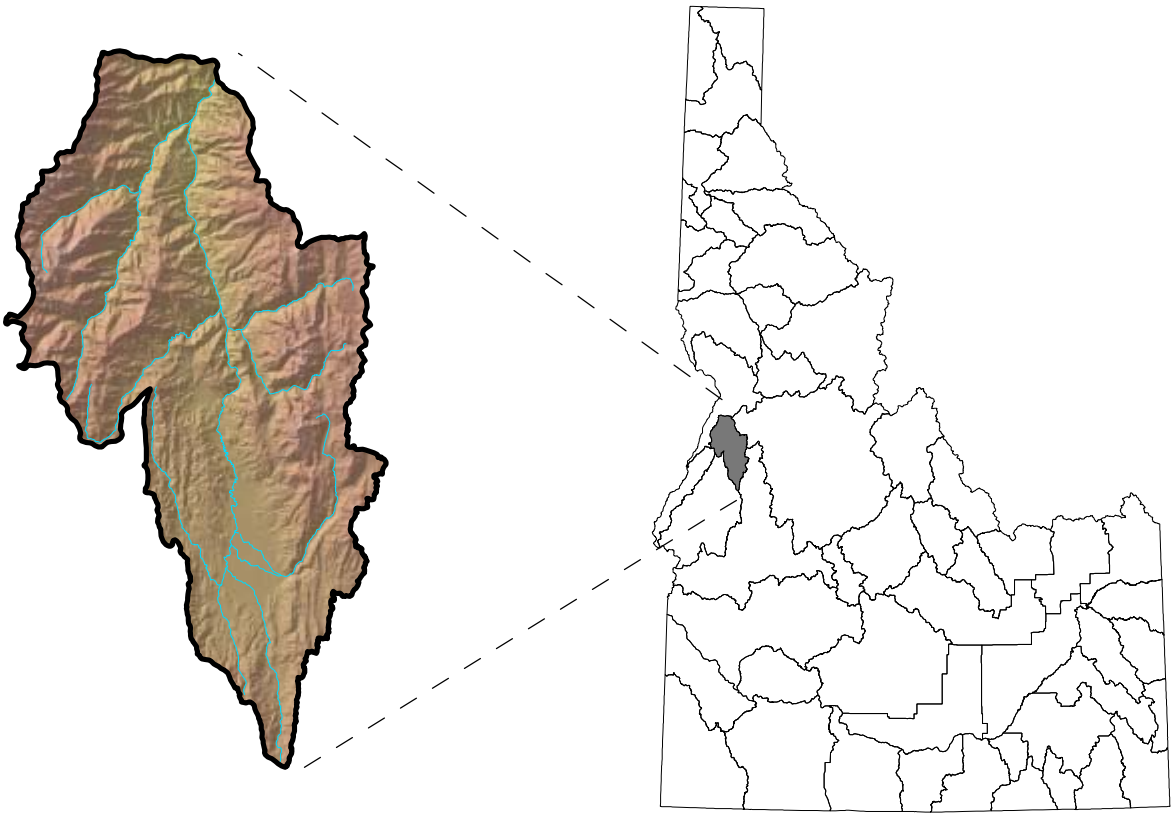
COMPREHENSIVE STATE WATER PLAN - PART B

Little Salmon River Basin



Idaho Water Resource Board
October 2001

Comprehensive State Water Plan - Part B
Little Salmon River Basin

EXECUTIVE SUMMARY

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Adopted by the Idaho Water Resource Board
October 19, 2001

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E X E C U T I V E S U M M A R Y

This document describes comprehensive water resource planning actions, and recommendations for the Little Salmon River basin in central-western Idaho (front cover and Figure 1). The 576-square mile basin is located in northeastern Adams and southwestern Idaho Counties, and flows into the Salmon River (at river mile 86.7) at the northern side of Riggins. With one minor exception, the Little Salmon River basin coincides with U.S. Geological Survey Hydrologic Unit 17060210 and Idaho Department of Water Resources Administrative Basin 78. The basin is mountainous and sparsely populated. Occupations in ranching, logging, and lumber manufacturing contribute much to the basin's economy. Tourism and related services are becoming more important locally, potentially helping to support the area during downturns typically experienced by natural resources-based economies. Individuals and planning or management entities are encouraged to utilize and build upon the actions and recommendations initiated by this plan.

Little Salmon River Basin Comprehensive State Water Plan History and Public Involvement

Flooding and related landslides in January 1997 spurred the formation of the *Plan*. In a letter to IDWR, the Little Salmon Watershed Alliance, Inc. requested that IDWR determine which areas were prone to landslides and slippages (Little Salmon Watershed Alliance, Inc. June 26, 1997, pp.1-2). However, the requested study was beyond the normal work capacity of IDWR and the Board, but general elements related to the request could be addressed by the Board's comprehensive planning process. The Board subsequently decided to develop a comprehensive state water plan for the entire Little Salmon River basin in order to provide an analysis of the basin's resources, and to develop recommendations that help guide resource decisions in the future, but with considerations for floods and landslides being a prominent part of the *Plan*.

The public involvement process was initiated on November 10, 1998. Public information meetings were conducted in Riggins, Pollock, and New Meadows. The concerns and ideas of Idaho residents were an important part of the Board's planning process. Input from local citizens, property owners, and other groups who are most familiar with the area was necessary to understand conditions and issues of concern in the basin. Information meetings, citizens advisory group meetings, and formal hearings provided opportunities for public review and suggestions for the *Plan*. The Board weighed all information and concerns, considering both local and statewide perspectives in the public interest.

The Board formed a citizens advisory group comprised of local residents in January 1999. Members represented local government, industry, agriculture, and private interests including water-users, landowners, and sportsmen. The mission of the group was to identify local concerns, to review information, and to provide opinions and suggestions for the Board's consideration in plan development. The group met eight times during development of the plan's first draft, and three more times for the second draft plan. All group meetings were open to the public.

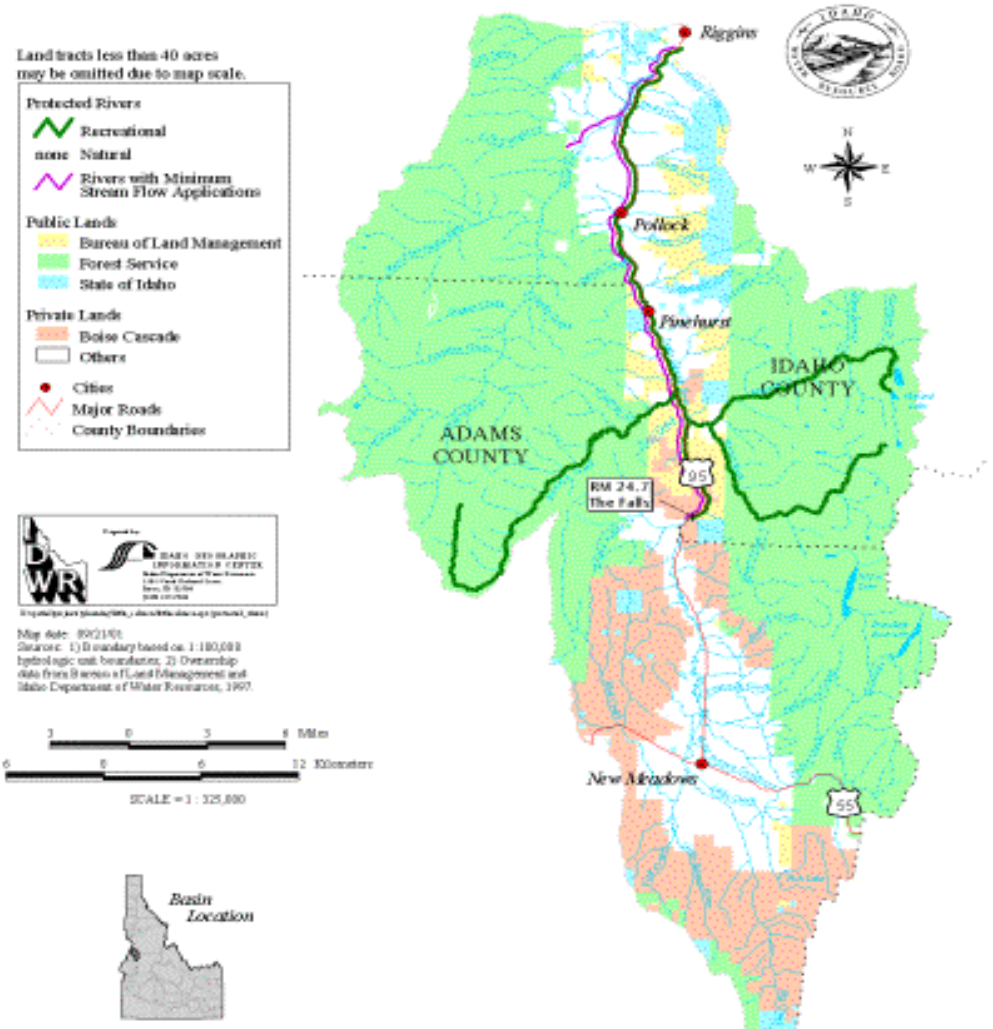

Figure 1. Land ownership and protected rivers in the Little Salmon River basin.

In addition, newsletters were circulated to interested parties that summarized the development of the *Plan*, announced group meetings, and requested comments on important issues and information. After careful consideration of all public testimony, the Board made significant changes to the *Plan* before its final release.

- The *Draft Little Salmon River Basin Comprehensive State Water Plan* was released for public comment on September 27, 2000. Comments were taken until November 30, 2000.

- A second draft *(Little Salmon River Basin Comprehensive State Water Plan: Second Draft*) was released on June 4, 2001, and comments were taken until August 3, 2001.

- The second draft included a supplemental document containing a discussion of flooding and landslides (titled, *Little Salmon River Basin Comprehensive State Water Plan Supplement–Flood and Landslide Management Information*).

- The Board adopted the *Little Salmon River Basin Comprehensive State Water Plan, Part B,* on October 19, 2001, and submitted it to the 2002 Legislative Session for their review and ratification.

Idaho Water Resource Board Actions and Recommendations

Based on available information, the Board developed "actions" and "recommendations" and presented them in the plan's first draft. These draft actions and recommendations were mailed to the citizens advisory group for evaluation and comment and were further refined in the plan's second draft. Citizens advisory group members provided the Board's planning staff with written and verbal responses during this process.

The Board's actions are presented first (see below), and are then followed by recommendations categorized according to the issues of concern as prioritized by the Board and the citizens advisory group. Recommendations are an outgrowth of the ideas and direction provided to the Board by the citizens advisory group.

At the core of this plan is the Board's recognition that local control can be maintained only if local citizens and residents participate constructively in the decisions that affect their community. Although Idaho Code § 42-1734B (4) directs state agencies to "exercise their duties in a manner consistent with the comprehensive state water plan," the Board also relies on cooperation and assistance from others to implement its plan recommendations. The Board urges all agencies and the public to implement the recommendations in a manner that supports and complements the *Plan*.

Board Actions

Protected Rivers

A comprehensive state water plan may designate outstanding waterways as a "Protected river," being either a "natural river" or a "recreational river" (Idaho Code § 42-1731(8)). The protection designations are further defined by Idaho Code §§ 42-1731(7) and (9) as "… a waterway which possesses outstanding fish and wildlife, recreation, geologic, or aesthetic values…" and:

- Natural rivers are free of substantial human development in the waterway, and the riparian area is largely undeveloped (but may be accessible in places by trails or roads).
- Recreational rivers may include human development in the waterway or the riparian area.

The Idaho Water Resource Board considers the impacts of protection designations on the social, economic, and environmental livelihood of the region. A protection designation is made if the Board determines the value of preserving the waterway is in the public interest and outweighs development for other beneficial uses (Idaho Code § 42-1734A(4)). The Board also determines which activities shall be prohibited, and may specify terms and conditions for other activities not listed (Idaho Code § 42-1734A(5)). Potentially prohibited activities include:

- construction or expansion of dams or impoundments,
- construction of hydropower projects,
- construction of water diversion works,
- dredge or placer mining,
- alterations of the stream bed,
- mineral or sand and gravel extraction within the stream bed.

Prohibitions for recreational designations do not interfere with activities necessary to maintain and improve *existing* utilities, roadways, managed stream access facilities, diversion works, or private property. Natural and recreational designations do not change or infringe upon *existing* water rights or other vested property rights.

As a part of the development of the *Little Salmon River Basin Comprehensive State Water Plan, Part B*, streams were identified that will benefit from state protection designation to protect current outstanding values for the people of Idaho. All landowners – private, state, and federal – are encouraged to manage their lands consistent with the Board's protection designations. The Board also encourages federal resource management agencies to work within the comprehensive state water planning process rather than pursuing federal protection of waters within Idaho.

