product B above.
  - The spreadsheet will multiply the model determined response function coefficients times the user entered pumping volumes and superimpose in time the effects (convolution) of pumping at a given location on depletion of the Spokane River. The effects will be determined for the collective reach of the Spokane River from Post Falls to the Spokane gage. A hypothetical example output of the spreadsheet, resulting from a user evaluating the depletion effects of a five-day shut down of a well pumping at a rate of 10 ft^3/s, is shown in Figure 12. Complex scenarios of changing pumping rates at multiple locations will be possible by storing results in the worksheet and summing results for the multiple locations.
  - The product of this work would be: 1) a memo report that describes the spreadsheet is to be used and includes the spreadsheet and 2) a presentation/discussion meeting if desired. .
  - ***Product D: Assessment of Alternative Pumping Scenarios***. The purpose of this portion of the project is to describe the potential effects (in ft^3/s) of alternative ground water pumping schemes on Spokane River flows. Alternative schemes may involve hypothetical alterations in either pumping rates, locations, or both.
  - The assessment will be made by first evaluating impacts of reported or estimated pumping rates for each significant production well or groups of wells using the spreadsheet described in Product C above. The pumping rates will be typical for the months of July through December. Individual and cumulative effects on the Spokane River will be graphically illustrated. The appearance of the cumulative graph of existing pumping may be similar to that shown by the blue line in

Figure 13.

- The second part of the assessment results from evaluating approximately 10 different schemes (identified in collaboration with IDWR) that alter both pumping rates and locations. The individual well and net effects will be graphically illustrated for each scenario and compared to the effects from the existing pumping scheme. Results of an example scenario may appear similar to that shown by the red line in Figure 13. This product will not provide a comprehensive analysis of all alternative schemes, but should serve as a catalyst to initiate discussions and further use of the spreadsheet in Product C by collaborations of water interests to evaluate and consider mitigation alternatives.
- The potential benefit from completion of production wells with screens deeper within the aquifer will also be explored.
- The product of this work would consist of a final report that includes the results of products A, B and C with the results of product D plus presentation of one or more workshops.

Operation, Administration and Budget for the Project

All of the work on the project would be conducted by Dr. Ralston and Dr. Johnson (or under their direct supervision) with input from IDWR and other interested parties. The project would be administered through Ralston Hydrologic Services, Inc. with Dr. Ralston as lead.

A budget for the project will be created based on the final scope of work as determined with input from IDWR. The project can be completed within one year of award.

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http://www.if.uidaho.edu/%7Ejohnson/ifiwrri/research_and_education.html

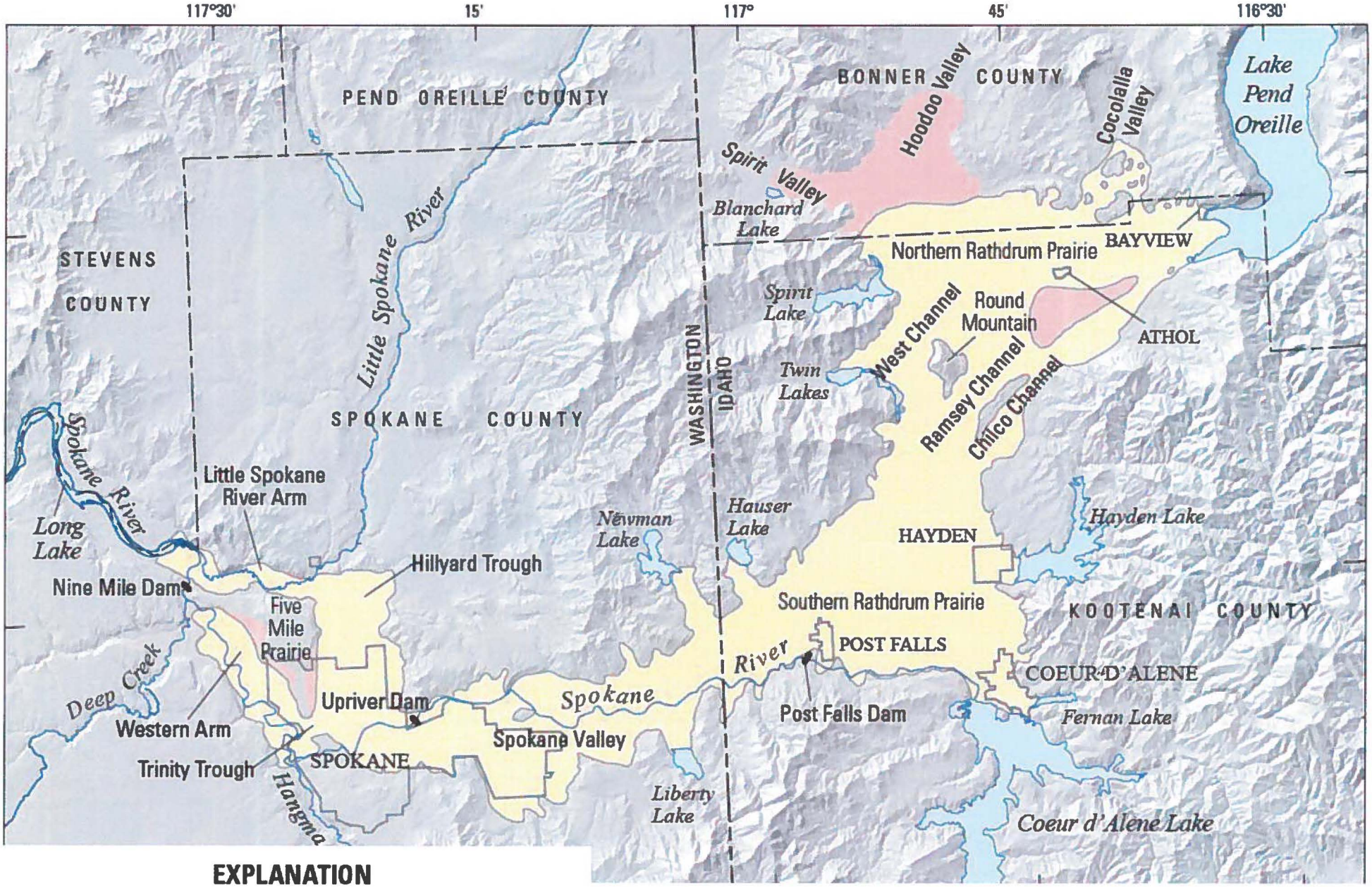


Figure 1 Plan Map of the SVRP Aquifer (taken from Hsieh and others, 2007)

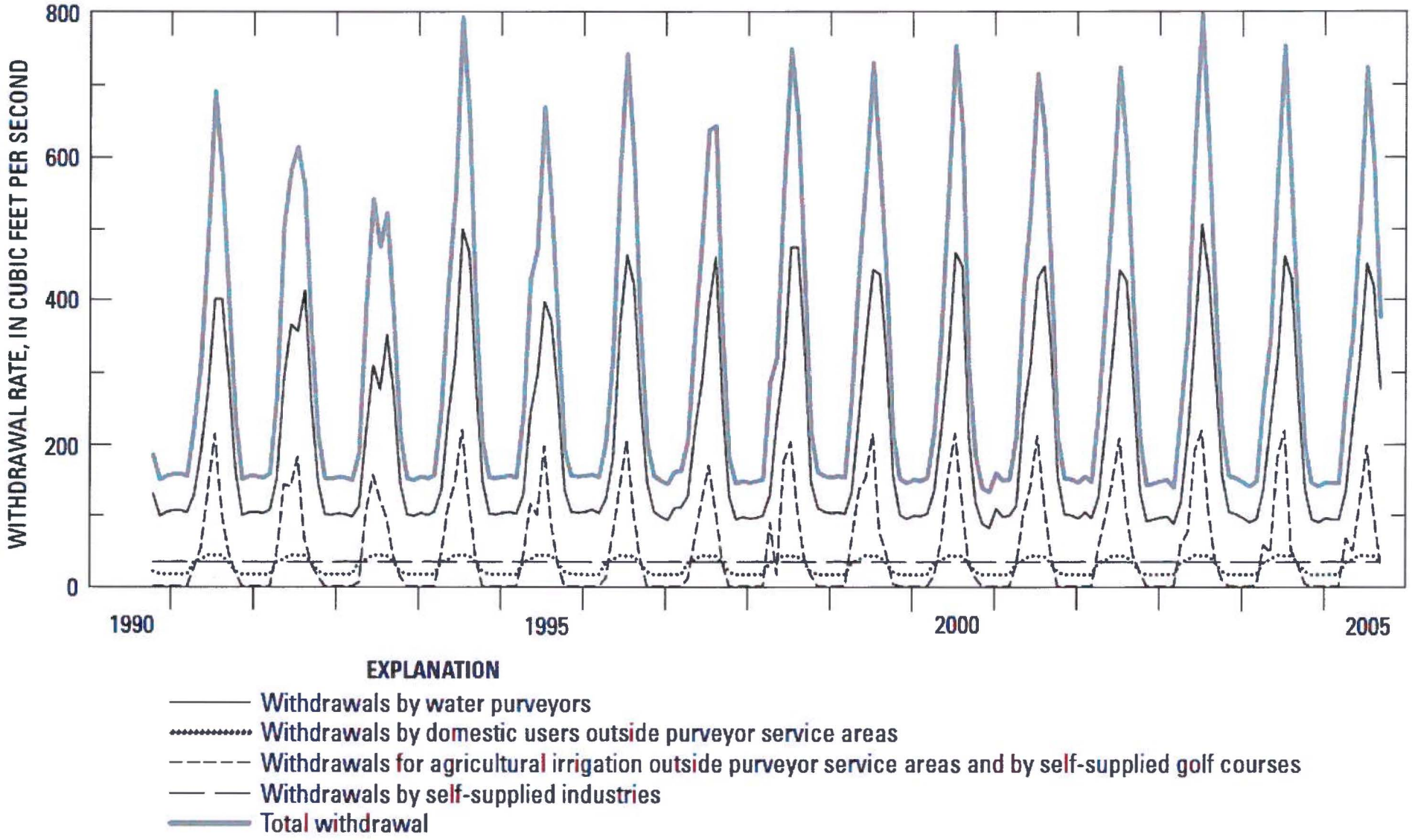


Figure 2 Withdrawal rates from wells (Taken from Hseih and others, 2007)

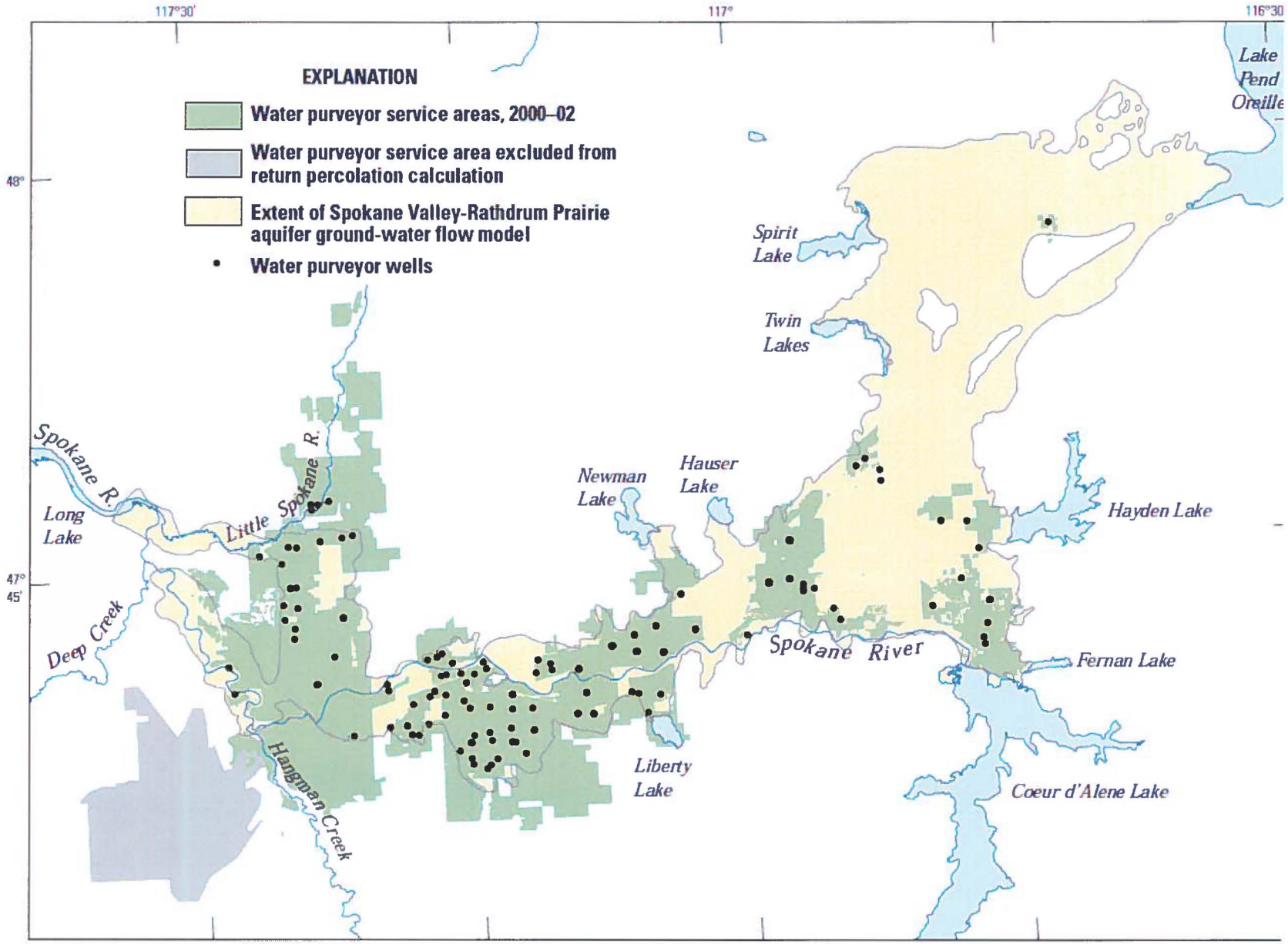


Figure 3 Location of Water Purveyors' Wells (Taken from Hseih and others, 2007)