Designated Waters in the Little Salmon River Basin

To protect the public interest, current resource use, and the multiple-use character of the basin, the Idaho Water Resource Board designates the following streams and stream segments as Recreational Rivers (no streams are designated Natural Rivers) (Figure 1):

Recreational Rivers

Little Salmon River: from the Highway 95 bridge above "The Falls" (river mile 24.7), to the confluence with the Salmon River (24.7 miles total length).

Boulder Creek: from its headwaters to its confluence with the Little Salmon River (18.6 miles total length).

Hard Creek: from its headwaters to its confluence with Hazard Creek (12.0 miles total length).

Hazard Creek: from the outlet of Hazard Lake downstream to its confluence with the Little Salmon River (12.5 miles total length).

- ***Prohibited activities***: Construction or expansion of dams or impoundments; dredge or placer mining (including recreational dredging); mineral or sand and gravel extraction within the stream channel. Other alterations of the stream channel are prohibited, except as provided below.
- ***Activities allowed with terms and conditions:*** The following activities are allowed if they do not impede fish and boat passage:
  1. Construction of water diversion works for domestic, commercial, municipal, industrial, agricultural, and hydropower uses;
  2. Alterations of the stream channel for protection and maintenance of private property, for flood control, for public recreation facilities, and for fish and wildlife enhancement structures.

All activities must comply with state stream channel alterations rules and standards. All works must be constructed or maintained to minimize erosion and sedimentation.

Minimum Stream Flows

Idaho Code, Title 42, Chapter 15, grants authority to the Idaho Water Resource Board to appropriate water for minimum stream flows. The statute defines minimum stream flow as a flow of water that is required to protect fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, navigation, transportation, and/or water quality. A minimum stream flow is not an ideal flow, but a minimum to protect beneficial uses (Idaho Code § 42-1503).

Like any other water right, a minimum stream flow must take its place by priority. A minimum stream flow right is filled only when senior rights have been satisfied. Furthermore, the process for the Board to acquire a minimum stream flow right is separate from the process to develop this comprehensive state water plan, *but is often done in conjunction with comprehensive state water planning efforts, as in this instance.* Studies to determine the quantity and timing of the minimum stream flow must be conducted before a minimum stream flow is granted. The Board can then submit an application to the director of the Idaho Department of Water Resources, who determines whether to grant the right in accordance with Title 42, Chapter 15 of the Idaho Code. Minimum stream flows granted by the director are approved by concurrent resolution of the Idaho State Legislature.

Because of their importance to Idaho and the basin's public health, safety, and welfare, minimum stream flows are required for protection of fish and wildlife habitat, water quality, aesthetic beauty, and recreational values. The preservation of the water for such purposes is in the public interest, and by law is declared a beneficial use (Idaho Code § 42-1501). The Board proposes that minimum stream flow rights be pursued on the following stream reaches (Figure 1):

- **Rapid River,** from the National Forest boundary above the fish hatchery, to the river's confluence with the Little Salmon River (2.8 miles total length).
- **Little Salmon River,** from the Highway 95 bridge above "The Falls" (river mile 24.7), to the confluence with the Salmon River (24.7 miles total length).

The Board intends to implement the following upon their adoption of the *Plan*:

(a) The Board will request that IDWR, in cooperation with the Idaho Department of Fish and Game, the U.S. Forest Service, and the U.S. Bureau of Land Management, initiate studies on portions of the Little Salmon River and the Rapid River to: verify that minimum stream flows will not interfere with any senior water rights; verify the minimum flows required to protect fish and wildlife, aquatic life, water quality, and aesthetic beauty, etc.; verify if minimum flows are capable of being maintained; and to acquire other necessary information to complete the minimum stream flow permitting process.

(b) As soon as possible after appropriate information is gathered and minimum stream flow analyses are completed, the Board will submit applications to the director of IDWR to acquire minimum stream flow rights on portions of the Little Salmon River and the Rapid River.

(c) If a minimum stream flow is approved by the director of IDWR, and subsequently the Idaho legislature, the Board will request that IDWR direct the watermaster (after the adjudication process is completed in the basin) to monitor flows as necessary to ensure compliance with the minimum stream flow appropriation.

Board Recommendations

Water Rights and Water Use

The Idaho Water Resource Board makes the following recommendations for the protection of water uses and rights in the Little Salmon River basin in the public interest:

- The Board encourages water users to use the Board's water bank to ensure protection from forfeiture and efficient use of water rights in the basin.
- The Board encourages water right owners to prepare for the Snake River Basin Adjudication by documenting current and historic water use.
- The Board supports creation of a water measurement district in the Little Salmon River basin. After the Snake River Basin Adjudication process is complete and all water rights are decreed, the water measurement district should be converted into a water district.
- The Board recommends that IDWR establish policy regarding permitting requirements for small ponds, and actively investigate citizen complaints concerning construction and use of ponds not consistent with established policy.

Flood Management

The Idaho Water Resource Board makes the following recommendations to protect the public interest and meet the goals of flood management in the Little Salmon River basin:

- The Board supports efforts of landowners to maintain streams in a properly functioning condition so that non-structural damages from a 25 to 30-year flood event will be minimized.
- The Board supports efforts of the Idaho Geological Survey and other investigations to develop and collect information about landslide and erosion factors in the Little Salmon River basin that can be used in highway design, river management, and land use decisions.
- The Board supports conducting an expedited reconnaissance and feasibility study, and implementation of study recommendations through cost-sharing with the U. S. Army Corps of Engineers and others entities to be identified as a part of the study.
- The Board supports development of landslide hazard maps of critical areas by the Idaho Geological Survey (Governor's Landslide Task Force 1997).
- The Board supports conducting a detailed, FEMA approved, flood insurance study and development of detailed flood insurance rate maps.
- The Board encourages Adams and Idaho Counties, and the City of Riggins, to incorporate study results (such as results found in landslide hazard mapping and the detailed flood mapping) in their local flood and landslide damage prevention ordinances.
- The Board encourages the Idaho Transportation Department to plan highway and

river protection projects that can be accomplished prior to or during future flood events.

- The Board encourages private landowners, local communities, counties, and the Idaho Bureau of Disaster Services to develop guidelines and research funding sources for coordinated removal of debris that is potentially hazardous to individuals, property, the community, or that which contributes to degradation of the stream.
- The Board requests that IDWR Stream Channel Protection Specialists facilitate discussions or educational efforts regarding work at or below the high water mark during routine and emergency situations.
- The Board encourages the local citizens to consider formation of a flood control district.
- The Board supports efforts by the NRCS and voluntary cooperators to install automated SNOTEL sites at lower elevations in the basin. Except for high elevation sites, no SNOTEL or similar data collection sites are located in the basin. Years of data collection at other locations have shown that low elevation sites can provide critically needed information in predicting flood events and soil moisture deficit.

Fisheries

The Idaho Water Resource Board makes the following recommendations to assist in the effort to protect the public interest in the fisheries of the Little Salmon River basin:

- The Board supports the continued coordination of resident and anadromous fisheries management efforts between the Nez Perce Tribe, the state, and the federal government.
- The Board supports and encourages stream improvement activities that enhance the basin's fish habitat.
- The Board supports implementation of Governor Batt's Bull Trout Conservation Plan (Batt 1996).
- The Board encourages agencies to provide information to private landowners for improving fish habitat, and to respect private property, including water rights, when developing resident and anadromous fishery enhancement programs.

Coordinating Government Agencies and Data Availability

The Idaho Water Resource Board makes the following recommendations for efficient and effective permitting processes and to make data available throughout the basin:

- The Board supports efforts by citizens and government agencies to establish a clearinghouse for storage and retrieval of information, data, and documents relating to the Little Salmon River basin.
- The Board encourages land managing agencies, regulatory agencies, and water users to cooperate in data collection and sharing efforts, including efforts to improve low-elevation snowpack information and watershed conditions, and to eliminate water

quality data gaps critical to future TMDL development.

- The Board supports IDWR administration of stream channel alteration permitting that currently requires joint approvals from both the IDWR and the U.S. Army Corps of Engineers. Benefits to Little Salmon River basin landowners should be reduced processing time and paperwork when seeking stream channel alteration permits. In addition, the Board supports a complete review of the U.S. Army Corps of Engineers Section 404 program to see if it would be in the state's best interest to develop a programmatic permit or to seek state primacy over the entire program. The programmatic permit could include expanded IDWR authority over intermittent and riparian areas along streams and stream channels, whereas primacy would give the state permitting authority over Section 404 permitting, including lakes, wetlands, and intermittent streams.

Water Quality

The Idaho Water Resource Board recognizes that the quality of the water in the Little Salmon River basin is of utmost importance to the residents of the basin and the state. The following recommendations are intended to protect the public interest by supporting and guiding efforts to protect and enhance the quality of the state's water in the Little Salmon River basin:

- The Board supports the continued cooperation between the Public Health Districts, IDWR, and DEQ to ensure that future wells and septic systems are sited and constructed in a manner that will protect water quality.
- The Board supports the voluntary implementation of land and water use practices that protect and enhance water quality of both surface and ground water systems in the Little Salmon River basin. Land and water use protection and enhancement practices should involve neighbors, organizations, and agencies, and should include the entire basin (not focused entirely on the lower basin). Because of potential impacts catastrophic forest fires have on water quality, susceptible timber stands need immediate, silvicultural treatments.
- The Board supports cost-sharing programs for landowners interested in conversion to irrigation systems that provide water quality improvements to streams and benefits to landowners.

Recreation

The Idaho Water Resource Board makes the following recommendations to meet the goal of increasing recreational opportunities in the Little Salmon River basin:

- The Board encourages the U.S. Forest Service to support volunteer programs to enhance recreation opportunities.
- The Board supports cooperation between recreationists and landowners to enhance quality recreation opportunities on the state's waterways while respecting private property.

References

Batt, Governor Philip E. 1996. *State of Idaho Bull Trout Conservation Plan.* Boise, ID.

Governor's Landslide Task Force. 1997. *Recommendations for Idaho Communities, Infrastructure, and Resources at Risk from Landslides and Related Events*. Idaho Bureau of Disaster Services. Boise, ID.

Little Salmon Watershed Alliance, Inc. 1997. Letter to Mr. Karl Dreher, Director, Idaho Department of Water Resources. June 26, 1997.

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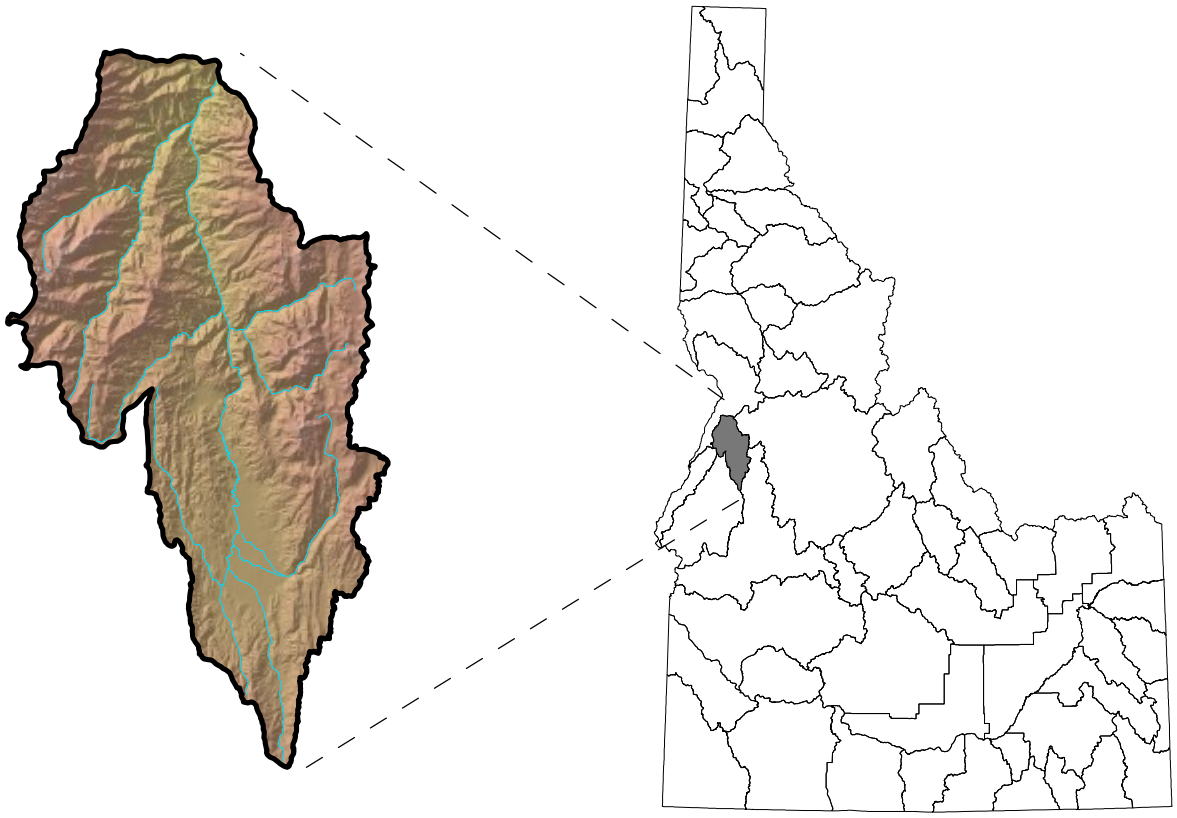

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Little Salmon River Basin

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1 INTRODUCTION

This document describes comprehensive water resource planning issues, actions, and recommendations for the Little Salmon River basin in central-western Idaho (Figure 1). The 576-square mile basin is located in northeastern Adams and southwestern Idaho Counties, and flows into the Salmon River (at river mile 86.7) at the northern side of Riggins. With one minor exception, the Little Salmon River basin coincides with U.S. Geological Survey Hydrologic Unit 17060210 and Idaho Department of Water Resources Administrative Basin 78. The basin is mountainous and sparsely populated. Occupations in ranching, logging, and lumber manufacturing contribute much to the basin's economy. Tourism and related services are becoming more important locally, potentially helping to support the area during downturns typically experienced by natural resources-based economies. Individuals and planning or management entities are encouraged to utilize and build upon the efforts initiated by this plan.