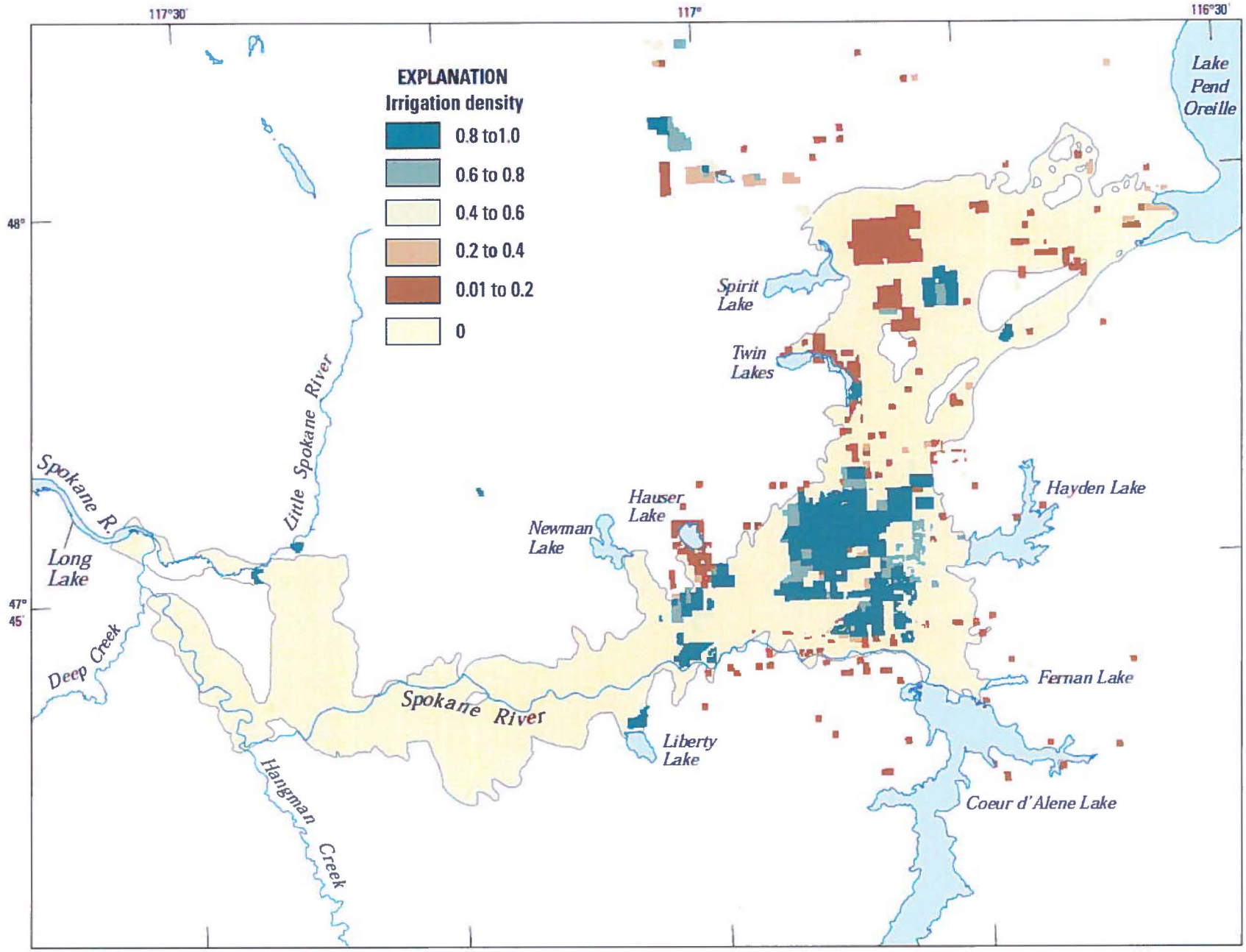


Figure 4 Map of Irrigation Densities (Taken from Hseih and others, 2007)