1.1 Constitutional and Statutory Basis of the Comprehensive State Water Plan

The Idaho Water Resource Board (Board) is a constitutional agency responsible for developing a plan for the state's water resources (Article XV, Section 7 of the Idaho Constitution), and works within the Idaho Department of Water Resources (IDWR). In 1988, the Idaho State legislature directed the Board to develop a "comprehensive state water plan" (*Idaho Code § 42-1734A*). Idaho Administrative Code for the IDWR further defines comprehensive state water planning rules (IDAPA 37.02.01).

The comprehensive state water plan is a two-part document. "Part A," entitled *Idaho State Water Plan* (Idaho Water Resource Board 1996), sets out statewide policies, goals, and objectives for water resources in the public interest. The latest version was adopted in December 1996. The second part, "Part B," is directed at specific water resources (for example, river basins, waterways, groundwater aquifers, etc.) and in this case, is named the *Little Salmon River Basin Comprehensive State Water Plan-Part B.* The "Part B" plan explains issues, goals, and recommendations that are specific to the Little Salmon River basin. For brevity, the *Little Salmon River Basin Comprehensive State Water Plan-Part B* is simply referred to as the *Plan* throughout this document.

1.2 Little Salmon River Basin Comprehensive State Water Plan History and Public Involvement

Flooding and related landslides in January 1997 spurred the formation of the *Plan*. In a letter to IDWR, the Little Salmon Watershed Alliance, Inc. requested that IDWR determine which areas were prone to landslides and slippages (Little Salmon Watershed Alliance, Inc. June 26, 1997, pp.1-2). However, the requested study was beyond the normal work capacity of IDWR and the Board, but general elements related to the request could be addressed by the Board's comprehensive planning process. The Board subsequently decided to develop a comprehensive state water plan for the entire Little Salmon River basin in order to provide an analysis of the basin's resources, and to develop recommendations that help guide resource decisions in the future, but with considerations for floods and landslides being a prominent part of the *Plan*.

- The *Draft Little Salmon River Basin Comprehensive State Water Plan* was released for public comment on September 27, 2000.Comments were taken until November 30, 2000.
- A second draft (*Little Salmon River Basin Comprehensive State Water Plan: Second Draft*) was released on June 4, 2001, and comments were taken until August 3, 2001.

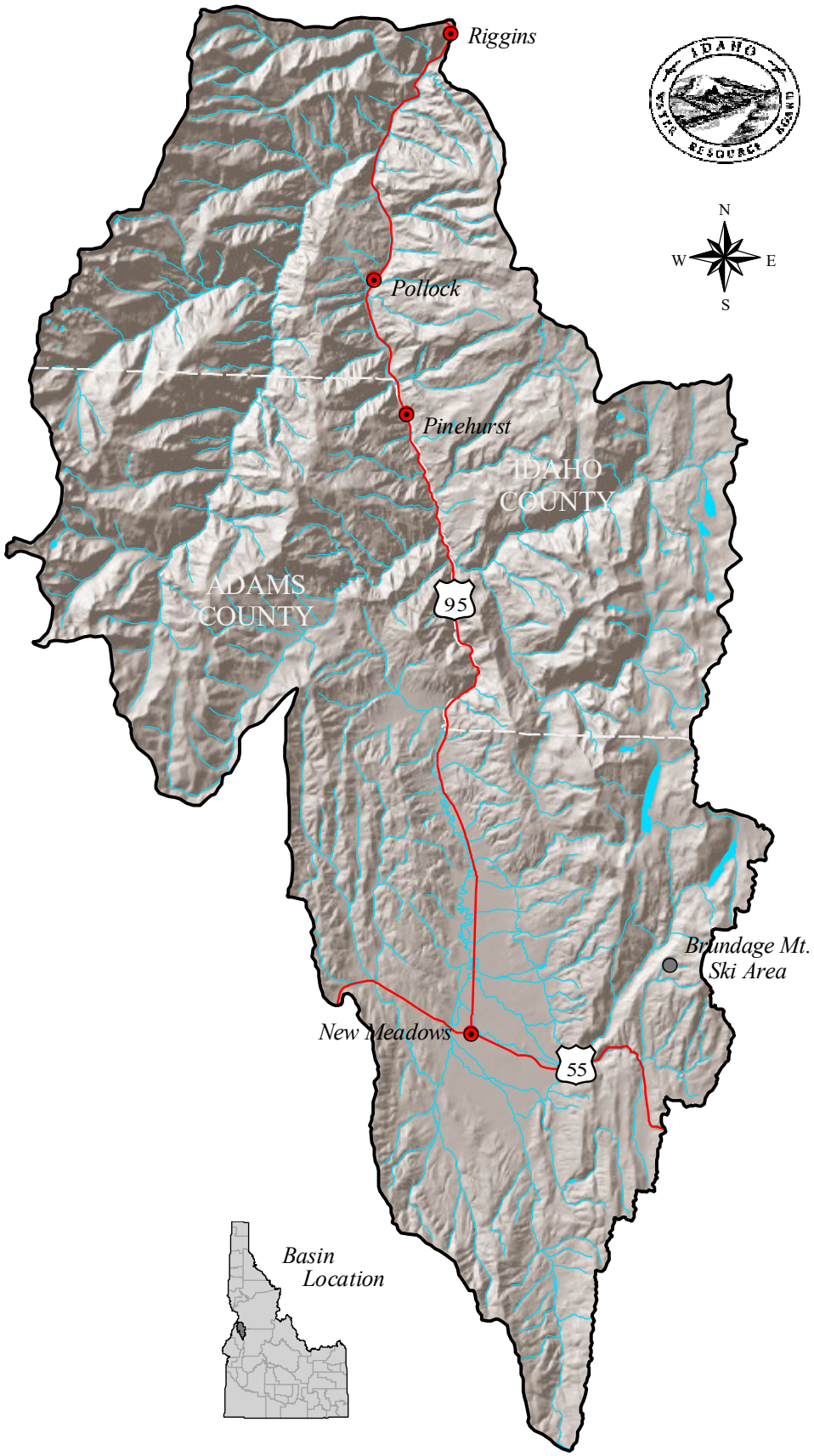

Figure 1. Shaded relief map of the Little Salmon River basin.

- The second draft included a supplemental document containing a discussion of flooding and landslides (titled, Little Salmon River Basin Comprehensive State Water Plan-Part B: Supplement - Flood and Landslide Management Information).
- The Board adopted the *Little Salmon River Basin Comprehensive State Water Plan-Part B,* on October 19, 2001, and submitted it to the Idaho legislature during the first week of the 2002 Legislative Session for final hearings and approvals.

The concerns and ideas of Idaho residents are an important part of the Board's planning process. Input from local citizens, property owners, and other groups who are most familiar with the area is necessary to understand conditions and issues of concern in the basin. Information meetings, citizens advisory group meetings, and formal hearings provided opportunities for public review and suggestions for the *Plan*. The Board weighed all information and concerns, considering both local and statewide perspectives in the public interest.

The public involvement process was initiated on November 10, 1998. Public information meetings were conducted in Riggins, Pollock, and New Meadows. The purpose of the meetings was to inform residents and others about the preparation of the *Plan*, and to ask them to identify important issues and concerns in the basin.

In accordance with its Comprehensive State Water Plan Rules (*Rule 30, IDAPA 37.02.01*), the Board formed a citizens advisory group comprised of local residents in January 1999. Members represented local government, industry, agriculture, and private interests including water-users, landowners, and sportsmen. The mission of the group was identify local concerns, to review information, and to provide opinions and suggestions for the Board's consideration in plan development. The group met eight times during development of the plan's first draft, and three more times for the second draft plan. All group meetings were open to the public. In addition, newsletters were circulated to interested parties that summarized the development of the *Plan*, announced group meetings, and requested comments on important issues and information. Persons who regularly participated in the citizens advisory group are listed in Appendix A.

1.3 Planning Process

In addition to the Board's public participation efforts, the process of developing a comprehensive state water plan consists of the six steps described below. Not all steps occur in the order presented; some take place throughout the planning process and some occur concurrently. All are considered essential to the process of developing effective policy and recommendations for the use of the state's waters.

- **Inventory Resources in the Basin**

  Data, information, figures, and statistics about the resources in the basin are obtained through document reviews, field reconnaissance, contacts with government agencies, and citizen input. Maps are prepared using a computerized geographic information system.

- **Identify Local Issues, Concerns, and Goals**

  Issues, concerns, and goals relating to water resources are identified through public meetings, formation of a local citizens group, and regular contacts with management agencies and local officials. They are described in the ISSUES, GOALS, AND RECOMMENDATIONS section (Chapter 3) of this plan.

- **Assess Current and Potential Future Water Uses and Constraints**

  The Board's assessments of the present and potential water uses in the Little Salmon River basin is contained in the *Water Resources* and *Water Resource*

Development portions of the RESOURCE INVENTORY section of this document (Chapter 4). The assessments are based on review of water right records, state laws and regulations, the basin's hydrology, and discussions with agency personnel and water users.

- **Identify Waterways with Outstanding Resource Values**

  Idaho Code directs the Board to evaluate the waterways of the state for "outstanding" fish and wildlife, recreational, aesthetic, or geological values. Outstanding resources are indicated by: 1) unique or rare features of regional or national importance, 2) significant public concern for protection and/or, 3) existing legal protection or special agency management designation to protect important resource values or the public safety. Specific criteria are described in the OUTSTANDING RESOURCE EVALUATIONS section (Chapter 5).

  The Board has authority to protect outstanding waterways by designating them as protected in one of two categories: "Natural River" or "Recreational River." Natural River designation preserves streams (or stream reaches, lakes, etc.) that are free of substantial human-made impoundments or other structures and have undeveloped riparian areas. Recreational River designation preserves rivers (or stream reaches, lakes, etc.) that have some human development within the streambanks or riparian area.

- **Generate Policy Alternatives**

  Alternatives are the actions, recommendations, or policies that may help achieve the goals identified in the *Plan*. They represent all the different solutions that are considered by the Board. The alternatives developed for the Little Salmon River basin are discussed along with issues, found in Chapter 3.

- **Develop Specific Actions and Recommendations**

  "Actions" are the steps that the Board can take under the authority granted by the Idaho Constitution and Idaho Code. These steps include proposing protection designations for streams or stream reaches, and submitting applications for minimum stream flows to the IDWR. "Recommendations" are the policy alternatives that the Board proposes to help guide public policy decisions. Many of the actions and recommendations evolved from ideas generated during citizens group meetings.

- **Produce the Plan Document**

  Comprehensive State Water Plans are first released in a draft form. Draft plans are available for public comment for at least 60-days after their release to the public. After receiving comments, the Board may make changes to the draft plan, and then chooses whether to adopt the plan. If adopted, the plan is submitted to the Idaho legislature for more review and public hearings, possible amendment, and approval. When the Plan is approved by the state legislature, it becomes an official policy document of the state.

Once a plan is approved by the legislature, it can be amended only by actions of the Board and the legislature. The Board decides whether to amend a plan based on an evaluation of the impact of proposed changes on the protection and preservation of the state's waterways. The evaluation also includes the economic impact of the proposed change on the state as a whole, its effect on existing water rights, whether it is necessary to provide adequate and safe water for human consumption, and whether it is necessary to protect life. All amendments to comprehensive state water plans (Parts A or B) are submitted to the Idaho legislature for approval. Little Salmon River and the Rapid River.

2 IDAHO WATER RESOURCE BOARD ACTIONS

2.1 Protection Designations

A comprehensive state water plan may designate outstanding waterways as a "Protected river," being either a "natural river" or a "recreational river" (*Idaho Code § 42-1731 (8)*). The protection designations are further defined by *Idaho Code §§ 42-1731(7) and (9)* as " … a waterway which possesses outstanding fish and wildlife, recreation, geologic, or aesthetic values…" and:

- Natural rivers are free of substantial human development in the waterway, and the riparian area is largely undeveloped (but may be accessible in places by trails or roads).
- Recreational rivers may include human development in the waterway or the riparian area.

The Idaho Water Resource Board considers the impacts of protected river designations on the social, economic, and environmental livelihood of the region. A protection designation is made if the Board determines the value of preserving the waterway is in the public interest and outweighs development for other beneficial uses (*Idaho Code § 42-1734A(4)*). The Board also determines which activities shall be prohibited, and may specify terms and conditions for other activities not listed (*Idaho Code § 42-1734A(5)*). Potentially prohibited activities include:

- construction or expansion of dams or impoundments,
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Prohibitions for recreational designations do not interfere with activities necessary to maintain and improve *existing* utilities, roadways, managed stream access facilities, diversion works, or private property. Natural and recreational designations do not change or infringe upon *existing* water rights or other vested property rights.

As a part of the development of the *Little Salmon River Basin Comprehensive State Water Plan, Part B*, streams were identified that will benefit from state protection designation to protect current values for the people of Idaho. The analyses for this identification process are described in the OUTSTANDING RESOURCE EVALUATIONS section of this plan (Chapter 5).

Designated Waters in the Little Salmon River Basin

The Idaho Water Resource Board has determined that, at this time, the value of preserving the designated waterways of the Little Salmon River basin are in the interest of and for the benefit of the state as a whole. All landowners – private, state, and federal – are encouraged to manage their lands consistent with the Board's protection designations. The Board also encourages federal resource management agencies to work within the comprehensive state water planning process rather than pursuing federal protection of waters within Idaho.

To protect the public interest, current resource use, and the multiple-use character of the basin, the Idaho Water Resource Board designates the following streams and stream segments as Recreational Rivers (no streams are designated Natural Rivers)(Figure 2):

Recreational Rivers

Little Salmon River: from the Highway 95 bridge above "The Falls" (river mile 24.7), to the confluence with the Salmon River (24.7 miles total length).

Boulder Creek: from its headwaters to its confluence with the Little Salmon River (18.6 miles total length).

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    2. Alterations of the stream channel for protection and maintenance of private property for flood control, for public recreation facilities, and for fish and wildlife enhancement structures.

All activities must comply with all state stream channel alterations rules and standards.
All works must be constructed or maintained to minimize erosion and sedimentation.

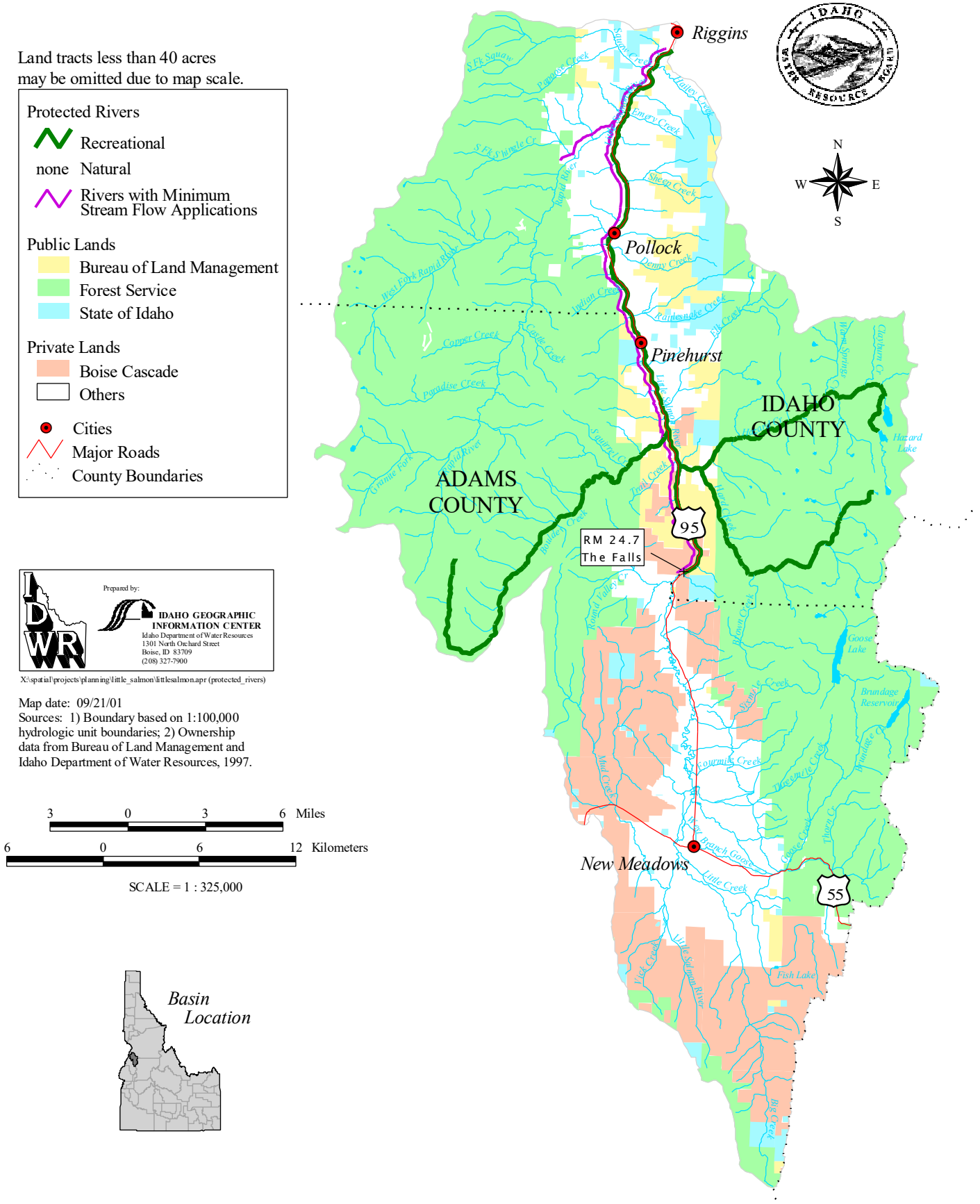


Figure 2. Protected rivers in the Little Salmon River basin.

2.2 Minimum Stream Flows

Idaho Code, Title 42, Chapter 15, grants authority to the Idaho Water Resource Board to appropriate water for minimum stream flows. The statute defines minimum stream flow as a flow of water that is required to protect fish and wildlife habitat, aquatic life, recreation, aesthetic beauty, navigation, transportation, and/or water quality. A minimum stream flow is not an ideal flow, but a minimum to protect beneficial uses (*Idaho Code § 42-1503*).

Like any other water right, a minimum stream flow must take its place by priority. A minimum stream flow right is filled only when senior rights have been satisfied. Furthermore, the process for the Board to acquire a minimum stream flow right is separate from the process to develop this comprehensive state water plan, *but is often done in conjunction with comprehensive state water planning efforts, as in this instance.* Studies to determine the quantity and timing of the minimum stream flow must be conducted before a minimum stream flow is granted. The Board can then submit an application to the director of the Idaho Department of Water Resources, who determines whether to grant the right in accordance with Title 42, Chapter 15 of the Idaho Code. Minimum stream flows granted by the director are approved by concurrent resolution of the Idaho State Legislature.

Because of their importance to Idaho and the basin's public health, safety, and welfare, minimum stream flows are required for protection of fish and wildlife habitat, water quality, aesthetic beauty, and recreational values. The preservation of the water for such purposes is in the public interest, and by law is declared a beneficial use (*Idaho Code § 42-1501*). The Board proposes that minimum stream flow rights be pursued on the following stream reaches (Figure 2):

- **Rapid River,** from the National Forest boundary above the fish hatchery, to the river's confluence with the Little Salmon River (2.8 miles total length).
- **Little Salmon River,** from the Highway 95 bridge above "The Falls" (river mile 24.7), to the confluence with the Salmon River (24.7 miles total length).

The Board intends to implement the following upon their adoption of the *Plan*:

(a) The Board will request that IDWR, in cooperation with the Idaho Department of Fish and Game, the U.S. Forest Service, and the U.S. Bureau of Land Management, initiate studies on portions of the Little Salmon River and the Rapid River to: verify that minimum stream flows will not interfere with any senior water rights; verify the minimum flows required to protect fish and wildlife, aquatic life, water quality, and aesthetic beauty, etc.; verify if minimum flows are capable of being maintained; and to acquire other necessary information to complete the minimum stream flow permitting process.

(b) As soon as possible after appropriate information is gathered and minimum stream flow analyses are completed, the Board will submit applications to the director of IDWR to acquire minimum stream flow rights on portions of the Little Salmon River and the Rapid River.

(c) If a minimum stream flow is approved by the director of IDWR, and subsequently the Idaho legislature, the Board will request that IDWR direct the watermaster (after the adjudication process is completed in the basin) to monitor flows as necessary to ensure compliance with the minimum stream flow appropriation.

3 ISSUES, GOALS, AND RECOMMENDATIONS

3.1 Introduction

When determining the best uses of the state's water resources, the Idaho Water Resource Board must balance competing uses and needs. The Board's recommendations for finding that balance were developed through a process set out in the *Comprehensive State Water Planning Rules* (*IDAPA 37.02.01*). In addition, content of comprehensive state water plans are guided by the criteria found in *Idaho Code § 42-1734A(1)(a-e)*. These criteria are broad in scope and address conservation, development, and management of water and related resources of Idaho, all in the public interest. The criteria are:

(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.

Additional plan guidance, which reflects local issues, goals, and recommendations, was obtained from the Little Salmon River basin citizens advisory group. Discussions about issues and concerns centered around four areas: 1) flood management, 2) water quality, 3) fisheries, and 4) loss of local control if new federal or state regulations were imposed. The last concern was expressed particularly in relation to the coordination of land and water use practices with water quality enhancement projects and wildlife habitat rehabilitation efforts. All areas of concern contained elements relating to the availability of data and agency coordination.

Based on available information, the Board developed plan recommendations and presented them in the plan's first draft. These draft recommendations were mailed to the citizens advisory group for evaluation and comment. The draft recommendations were further refined in the plan's second draft. Citizens advisory group members provided the Board's planning staff with written survey responses and verbal responses during this process. All survey materials and other intermediate planning products compiled during prioritization of the recommendations are not included in this plan (but are maintained on file at IDWR's state office).

The Board's recommendations are categorized below according to the issues of concern as prioritized by the Board and the citizens advisory group. Following each issue discussion are goal statements that were developed by the group and the Board. The recommendations, listed at the end of each issue section and after the goals, are an outgrowth of the ideas and direction provided to the Board by the citizens advisory group.

At the core of this plan is the Board's recognition that local control can be maintained only if local citizens and residents participate constructively in the decisions that affect their community. Although *Idaho Code § 42-1734B (4)* directs state agencies to "exercise their duties in a manner consistent with the comprehensive state water plan," the Board also relies on cooperation and assistance from others to implement its *Plan* recommendations. The Board urges all agencies and the public to implement the recommendations in a manner that supports and complements the *Plan*.

3.2 Issues, Goals, and Recommendations

ISSUE: Water Rights and Water Use

Nothing is more important to the Idaho Water Resource Board than the protection of Idaho water rights. This *Plan* helps to protect those rights, and discourages interference from federal or other out-of-state interests. The Board encourages water right owners to use their valid water rights within the legal limits of those rights.

In order to use water effectively, water-right holders should consider use of the Idaho Water Resource Board's water bank. The bank allows water right holders to voluntarily make unused rights available for lease through the Board. By volume, application of agricultural water constitutes the greatest use of water in the basin relative to other uses. This reinforces the importance of agriculture in the basin, and this *Plan* encourages water right holders to seek the best use of their water rights. One recent example of this concept is demonstrated with the newly formed water bank on the Lemhi River in eastern Idaho (*Idaho Code § 42-1763C*). The water bank has allowed diversions of water to improve anadromous fish passage while providing irrigators who participate on a voluntary basis favorable water rental payments. Details about the water bank are included in Chapter 6 of this document.

Water right holders also have the opportunity to protect their rights by participating in the Snake River Basin Adjudication. The adjudication is an ongoing effort to verify water rights throughout the Snake River basin. The Little Salmon River basin is within the larger Snake River basin. The investigation of non-domestic claims in the Little Salmon Basin will occur in the years 2004 and 2005. This process will require some water right owners to assist IDWR with field verifications and may require historical documentation of water use. The resultant court-issued description of a right to divert the state's water is the strongest protection of the right.