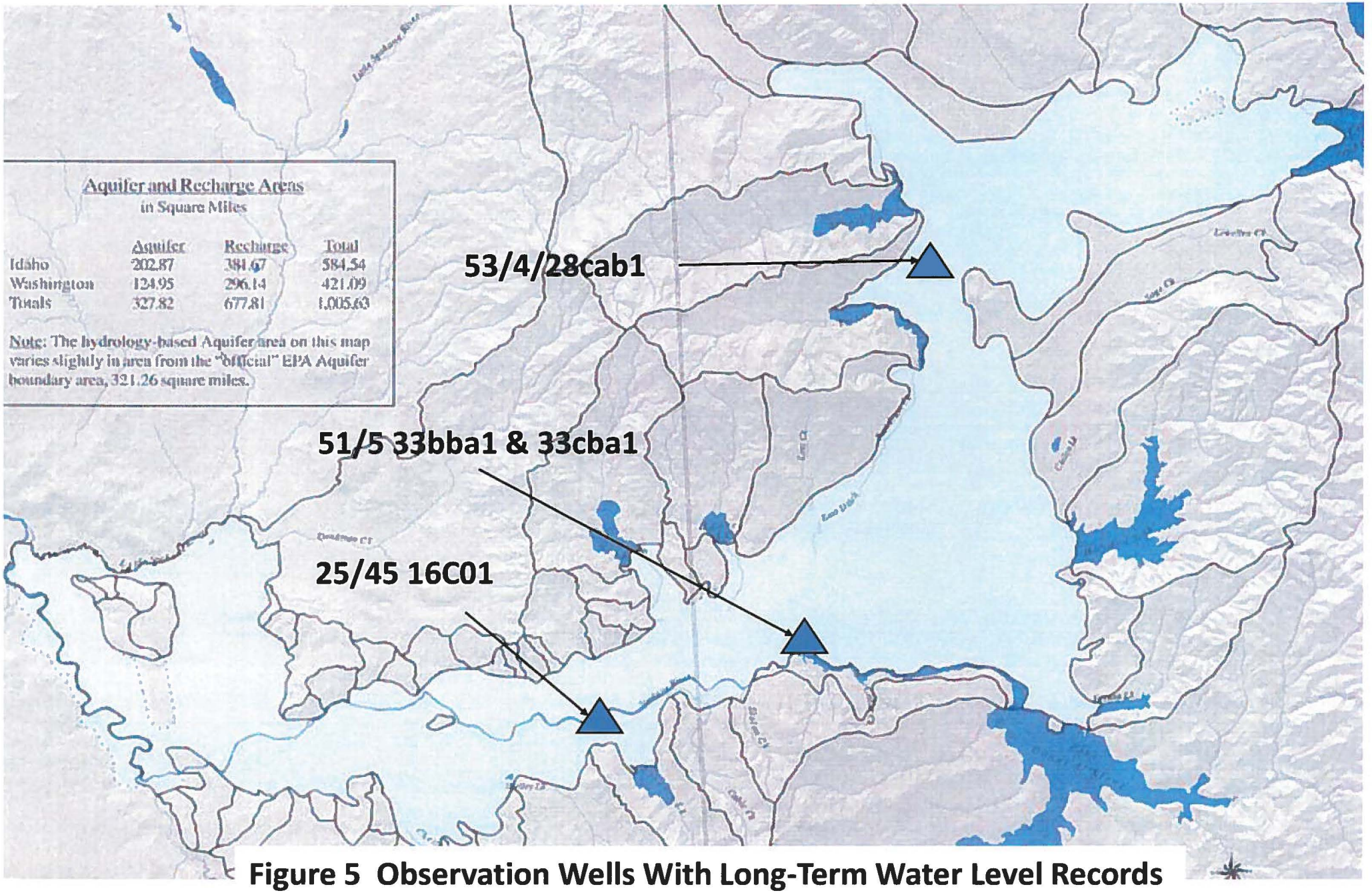


Figure 5 Observation Wells With Long-Term Water Level Records

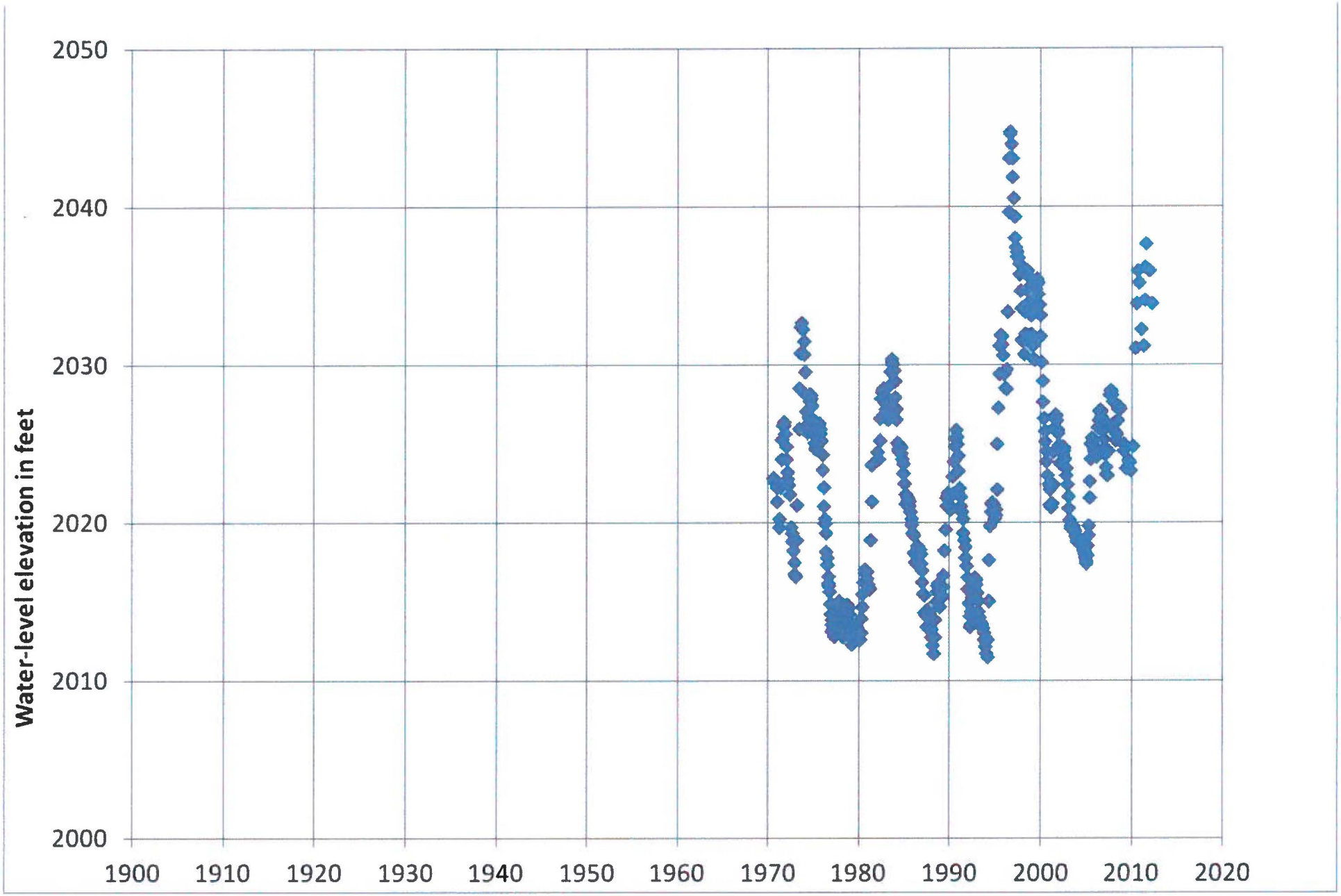


Figure 6 Hydrograph for Well 53/4 28cab1 Located Near Spirit Lake, Idaho