The citizens group suggested several different ways to maintain control of water rights while not interfering with landowners' operations. It was suggested that a duty of water be listed, which is a reference to the amount of water that is allowed for specific water uses. It was also suggested that measuring devices be installed on all diversions basin-wide, and that regular measuring and reporting of diversions will help to protect valid water rights.

There was some concern that installation of measuring devices only sets the stage for others to "call" for water for endangered species protections downstream. The *Idaho State Water Plan* - Policy 1E - establishes that the "water resources of the state should be quantified and their uses should be measured." This is vital not only for planning optimum use, but also to administer water consistent with the Doctrine of Prior Appropriation. In order for any party, including the federal government, to make a "call" they must have a valid water right and show injury by a junior appropriator (some exceptions may occur under Endangered Species Act rules). Measuring devices do not increase risk from anyone's calls for additional flows for fish and wildlife. In fact, Idaho citizens are more vulnerable if they have no defensible flow data with which to make a case in defense of the existing uses. State water law calls for the measurement of water diverted for

beneficial use. This is an essential part of efficient water management.

Measurement of diversions is usually done only in water measurement districts or water districts where there is an active watermaster. At this time, there is one watermaster covering two active water districts in the basin: Big Creek (District 78A) and Goose Creek (District 78C). Regular and accurate measurement and documentation of diversions is the best way to protect valid water rights from injury. Water users in the Little Salmon River basin will have the opportunity to take these actions once the water rights have been verified through the Snake River Basin Adjudication.

Concern was expressed by a significant number of landowners in the basin regarding the need to "protect the right to continued use of all waters (streams, lakes, and springs) in the basin for wildlife and livestock watering" (Armacost [petition] 2001). *Idaho Code § 42-113* provides for instream livestock watering without a water right. This section further provides for diversion of up to 13,000 gallons per day (per diversion) to promote livestock watering away from streams and riparian areas. Water for wildlife is considered a non-consumptive water use but may be further protected through the Board's Minimum Stream Flow Program.

Concern was also expressed over the growing frequency of new property developments that are constructing ponds adjacent to streams and irrigation canals. Some residents felt their senior water rights could be harmed by these ponds. IDWR is aware of this issue and is currently forming clarifications, consistent with water allocation regulation and the current moratorium. See Section 4.2.2 - WATER ALLOCATION AND USE for more information.

Goal Statement

- To maintain state and/or local control of water rights and water resources. Policy 1A of the *Idaho State Water Plan*, Part A, states:

  > "…the state has sovereignty over decisions affecting the development and use of its water resources, and that the state opposes any attempt by the federal government, its management agencies, any other state, or any other entity to usurp the state's role in these areas."

Recommendations

The Idaho Water Resource Board makes the following recommendations for the protection of water uses and rights in the Little Salmon River basin in the public interest.

- The Board encourages water users to use the Board's water bank to ensure protection from forfeiture and efficient use of water rights in the basin.
- The Board encourages water right owners to prepare for the Snake River Basin Adjudication by documenting current and historic water use.
- The Board supports creation of a water measurement district in the Little Salmon River basin. After the Snake River Basin Adjudication process is complete and all water rights are decreed, the water measurement district should be converted into a water district.
- The Board recommends that IDWR establish policy regarding permitting requirements for small ponds, and actively investigate citizen complaints concerning construction and use of ponds not consistent with established policy.

ISSUE: Flood Management

The impetus for the *Little Salmon River Basin Comprehensive State Water Plan* was the flood of January 1997. The Board considered several options to meet the challenges of flood management and recurring landslides in the basin. These options were divided into two broad categories: structural modification and land

use alternatives. In addition to information regarding floods and landslides provided in this plan, a companion supplemental document entitled the *Little Salmon River Basin Comprehensive State Water Plan-Part B: Supplement - Flood and Landslide Management Information*, should be consulted to better understand this issue.

Structural Modification

Structural modification involves placing physical structures in or along waterways to change the hydraulics of a stream or river system. Examples are levees, berms, bank barbs, and water impoundment structures. Water impoundment structures, such as dams, can reduce flood flows by holding water back and then releasing it slowly over time.

A number of factors unique to the Little Salmon River basin make structural modifications, and dams in particular, impractical. The first factor is the hydrology of the basin. Because there are many tributary streams throughout the basin that cumulatively contribute significant flows to the Little Salmon River, any single tributary dam would provide minimal benefit in reducing flood flows in the Little Salmon River. Enlarging the storage capacity of existing facilities would have minimal downstream effects for the same reason.

The topography of the basin is the second factor that limits the usefulness of structural alternatives. Most of the tributaries have narrow, steep drainages, lacking economical storage reservoir sites. Erosion problems migrate up and down the stream with each construction project, often exacerbating the impacts of a high flow event. Finally, much of the damage caused during the winter of 1997 flood was due to land movement that dammed or redirected the courses of streams. Nearly all of the landslides that occurred were below the 5,000 foot elevation level, where the ground was not frozen, but had been saturated by earlier precipitation (Governor's Landslide Task Force 1997). Damages caused by the 1997 flood would not have been significantly lessened by flood management structures.

The third factor is centered on concern for endangered fish species in the basin. The presence of threatened or endangered species prevents any major alterations to flow regimes of the streams in the Little Salmon River basin, particularly for those streams located below the Little Salmon River Falls (near river mile 24.7).

Land Use Alternatives

Land use alternatives address the different ways land can be used, including wildlife habitat, agriculture, or housing subdivisions. Land use regulation was a contentious issue during public advisory group meetings, and recommendations that included restrictions on land use were not fully supported by the citizens group. Land use regulation also does not meet one of the stated goals in this plan: that of avoiding regulatory intervention. However, property owners can take voluntary steps to reduce the severity of flood and landslide impacts, to both their own property and their neighbors' properties.

Flood impacts can be decreased by allowing rivers and streams to function as dynamic systems. Land uses that preserve floodplains can help slow floodwaters and recharge ground water aquifers. Stable stream banks, low water temperatures, sediment retention, floodplain access, and diverse wildlife habitats are some of the benefits of functional stream systems. The added benefit of extending water storage times, enhancing water quality, and meeting beneficial use criteria will help avoid direct regulatory intervention into land and water use practices. Uplands should also be managed properly to reduce flood and landslide impacts. Poor watershed conditions leading to intense fires may open the way for noxious weed invasion, which in turn may decrease soil stability and worsen flood impacts. Yellow starthistle is one such weed that is gaining a foothold in watersheds surrounding the Little Salmon River basin.

There may be a fiscal impact when sites that are highly desirable remain undeveloped. Property taxes are lower on undeveloped

land, reducing the revenue available to local governments. Development is often located in floodplains because of the relatively level topography and the aesthetics associated with proximity to flowing streams. Leaving floodplains in an undeveloped state may restrict property owners' ability to enjoy these values.

Recommending appropriate land uses in hazardous areas was one alternative considered by the Board. Accurate delineation of floodplains is vital to locating appropriate development. The Federal Emergency Management Agency (FEMA) has completed the flood insurance studies and the 100-year flood plain Zone A maps for Adams County, Idaho County, and the City of Riggins (refer to the *Little Salmon River Basin CSWP-Part B: Supplement-Flood and Landslide Management Information*, Section 7.3, for details). Floodplain mapping by FEMA is funded from floodplain insurance premiums (and local dollars, if any). Idaho has very few policy holders relative to other more populous states, and therefore a smaller pool of funding resources. This funding shortage creates a formidable obstacle for starting new mapping projects and updating of old flood maps.

Land uses (whether regulated or not) should be carefully considered when located in geologically unstable areas. The Idaho Geological Survey is compiling a database of landslide-prone areas of the state. This type of information is site-specific and requires long-term study of considerable effort. While the Little Salmon River basin is a priority area, detailed data will not be available for some time. To provide basin landowners, local governments, and other groups with immediate information assistance regarding landslide-prone areas, the Idaho Water Resource Board has included a supplemental document to accompany this *Plan*. It aggregates all known landslide study maps into one, comprehensive family of maps (refer to the *Little Salmon River Basin CSWP-Part B: Supplement - Flood and Landslide Management Information*).

The Board considered several alternatives to manage floods without regulatory intervention. The citizens advisory group considered the inclusion of Proper Functioning Condition (PFC) in the Board's recommendations. There was considerable support for the PFC concept by the group, although some members asked the Board not to use PFC by name. Proper Functioning Condition is a term that describes both the physical conditions of a stream and the process that assesses that condition. Proper Functioning Condition assessments seek to determine a stream's physical capacity to withstand a 25 to 30-year flood event by analyzing the interaction of soils, topography, vegetation, and water. A low to moderate flood flow level, such as a 25 to 30-year event, has a probability of occurrence of less than four percent. Use of the PFC assessment process can help direct land use decisions that result in stable stream systems, which in turn will result in reduced damages from low to moderate flows. This reduction in damage to properties, to the stream systems, and to the state's resources would serve the public interest. Nevertheless, even streams in properly functioning condition can be damaged by 100-year flood events, and PFC methodologies recognize this openly.

Abandoned properties, including damaged homes and personal property, present an ongoing physical hazard and scenic-river eyesore along the Little Salmon, particularly on the Idaho County side of the Little Salmon River. The Board and citizens advisory group examined recommendations for cooperation to remove and rehabilitate hazardous debris on abandoned properties. Since the structures on the properties are no longer suitable for human habitation, it was proposed that these properties should be purchased by public entities, who would then use them as park space or river access points. However, each purchase option explored was rejected for lack of funding. The Idaho Department of Fish and Game has lease and purchase programs in order to enhance access, but funding levels cannot meet all needs. Another option researched was the Land and Water Conservation Fund,

which contributed almost $400,000 to the Idaho Department of Parks and Recreation (2001). Without action by the landowner, Idaho County, or the state, these abandoned properties will continue to present an eyesore and a hazard in the basin. Given the continued hazard to properties and resources in the basin, the Board feels that it is in the public interest to coordinate efforts to remove or stabilize dangerous debris.

Finally, the Board considered an alternative recommendation that U.S. Highway 95 be relocated out of the Little Salmon River canyon area. Financial considerations alone rule out this alternative. For example, repair work scheduled for the Smokey Boulder to Hazard Creek section of the Highway 95, a four-mile stretch, is projected to cost $14 million (Clark 1999). Construction of a new roadway is likely to have a higher cost per mile than repair work, precluding any realistic consideration of relocation of the highway.

In 1997, the state of Idaho moved funds from other areas of the budget in order to meet the financial demands of mitigating floods and landslides. In the future, the Water Resource Board may be a source of funding for mitigation and rehabilitation projects through its various funding programs. In order to use the Water Resource Board's funding programs for flood mitigation and stream channel rehabilitation projects, the language of the statutes that govern the use of those funds may require updating. State water policy 4H, articulated in Part A of the *Idaho State Water Plan*, recommends that the language that governs the use of funds in the Board's programs be broadened to include projects that would conserve, preserve, or restore the state's water and related resources. Currently, Board funds are only used for reclamation, upstream/offstream storage, aquifer recharge, reservoir site-acquisition, water supply, etc. (*Idaho Code § 42-1760*). Changes of this nature would allow the Board to fund a wider range of projects to protect waterways.

The *Idaho State Water Plan*, Part A, provides guidance for developing recommendations for the Little Salmon River basin. Policy 3I encourages reliance on management rather than structural alternatives in reducing or preventing flood damages. Policy 3E encourages the state to rehabilitate impacted stream channels where public safety may be threatened, or where the remedial costs are less than the potential damages. This policy is well suited to the Little Salmon River basin as the floods and landslides of 1997 destroyed U.S. Highway 95 in several places. The Idaho Transportation Department spent $2.5 million to repair Highway 95 (Governor's Landslide Task Force 1997, Idaho Transportation Department 1999a). These figures do not include the dollar value of private property damaged by floodwaters and landslides, or the economic impact of the disruption to transportation.

Goal Statements

- To address flood and landslide management in the Little Salmon River basin.
- To have effective regulatory intervention supported and endorsed by landowners.

Recommendations

The Idaho Water Resource Board makes the following recommendations to protect the public interest and meet the goals of flood management in the Little Salmon River basin:

- The Board supports efforts of landowners to maintain streams in a properly functioning condition so that non-structural damages from a 25 to 30-year flood event will be minimized.
- The Board supports efforts of the Idaho Geological Survey and other investigations to develop and collect information about landslide and erosion factors in the Little Salmon River basin that can be used in highway design, river management, and land use decisions.