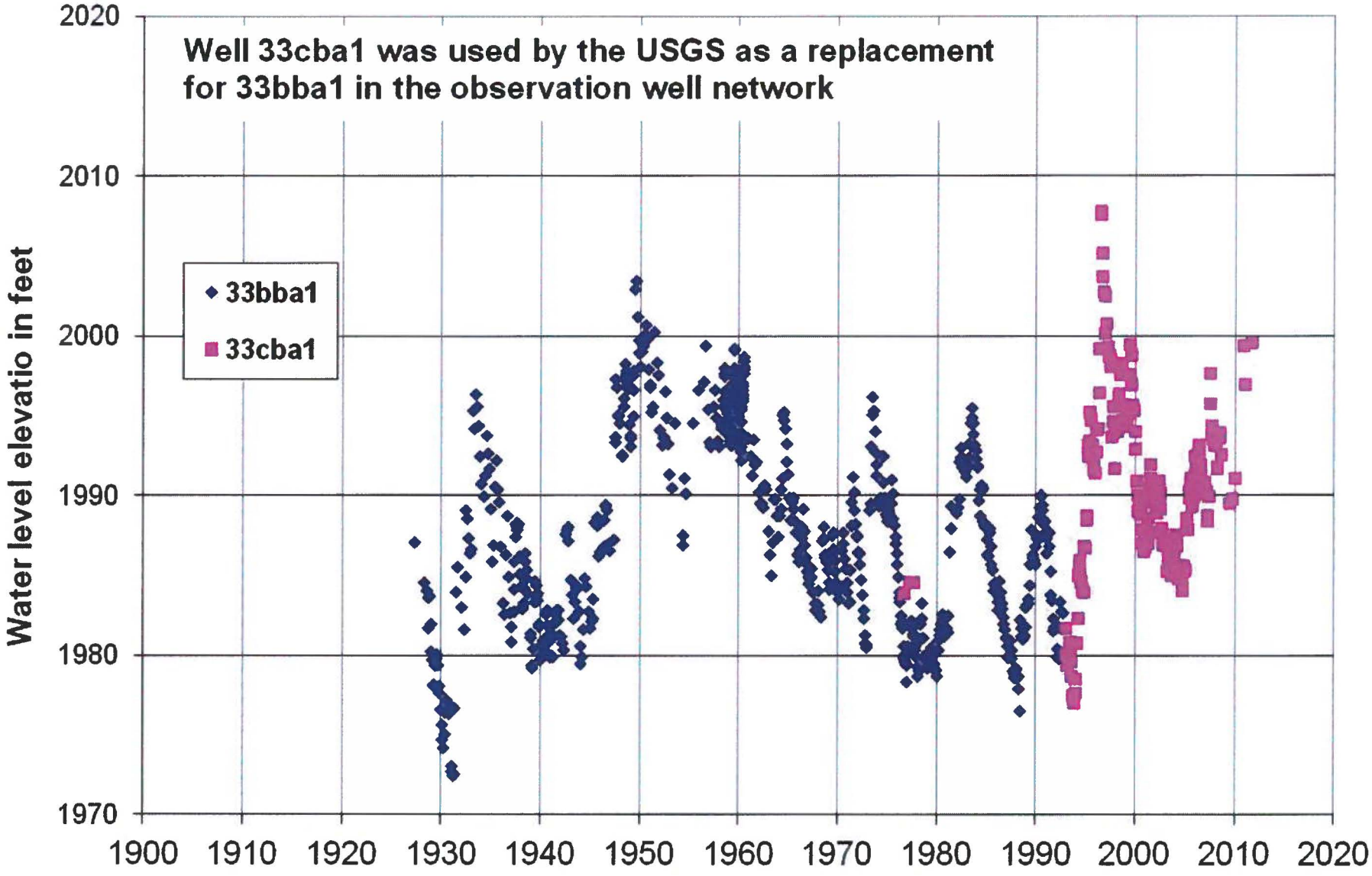


Figure 7 Hydrograph for Wells 51/5 33bba1 and 33cba1 Located Near Post Falls, Idaho

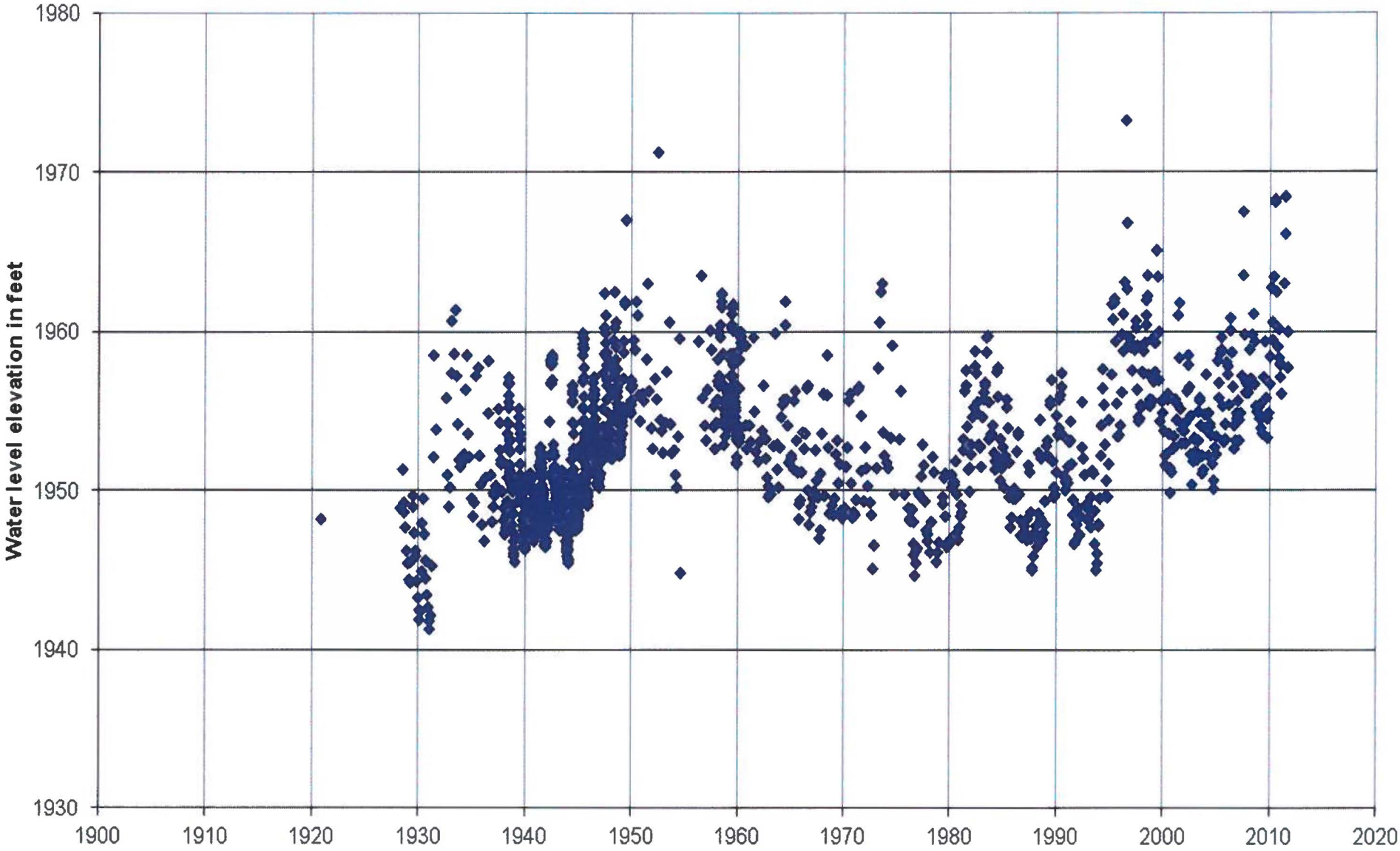
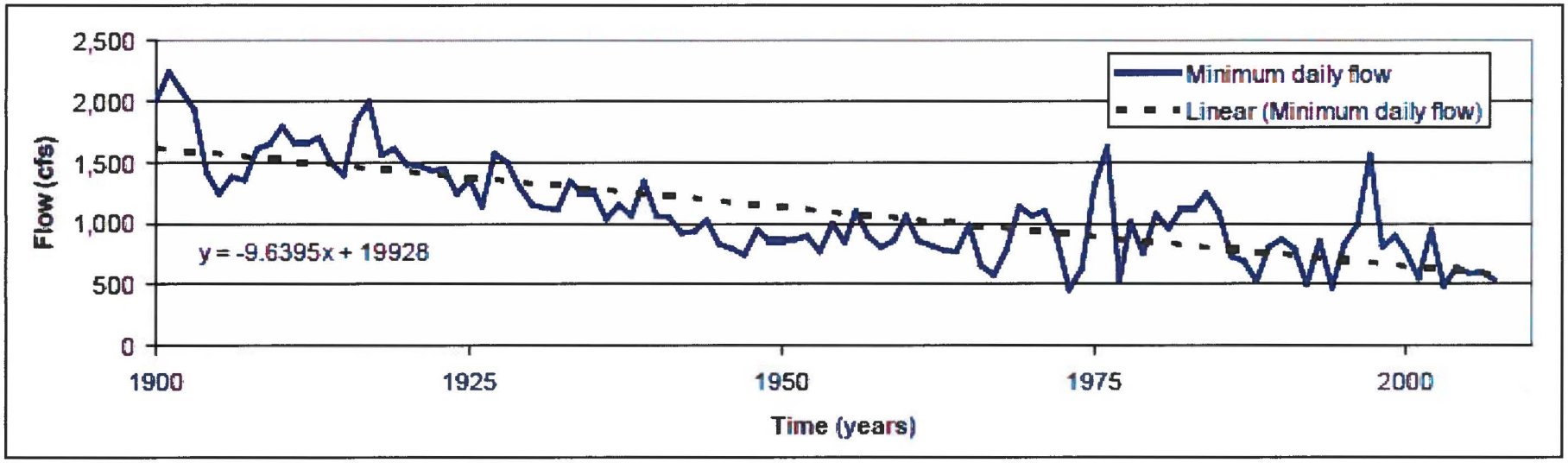


Figure 8 Hydrograph for Well 24N 45E 16C01Located Near Liberty Lake, Washington



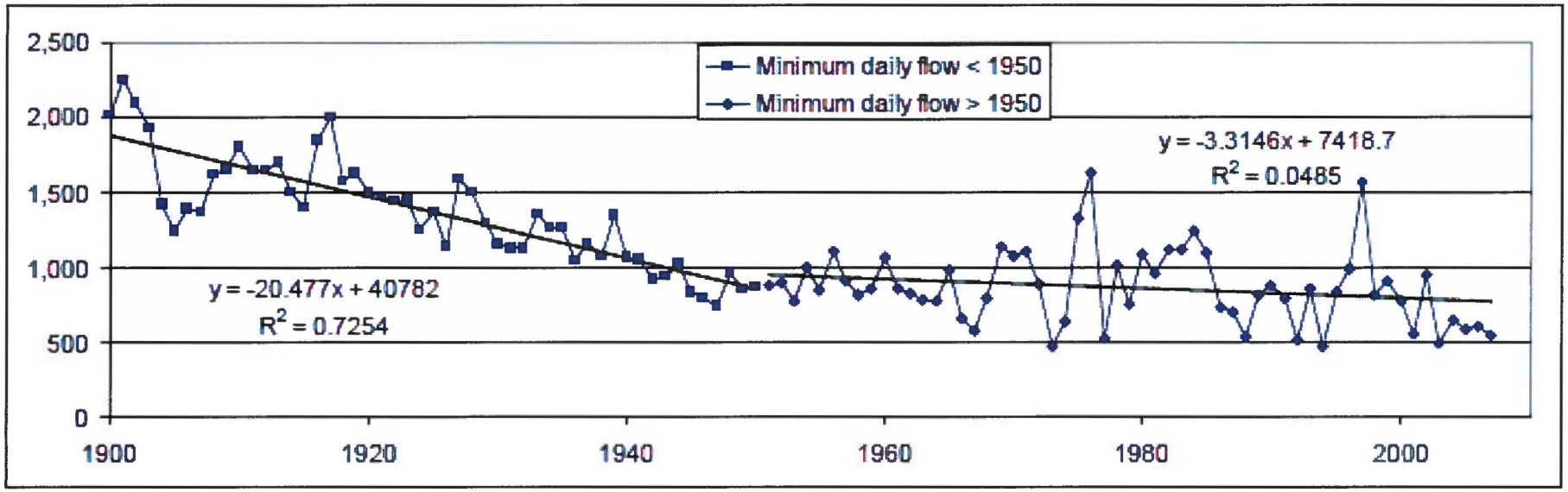


Figure 9 Minimum Daily Flow of the Spokane River at the Spokane Gage (Taken from Barber and others 2011)