- The Board supports conducting an expedited reconnaissance and feasibility study, and implementation of study recommendations through cost-sharing with the U. S. Army Corps of Engineers and others entities to be identified as a part of the study.
- The Board supports development of landslide hazard maps of critical areas by the Idaho Geological Survey (Governor's Landslide Task Force, July 1997).
- The Board supports conducting a detailed, FEMA approved, flood insurance study and development of detailed flood insurance rate maps.
- The Board encourages Adams and Idaho Counties, and the City of Riggins, to incorporate study results (such as results found in landslide hazard mapping and the detailed flood mapping) in their local flood and landslide damage prevention ordinances.
- The Board encourages the Idaho Transportation Department to plan highway and river protection projects that can be accomplished prior to or during future flood events.
- The Board encourages private landowners, local communities, counties, and the Idaho Bureau of Disaster Services to develop guidelines and research funding sources for coordinated removal of debris that is potentially hazardous to individuals, property, the community, or that which contributes to degradation of the stream.
- The Board requests that IDWR Stream Channel Protection Specialists facilitate discussions or educational efforts regarding work at or below the high water mark during routine and emergency situations.
- The Board encourages the local citizens to consider formation of a flood control district.
- The Board supports efforts by the NRCS and voluntary cooperators to install automated SNOTEL sites at lower elevations in the basin. Except for high elevation sites, no SNOTEL or similar data collection sites are located in the basin. Years of data collection at other locations have shown that low elevation sites can provide critically needed information in predicting flood events and soil moisture deficit.

ISSUE: Fisheries

State Water Policy 3D, stated in the *Idaho State Water Plan*, Part A, describes the state's support of the protection of the ecological viability of riparian habitat and wetlands as a matter of public interest. These areas are crucial to fish and wildlife, and are largely the responsibility of the private property owner or federal land management agencies.

The Little Salmon River basin supports an extremely important fishery. One alternative for helping to improve the basin's fisheries is to increase the amount of habitat for fish. The Board looked closely at one alternative in the Little Salmon River, that allows for fish passage at the "Falls." The Falls is an area of steep elevation drops below Round Valley Creek (near river mile 24.7, in Township 21N, Range 1E, Section 26) that prevent upstream fish passage. The citizens advisory group had much discussion on the appropriate actions, or if any were recommended at all, for the Falls. Some members of the group felt that fish passage should be enhanced at the Falls. Other members adamantly opposed this action. There is equal disagreement over whether anadromous fish were ever able to access streams above the natural barrier. Some long-time residents stated they had no memories of salmon in streams above the Falls. Other residents have different memories.

Regardless of the historical presence of anadromous fish above the Falls, there is no clear indication that removal of the Falls at this time will assist in recovering fish populations. Although the Northwest Power Planning Council recommended that removal of the Falls may be an opportunity

to strengthen the basin's fisheries, the Idaho Department of Fish and Game has not found adequate fish habitat above the Falls to justify removal or alteration at this time (Apperson 1999).

Other obstacles to improving conditions in the basin's fisheries pertain to regulatory intervention. Riparian landowners may be reluctant to create favorable conditions for species listed as endangered or threatened under the Endangered Species Act, given the penalties for harming or "taking" a listed species. Citizens advisory group members repeatedly expressed concerns about anticipated conflict over the use of private property. However, there are opportunities for willing landowners to assist in the maintenance of the basin's fisheries. Landowners can develop an approved Habitat Conservation Plan with the National Marine Fisheries Service or the U.S. Fish and Wildlife Service. A detailed explanation of the Habitat Conservation Plan program is included in the AGENCIES AND PROGRAMS section in Chapter 6 of this document.

The citizens advisory group generated the idea that restoring the basin's fisheries will reduce the threat of calls for increased instream flow requirements under the Endangered Species Act. There are many opportunities available to landowners in the Little Salmon River basin to use the flexibility of existing programs to enhance the natural resources of the basin before rigid regulations become a reality. Technical and financial assistance is available through a number of agencies and the Nez Perce Tribe. These programs are explained in detail in the AGENCIES AND PROGRAMS section in Chapter 6 of this document.

Goal Statements

- To encourage improvement of the Little Salmon River basin's fisheries with consideration of water and land use practices.

Recommendations:

The Idaho Water Resource Board makes the following recommendations to assist in the effort to protect the public interest in the fisheries of the Little Salmon River basin.

- The Board supports the continued coordination of resident and anadromous fisheries management efforts between the Nez Perce Tribe, the state, and the federal government.
- The Board supports and encourages stream improvement activities that enhance the basin's fish habitat.
- The Board supports implementation of *Governor Batt's Bull Trout Conservation Plan* (Batt 1996).
- The Board encourages agencies to provide information to private landowners for improving fish habitat, and to respect private property, including water rights, when developing resident and anadromous fishery enhancement programs.

ISSUE: Coordinating Government Agencies and Data Availability

The citizens advisory group voiced concerns about their experiences during the flood and landslide events of January 1997. There were many government agencies involved, each with its own set of regulations and permit requirements. Others in the group expressed similar thoughts about government permitting processes of all kinds. The Board understands and shares the frustrations of the public.

There is always room for improvement in coordinating government permitting processes and for the dissemination of information and data. Several programs already in place provide opportunities to coordinate agency activities and permitting processes, including the Idaho OnePlan, the Model Watershed process, and flood control districts. Additionally, IDWR is working with the U.S. Army Corps of Engineers to develop a regional general permit to authorize certain types of minor construction

projects that meet the state's Stream Channel Alteration Permit requirements. In a move to reduce duplication of information gathering efforts and to further coordinate with Idaho's citizens, the Payette National Forest will incorporate portions of this comprehensive state water plan into their sub-basin assessment document. These and other coordinating efforts are discussed in the ORGANIZATION AND PLANNING DOCUMENTS section in Chapter 6 of this document.

Dispersal of information should also be an important part of studies that are conducted by public agencies and universities. Many data users, both inside and outside the basin, benefit when it is collected. Members of the citizens advisory group commented they were aware of data collection efforts by different agencies, but rarely saw the results. The public does not benefit in the management of natural resources when information is collected for internal agency use, or when information is difficult to use and access by others. These comments also reflected the difficulties of scientific inquiry. In order to make realistic conclusions, data are usually collected over a long period, in many different conditions, to account for variability that may or may not be important to the conclusions. Finally, data analysis is a process in itself that is subject to interpretation. Raw data (in other words, data lacking organization or interpretation) are usually of limited value to someone not familiar with data collection methods and techniques, study conditions, and interpretation methods.

Policy 1L of the *Idaho State Water Plan*, Part A, supports the establishment of an information distribution system for all water quality data. According to state (Idaho Public Records Law) and federal (Freedom of Information Act) laws, agencies (or entities under contract to collect data for an agency) are required to make data and information available upon request. However, agencies can take this process one step further by making the information available without the submission of any requests.

A central clearinghouse holds great promise to help to accomplish this goal. The Board asked the citizens advisory group if it would support the Little Salmon Watershed Alliance, Inc., as an organization that could help to fill this need. Participants could not support this idea. Nevertheless, an opportunity exists for residents of the basin to come together to provide a clearinghouse of information, and to coordinate resource management decisions and projects. Given that such a clearinghouse does not yet exist, a list of agency contacts can be found in Appendix C.

Goal Statements

- To make government permitting processes more efficient and effective for citizens.
- To make scientific data available throughout the Little Salmon River basin.

Recommendations:

The Idaho Water Resource Board makes the following recommendations for efficient and effective permitting processes and to make data available throughout the basin.

- The Board supports efforts by citizens and government agencies to establish a clearinghouse for storage and retrieval of information, data, and documents relating to the Little Salmon River basin.
- The Board encourages land managing agencies, regulatory agencies, and water users to cooperate in data collection and sharing efforts, including efforts to improve low-elevation snowpack information and watershed conditions, and to eliminate water quality data gaps critical to future TMDL development.
- The Board supports IDWR administration of stream channel alteration permitting that currently requires joint approvals from both the IDWR and the U.S. Army Corps of Engineers. Benefits to Little Salmon River basin landowners should be reduced processing time and paperwork

when seeking stream channel alteration permits. In addition, the Board supports a complete review of the U.S. Army Corps of Engineers Section 404 program to see if it would be in the state's best interest to develop a programmatic permit or to seek state primacy over the entire program. The programmatic permit could include expanded IDWR authority over intermittent and riparian areas along streams and stream channels, whereas primacy would give the state permitting authority over Section 404 permitting, including lakes, wetlands, and intermittent streams.

ISSUE: Water Quality

Part A of the *Idaho State Water Plan* provides guidance in developing recommendations specifically for the Little Salmon River basin. Policy 1L supports the protection of Idaho's waters from unreasonable contamination or deterioration in quality. The policy also supports the establishment of an information distribution system for all water quality data.

The Little Salmon River basin faces several water quality challenges. The Idaho Department of Environmental Quality (DEQ) has identified sediment, fecal coliform bacteria, and elevated temperatures as pollutants that are keeping the waters of the basin from meeting beneficial use criteria. Locally, residents have voiced concern over the potential for catastrophic forest fires to occur, and the resulting increases of ash and sediment loads to streams. Total Maximum Daily Loads (TMDLs), which will govern the amount of pollutants that are allowed into the waters of the basin, are scheduled for identification in 2004. Implementation plans will follow.

A particular concern is the increase in homes built on land not served by municipal water and/or sewer systems. Local residents and government agencies alike are concerned that the rate of growth may strip the ability of agencies to provide adequate review and oversight of household wastewater disposal systems. Improperly sited or installed septic systems may contribute pollutants to both ground and surface waters. These pollutants could threaten domestic drinking water supplies as well as introduce pollutants into the basin's streams and aquifers.

The appropriate District Public Health office, under authority of the DEQ, must approve new septic systems; Public Health District 2 covers the Idaho County portion of the basin and District 3 covers the remainder. The districts are currently implementing new procedures for septic systems located near "live" water sources. Appropriate site-specific designs will be required for all new septic systems (Gunderson 1999). In addition, homeowners must obtain a permit from the Idaho Department of Water Resources before constructing a new well. Coordination between the agencies is provided in their Rules and Regulations, and in the conditions of approval of permits. Cooperation between these two programs is vital to the protection of the quality of the basin's water supply, and consequently to the protection of the public interest.

Land and water users of the Little Salmon River basin are in a unique position. Enforcement of water quality laws has not yet been aggressively pursued in the basin. Land and water users can voluntarily implement practices that help meet the intent of the law. For example, access areas for recreationists or livestock can be protected against erosion. Septic systems and wells can be designed, sited, and built to minimize surface and ground water contamination. Roads can be constructed to reduce impacts on drainage patterns and subsequent failures. Timber stands now susceptible to high-intensity fire can be thinned.

Water quality data and their availability are also concerns of the citizens group. There has been very little data gathered in the basin. Many people expressed dismay at the possibility of mandated changes to land and water management practices based on data that was collected for short periods of time or in limited geographic locations. The

group made suggestions to the Water Resource Board that included requests for more publication of data, identification of data needs in the basin, and increased availability of information in general.

Up until recently, Idaho water law did not allow diversion of stock water from live streams to watering troughs unless the landowner held a permitted water right, but instream stockwater rights could be established simply by use of the water. This law was a disincentive for livestock owners who wanted to develop off-stream water facilities for water quality and related conservation purposes. A law recently passed now allows diversion of in-stream water to stock troughs under certain conditions (*Idaho Code § 42-113*).

Goal Statements

- To improve water quality where appropriate in the basin and encourage organizations such as the Natural Resources Conservation Service and conservation districts to provide cost-sharing incentives that target practices where water quality can be improved in a practical and cost effective manner.
- To avoid regulatory intervention in land and water use practices.
- To collect and coordinate additional scientific data and to make it available.

Recommendations:

The Idaho Water Resource Board recognizes that the quality of the water in the Little Salmon River basin is of utmost importance to the residents of the basin and the state. The following recommendations are intended to protect the public interest by supporting and guiding efforts to protect and enhance the quality of the state's water in the Little Salmon River basin. Separate recommendations, listed later in this section, address the concerns of data collection and availability:

- The Board supports the continued cooperation between the Public Health Districts, IDWR, and DEQ to ensure that future wells and septic systems are sited and constructed in a manner that will protect water quality.
- The Board supports the voluntary implementation of land and water use practices that protect and enhance water quality of both surface and ground water systems in the Little Salmon River basin. Land and water use protection and enhancement practices should involve neighbors, organizations, and agencies, and should include the entire basin (not focused entirely on the lower basin). Because of potential impacts catastrophic forest fires have on water quality, susceptible timber stands need immediate, silvicultural treatments.
- The Board supports cost-sharing programs for landowners interested in conversion to irrigation systems that provide water quality improvements to streams and benefits to landowners.

ISSUE: Recreation

Residents and visitors to the Little Salmon River basin participate in a variety of outdoor recreational opportunities, and many local businesses benefit economically as they serve the needs of the different user groups. As noted in Policy 1C of the *Idaho State Water Plan*, the Board believes recreational use of water resources is a beneficial, non-consumptive use.