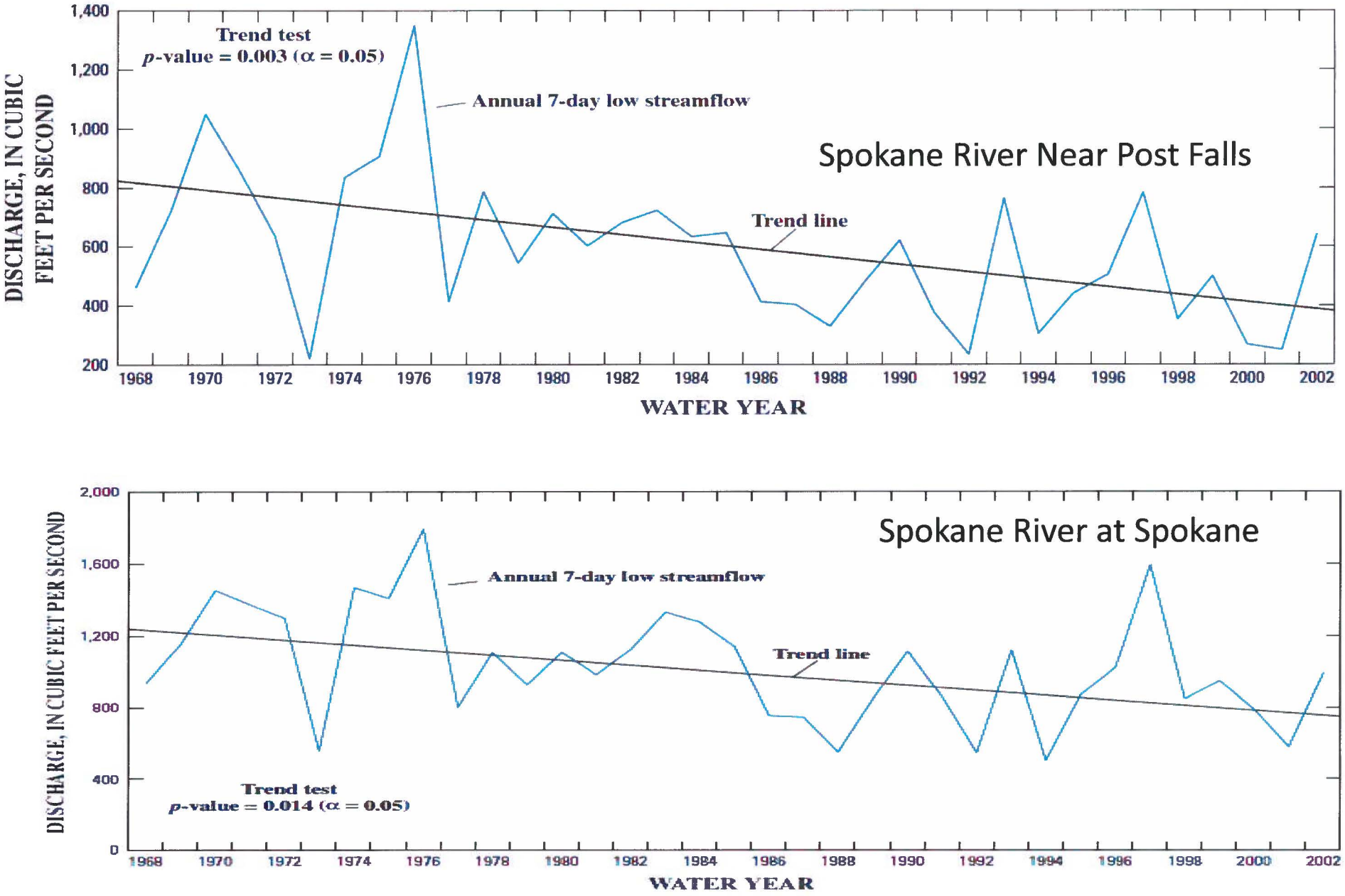


Figure 10 Trend Analysis of 7-Day Low Streamflows for the Spokane River Near Post Falls and at Spokane, 1968-2002 (Taken from Hortness and Covert, 2005)