The development of recreational opportunities must be balanced with the protection of private and public property. As roads are closed on public land to protect water quality, wildlife, and other resources, private property owners are feeling pressure to provide access to public lands as well as their private land. Landowners in the citizens advisory group told experiences of broken fences, livestock harassment, and trespass by the public. Members expressed frustrations over the perceived lack of enforcement and prosecution of trespass laws. Problems with access agreements with various agencies were also discussed. These problems make private property owners

more reluctant to offer recreationists access to the streams and rivers on their property.

Access to public lands must be balanced with resource protection and respect for private property. The public must respect private property by removing trash, limiting noise, and following landowners' instructions if landowner permission is given to travel over private land.

Trails on public lands are used by ranchers and recreationists, and provide access for forest management. The Interior Columbia Basin Ecosystem Management Project has identified over 1,100 places where trails cross streams on land managed by the U.S. Forest Service and U.S. Bureau of Land Management in the Little Salmon River basin (Interior Columbia Basin Ecosystem Management Project 1997). The federal agencies have experienced a decline in trail maintenance funds, which has meant that fewer culverts, bridges, and stream crossings are maintained. The results of decreased maintenance are seen as having negative impacts on water quality and fisheries. Proper trail grading, culvert and stream crossing maintenance, and trash collection can help to support the basin's fisheries and water quality.

An alternative supported by the citizens advisory group was voluntary assistance by the public in Forest Service trail maintenance programs. Given all the benefits to the basin, properly conducted trail maintenance activities serve the public interest.

Over the last decade, even a casual observer would recognize how float and power boating, salmon and steelhead fishing, and tourism have increased in visibility as part of the local economy. As discovered during the process of creating this comprehensive plan, some residents of the basin indicated that growth of these recreational activities are important substitutes for declining timber, mining, and ranching enterprises. Other residents, and at least one special interest group, expressed an opposite viewpoint.

Goal Statement

- To encourage the development of recreational opportunities in the basin.

Recommendations:

The Idaho Water Resource Board makes the following recommendations to meet the goal of increasing recreational opportunities in the Little Salmon River basin.

- The Board encourages the U.S. Forest Service to support volunteer programs to enhance recreation opportunities.
- The Board supports cooperation between recreationists and landowners to enhance quality recreation opportunities on the state's waterways while respecting private property.

4 RESOURCE INVENTORY

4.1 Basin Overview

4.1.1 Location and Climate

The Little Salmon River basin is located in the central-western portion of Idaho (Fig. 1). It lies in northeastern Adams and southwestern Idaho Counties and contains all surface and ground water draining into and including the Little Salmon River. The basin encompasses 368,565 acres or about 576 square miles. Its shape is similar to the state of Illinois, but with the north-south axis being 45-miles long, and the east-west axis varying from 0.5 to 22 miles wide. With one minor exception, the basin coincides with U.S. Geological Survey Hydrologic Unit 17060210 and Idaho Department of Water Resources Administrative Basin 78. The exception lies at the basin's northern end, where the *Plan* boundaries were extended slightly to include the city of Riggins in its entirety.

The Little Salmon River basin is located 45 degrees north of the equator and about 500 miles inland from the Pacific Ocean. Warm dry summers and cold moist winters characterize the basin's climatic regime. Climate is defined as "the cumulative effect of weather over a long period of time" (Abramovich et al. 1998). In general, Idaho's climatic patterns are influenced by latitude, distance from oceanic moisture sources, presence of mountain orographic barriers, prevailing wind patterns, and variations in altitude. At a given latitude, elevation and orographic barriers are the most important factors influencing temperature and precipitation differences. In the Little Salmon River basin, semi-arid conditions are typical at lower elevations, particularly at the northern end of the basin. A sub-humid continental climate is characteristic of the basin's higher elevations. Table 1 displays selected climatologic data from the two weather stations located in the Little Salmon River basin.

Table 1. Climatological summary data, 1961-1988 (University of Idaho State Climate Services; Natural Resources Conservation Service, National Water and Climate Center (Internet site)).

Climate Factor	New Meadows	Riggins
Elevation (feet)	3,870	1,760
Annual Precipitation (inches)	24.8	16.5
Annual Snowfall (inches)	86.4	7.7
Average January Precipitation (inches)	3.4	1.2
Average July Precipitation (inches)	0.7	0.8
Average January Minimum Temperature (^{o}F)	7.4	27.4
Average January Maximum Temperature (^{o}F)	30	41.4
Average July Minimum Temperature (^{o}F)	41.7	58.4
Average July Maximum Temperature (^{o}F)	83.9	92.3
Lowest Temperature (1961-90) (^{o}F)	-45	-10
Highest Temperature (1961-90) (^{o}F)	104	115
Growing Season [1]	56	180

[1] Number of days when daily minimum temperature is greater than 32^{o} F, 5 years in 10.

Much of the precipitation that falls in the basin comes as snow, and is initiated locally by orographic lifting. Average annual precipitation in the basin's valleys ranges from 17.4 inches to nearly 25 inches (Abramovich et al. 1998). The greatest precipitation amounts fall at high elevations on the eastern side of the basin, and may exceed 50 inches annually at Brundage Reservoir and Upper Hazard Lake (Figure 3).

For a detailed account of the weather conditions that led to flooding and landslides in 1974 and 1997, refer to the *Little Salmon River Basin CSWP Supplement: Flood and Landslide Management Information*. A lack of information regarding low-elevation snowpack, soil moisture, and precipitation impaired the National Weather Service's ability to quickly determine that floods and landslides were imminent in the Little Salmon River basin (U.S. Dept. of Commerce, National Weather Service 1997). There is a need for improved information about rain-on-snow events that occur in the 3,000 to 5,000 foot elevation zone in the Little Salmon River basin (Abramovich 2001). An automated SNOTEL site in this zone would provide climatic data during rain-on-snow events. The data could also be used for potential warnings of rapid runoff from these events (Abramovich 2001).

4.1.2 Hydrologic Structure

The Little Salmon River originates at about 6,280 feet above mean sea level on Blue Bunch Ridge, in Township 17N, Range 2E, Section 6. The river flows northward 51 river miles to its confluence with the Salmon River in Township 24N, Range 1E, Section 15, on the southern border of the city of Riggins.

Figure 4 shows the surface water drainages in the Little Salmon River basin. At the southern end of the basin, several major tributaries enter the Little Salmon near the city of New Meadows. Mud Creek and its tributaries originate between 4,600 and 5,600 feet elevation on Brush Mountain, along the western edge of the basin and join the Little Salmon River approximately three miles southwest of New Meadows. In addition, Big Creek, which begins nearly 13 miles south of New Meadows at an elevation of 6,600 feet, meets the Little Salmon River about a mile southwest of town. The east and west Branches of Goose Creek join the Little Salmon River about two and one miles, respectively, north of New Meadows.

Further to the north, the Little Salmon is joined from the east by Threemile Creek, Fourmile Creek, Sixmile Creek, and Martin Creek, and from the west by Round Valley Creek. Still further north, Hazard Creek joins the Little Salmon from the east side of the basin, and Boulder Creek from the west, both with headwaters above 7,000 feet in elevation. Three miles above its mouth, the waters of the Rapid River drainage, which start above the 9,000-foot elevation level in the Seven Devils area, join the Little Salmon River. Numerous smaller tributaries from both the east and west sides are located throughout the basin.

Surface water and ground water appear to be intertwined in the Little Salmon River basin, but little research has been completed to help understand the relationships. Water stored in the snowpack at higher elevations is critical for maintaining summer-time streamflow throughout Idaho (Abramovich 2001). Ground water aquifers are recharged principally by mid and upper elevation precipitation flowing through streams and numerous irrigation ditches (Bendixsen 2000). Some NRCS water supply prediction products are not currently produced (such as monthly volumetric streamflow forecasts, peak snowmelt streamflow forecasts, etc.) for the Little Salmon River basin, but may assist in managing water, or in understanding better, precipitation-runoff relationships (Abramovich 2001).

4.1.3 Geology and Soils

The geology of the Little Salmon River basin is illustrated in Figure 5. The basin lies

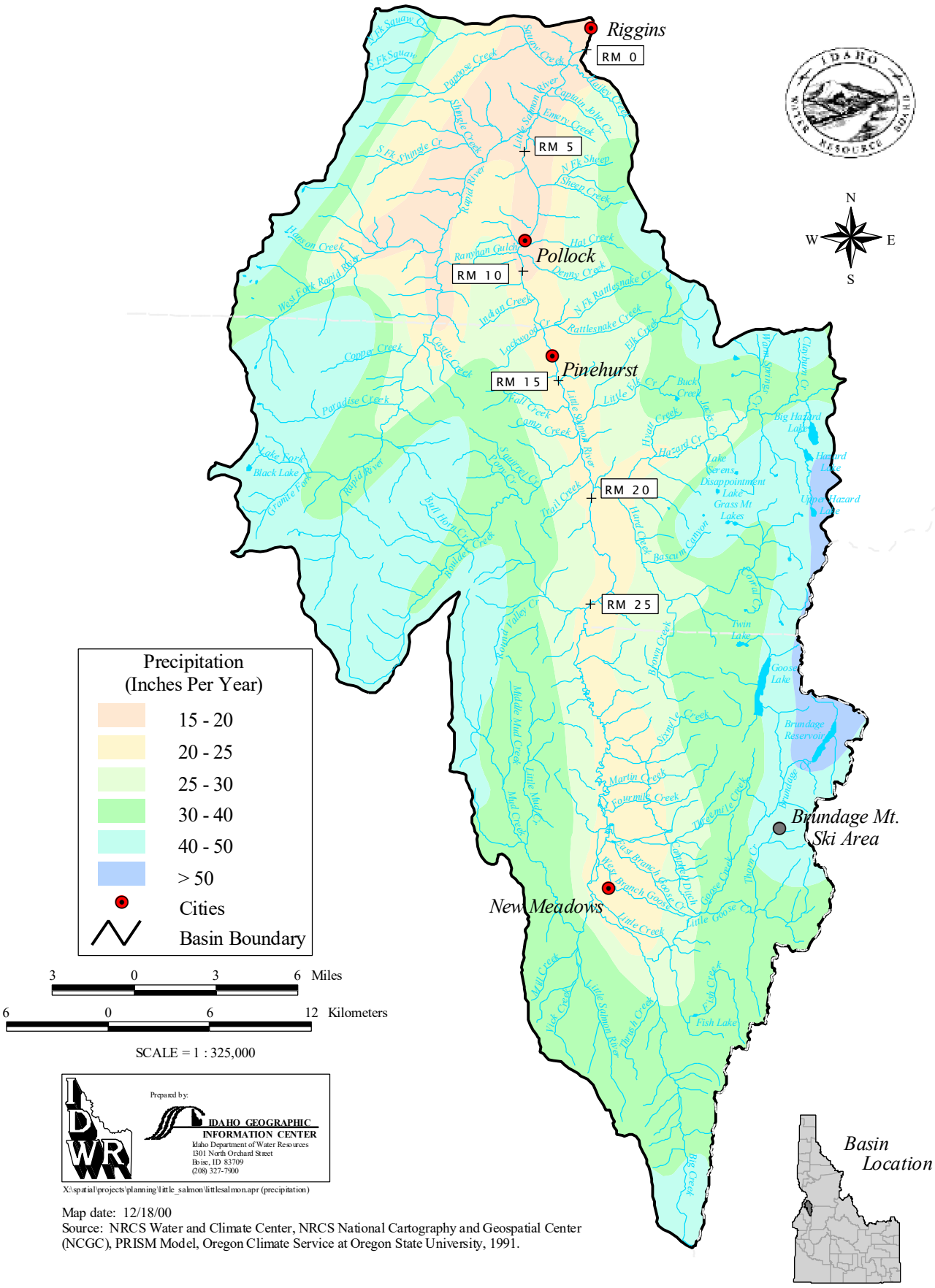


Figure 3. Precipitation contours for the Little Salmon River basin.