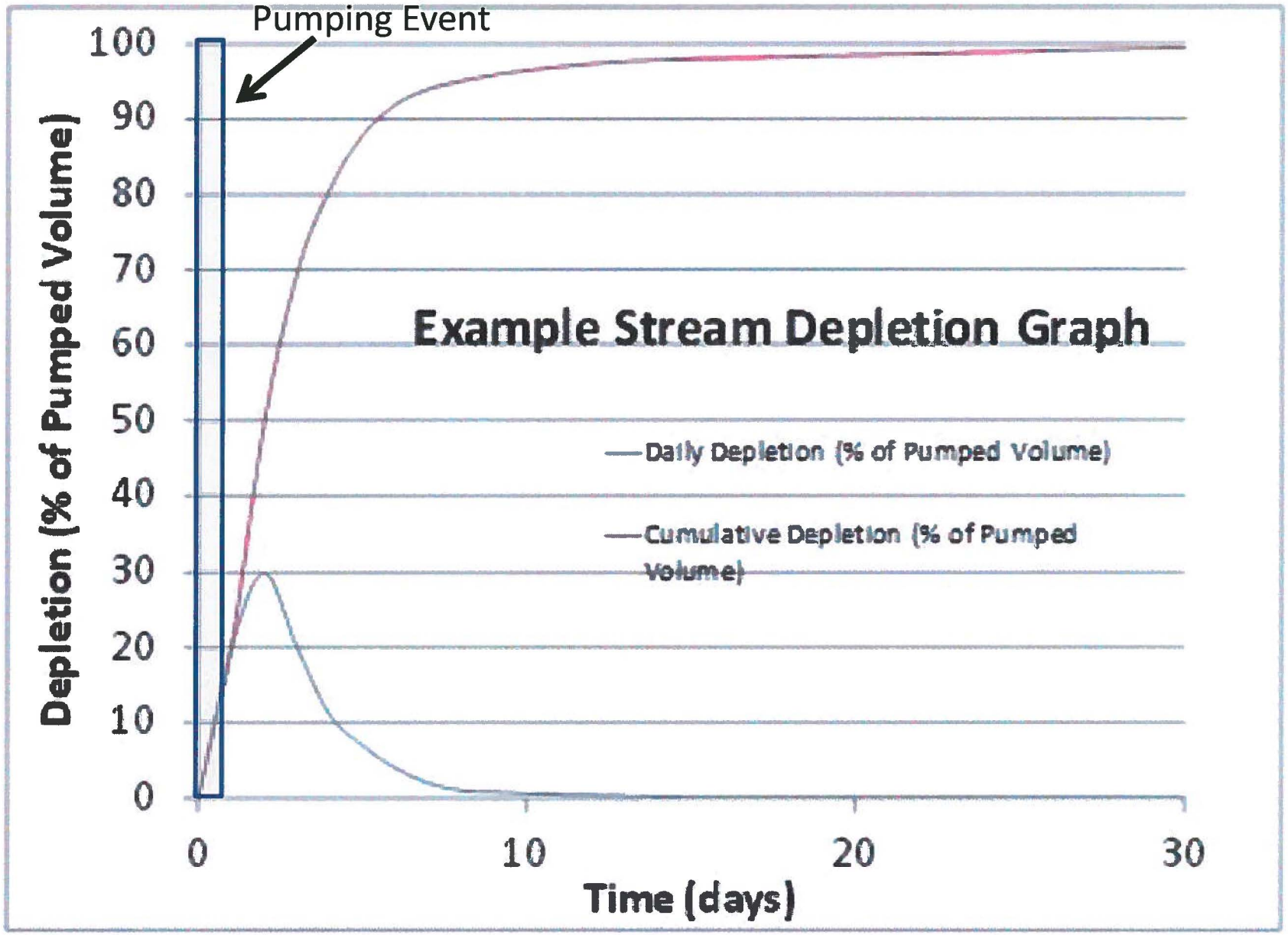


Figure 11 Example Stream Depletion Graph

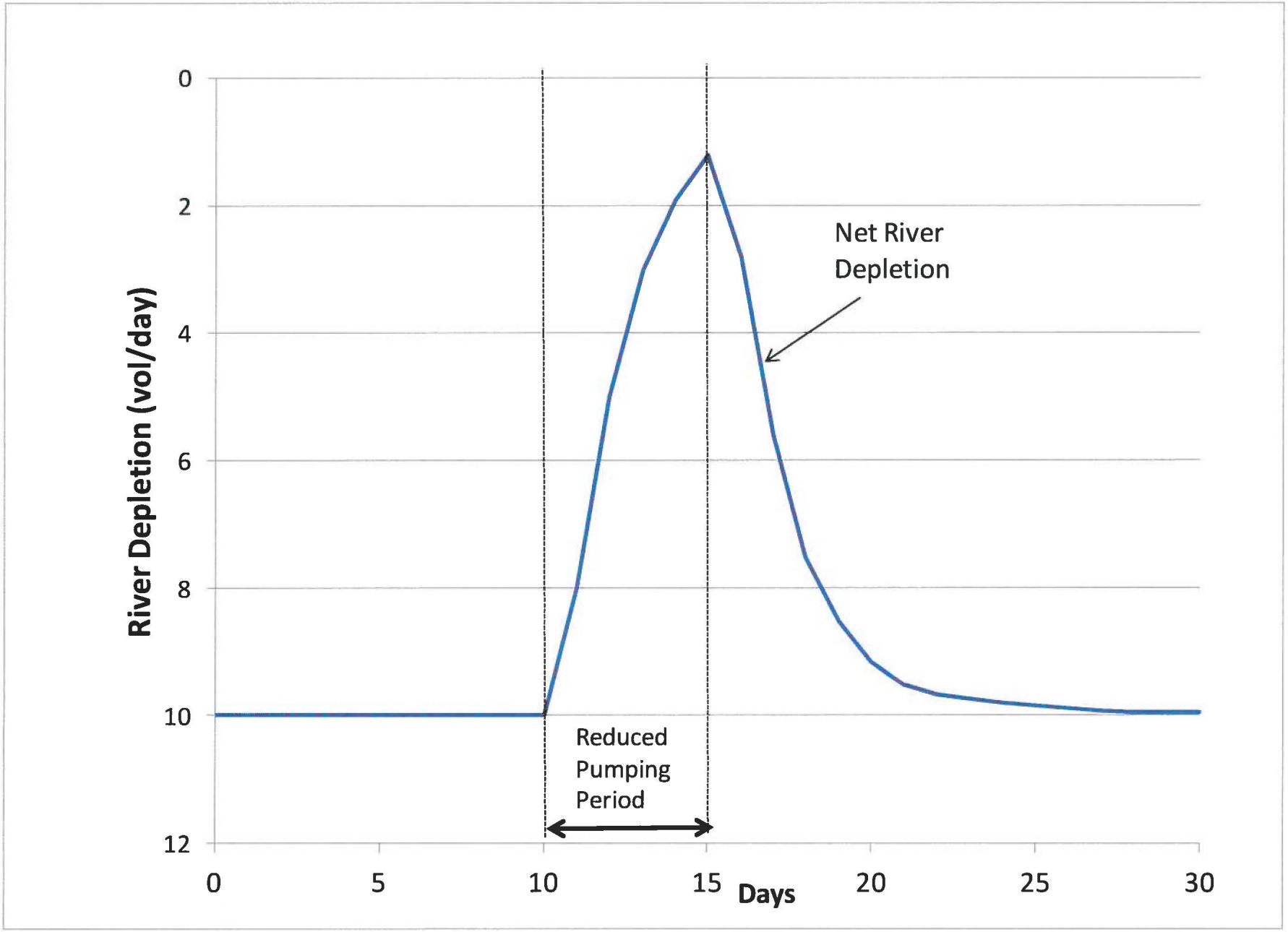


Figure 12. Hypothetical example of change in depletion resulting from a five-day cessation in pumping.

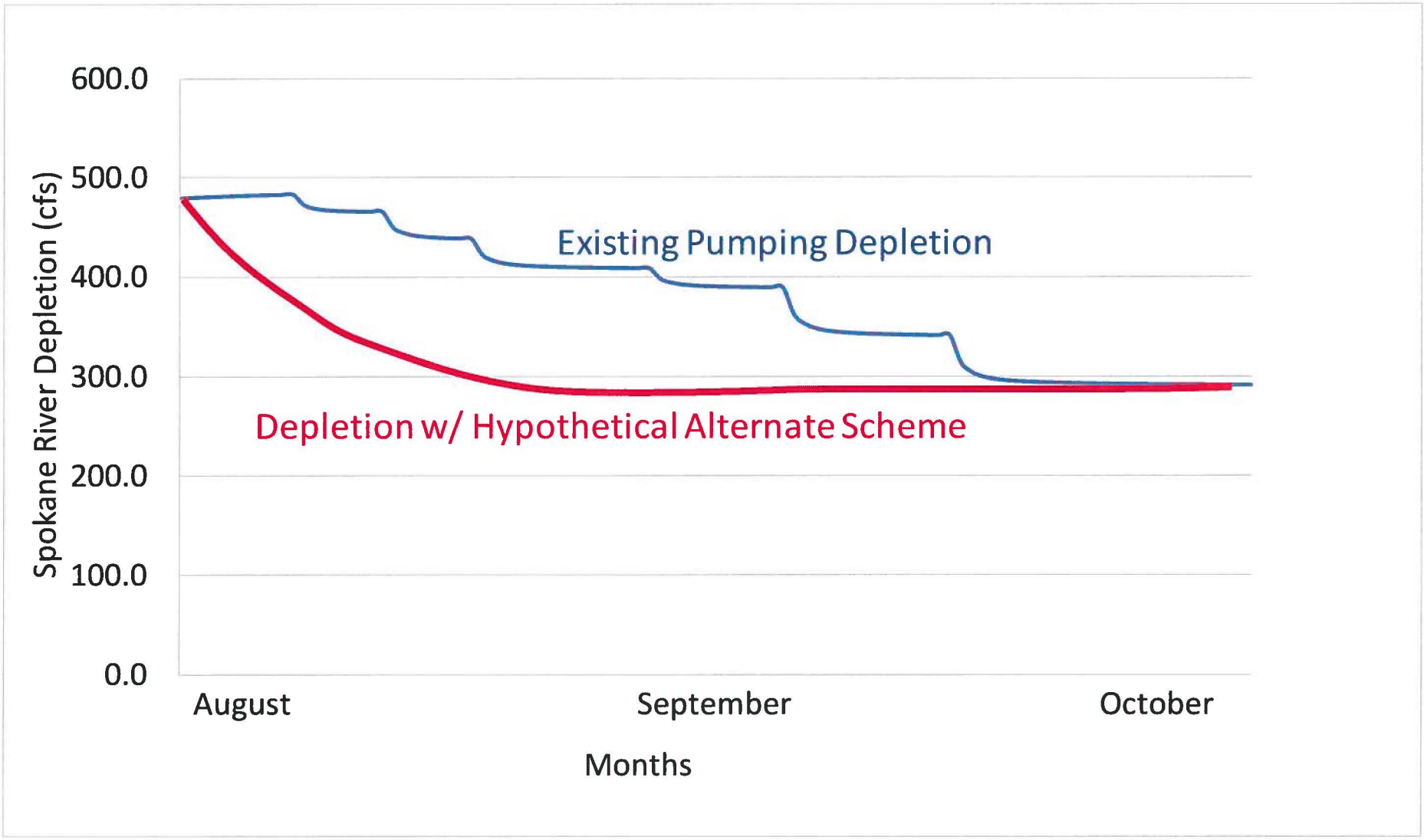


Figure 13. Hypothetical depletion estimates for existing pumping and an alternate scheme.