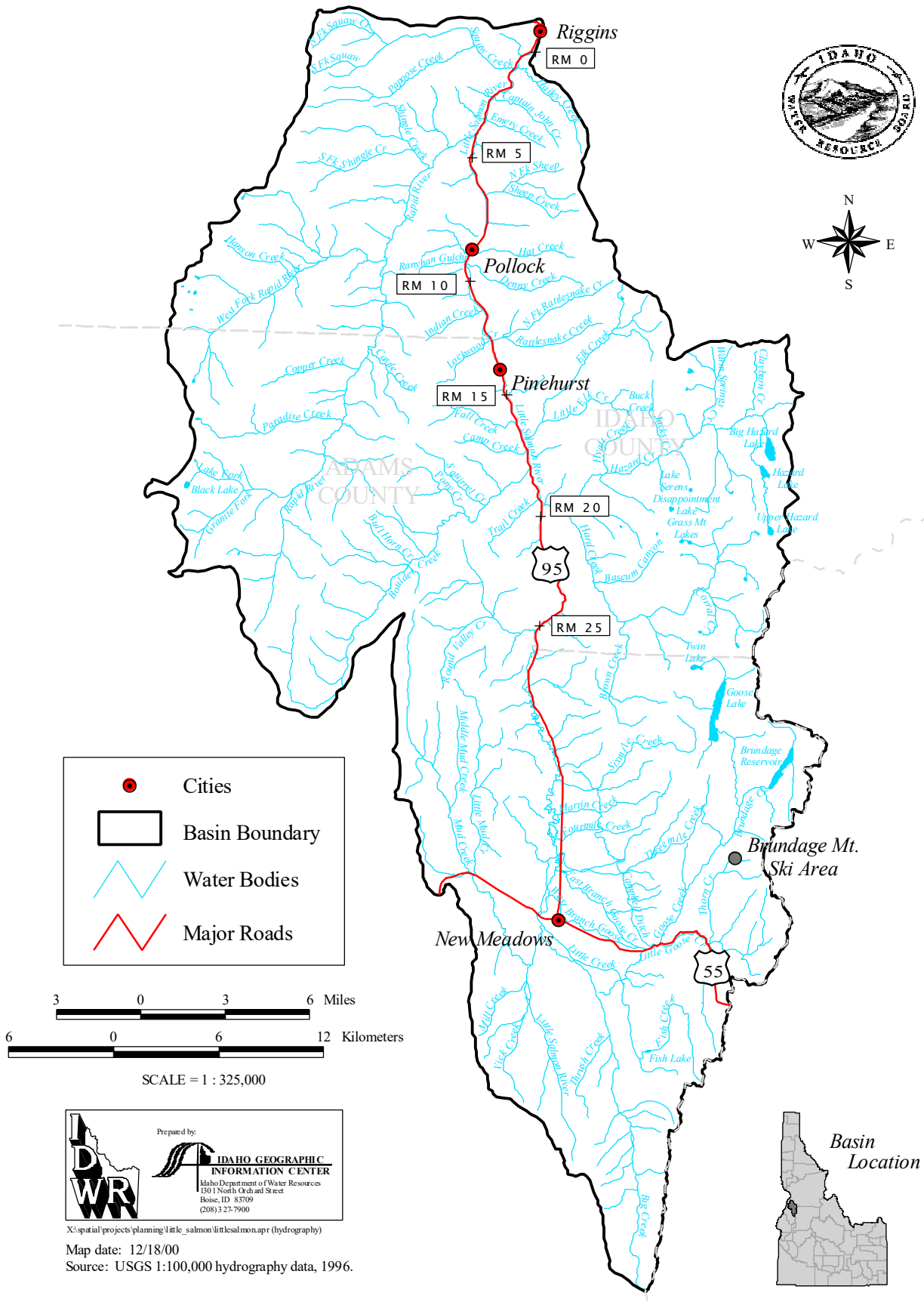


Figure 4. Surface water drainage (hydrography) of the Little Salmon River basin.

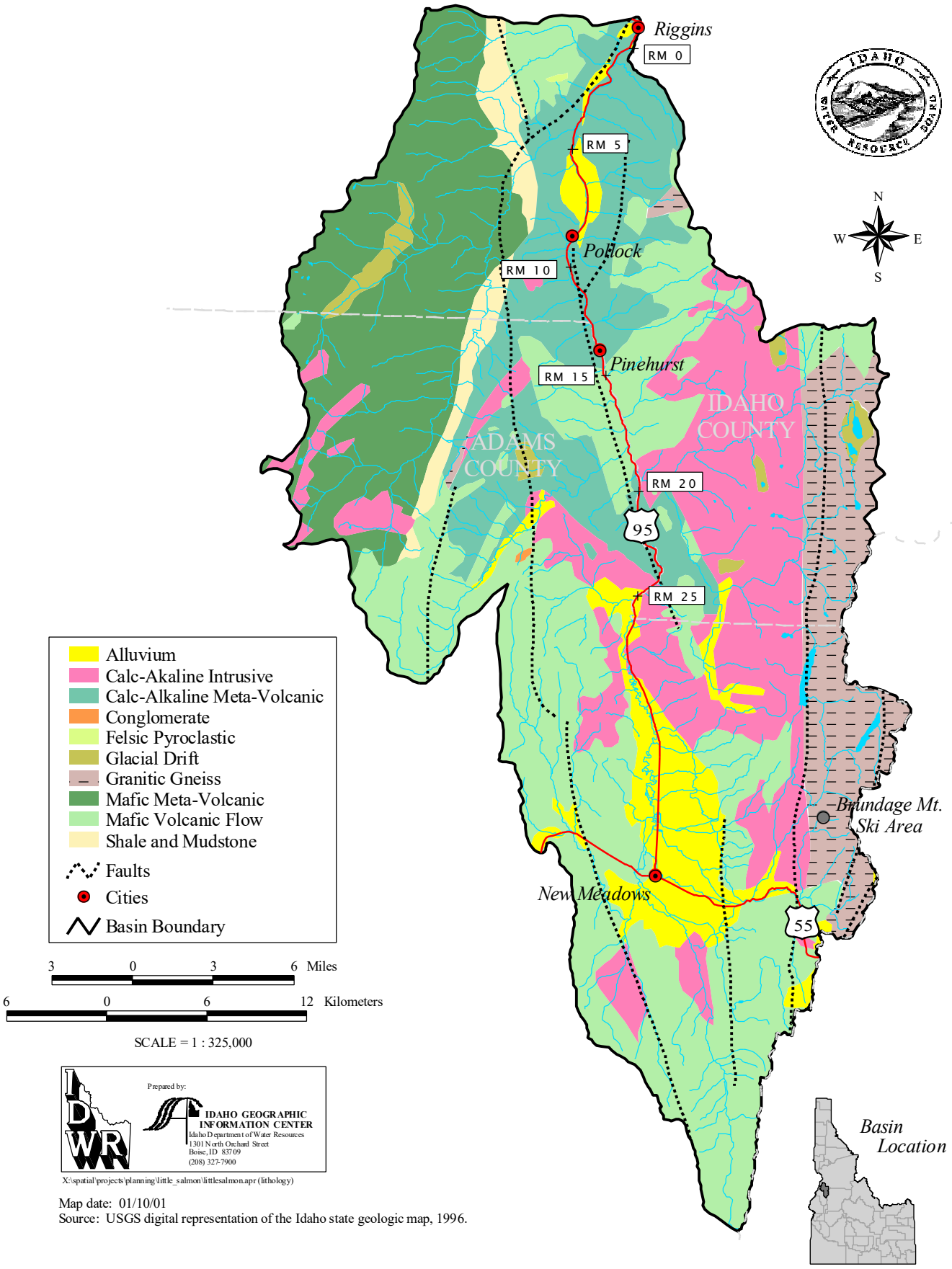


Figure 5. Major geologic features of the Little Salmon River basin.

astride two major physiographic provinces: the Northern Rocky Mountain physiographic province on the east side and the Columbia Intermontane physiographic province on the west side (Ross and Savage 1967). The boundary between the provinces roughly corresponds to the axis of the Little Salmon River, which is also the boundary between an ancient North American continental plate and an oceanic plate. The Idaho Batholith is a Cretaceous (75-100 million years ago) rock formation formed by up-welling magma that cooled as granite. The Idaho Batholith forms a foundation for portions of central Idaho and western Montana. However, it is not solid or contiguous in many locations due to numerous variations in faulting, sheared-zones, and other igneous intrusions.

Many smaller granitic masses are scattered around the Idaho Batholith. The smaller batholiths were emplaced during Eocene time, about 50 million years ago. Other parent materials are also present, such as much older Precambrian metamorphic rock (1.5 billion years old), typically found near the Cretaceous batholith margins (Alt and Hyndman 1989), and Columbia Basin basalt flows (14-17 million years old) that recently capped some of the granitic and metamorphic materials.

Terrain on the eastern portion of the Little Salmon drainage is characterized by high, massive mountains and deep intermontane valleys, a result of magma intrusion, faulting, and erosion. Elevations range from nearly 8,500 feet on Granite Mountain to about 1,760 feet at the city of Riggins. Alluvial sediments and gravels (water-carried) fill the fault valleys, notably Meadows Valley and most of the Little Salmon River canyon. Upland features are predominantly steep, deeply incised slopes with gradients in excess of 60 percent. Mid-slope landscapes are steep to moderately steep, with V-shaped drainages. Flood plains are generally narrow and confined by adjacent valley walls. Glacial outwash deposits of varying ages are identifiable in drainages at higher elevations, such as near Hazard and Big Hazard Lakes.

On the western side of the basin, the topography reflects block faulting and glacial erosion (Ross and Savage 1967). Elevations exceed 9,300 feet in the Seven Devils Range. In the higher mountain areas, streams have deeply dissected the ancient sedimentary and volcanic rocks. These rocks are of marine origin and were joined to the North American land mass around 100 million years ago along the suture zone between the continental and oceanic crusts (or plates). Much of the central portion of the area is filled with sheets of Columbia Basin basalt. Folding and faulting has worked at reshaping these basalt sheets as well. During the Pleistocene (8,000-1.8 million years ago), some of the highest valleys were sites of glaciers, and glacial deposits have been identified along the West Fork of Rapid River and on Pollock Mountain. Meadows Valley formed when a fault block dropped below the adjacent terrain. It has since been filling with alluvial sediments.

Several longitudinal-oriented fault “swarms” have modified the basin topography and indicate past seismic instability in the area. One series of faults marks the eastern side of the basin, approximating the Adams-Valley County line, and passes through Brundage Mountain and the Brundage Reservoir area. Another major fault passes through the Rock Flat and Thorn Creek area just west of Little Ski Hill in the southern end of the basin, and continues along Goose Creek, Goose Lake, and the large rift valley west of the Hazard lakes. A third fault corresponds with the eastern edge of Meadows Valley and marks the Little Salmon River canyon (Alt and Hyndman 1989).

Soils of the basin reflect the landform parent materials and processes from which they were formed (e.g., glaciation, volcanic action, alluviation, regional uplift, and faulting) along with the influences of distinctive microclimates and vegetation. Soils descriptions are useful for land use planning and management, unfortunately, detailed soils information is lacking for much of the Little Salmon River basin. However, published or preliminary detailed

soil survey information is available from the U.S. Dept. of Agriculture - Natural Resources Conservation Service (USDA-NRCS) for small areas principally used for agriculture.

In general, shallow soils in the valley bottoms are alluvial gravels, clays, and boulders. Alluvial soils range in depth from a few feet to about 30 feet. Under the alluvial soils is bedrock material, most often composed of basalts (Bendixsen 2000).

Figure 6 shows the location of major soils in the basin. Table 2 provides general soil component descriptions. The map and table were adapted from the State Soil Geographic (STATSGO) database for Idaho, which was made by generalizing soil survey data from remote sensing methods (e.g., aerial and satellite photos). The mapping scale for this STATSGO coverage is 1:250,000. Therefore, site-specific recommendations based on this map are not appropriate.

Table 2. Selected attributes for soil map unit components (adapted from STATSGO, U.S. Dept. of Agriculture-Soil Conservation Service 1994).

Component Name	Texture[1]	Drainage[2]	Infil[3]	PermL[4]	PermH[5]
Andic Cryochrepts	SIL	W	B	0.6	2.0
Archabal	L	W	B	0.6	2.0
Blackwell	CL	VP	D	0.2	0.6
Bluebell	CB-L	W	C	0.2	0.6
Bluesprin	CBV-L	W	C	0.2	0.6
Demast	L	W	B	0.2	0.6
Dystic Cryochrepts	GR-L	W	B	0.6	2.0
Gaib	GRV-L	W	D	0.2	0.6
Gestrin	L	MW	B	0.6	2.0
Jugson	COSL	SE	C	2.0	6.0
Klickson	CB-L	W	B	0.06	0.2
Lithic Haploxerolls	GR-LS	W	D	2.0	20.0
McCall	CBV-SL	SE	B	2.0	6.0
Naz	SL	W	B	2.0	6.0
Quartzburg	COSL	SE,E	C	6.0	20.0
Rock Outcrop	UWB	[6]	D	0.0	0.0
Suloaf	CB-SIL	W	B	0.6	2.0
Swede	L	W	B	0.2	0.6
Tannahill	CB-L	W	B	0.2	0.6
Ticanot	CBV-L	W	D	0.06	0.2
Typic Dystrochrepts	L	W	[6]	0.6	2.0
Vay Family	SIL	W	B	0.6	2.0

[1] **Texture**: CB-cobbly, CBV-very cobbly, CL-clay loam, COSL-coarse sandy loam, GR-gravelly, GRV-very gravelly, L-loam, LS-loamy sand, SIL-silt loam, SL-sandy loam, UWB-unweathered bedrock.

[2] **Drainage**: Excessively, SE-somewhat excessively, W-well, MW-moderately well, P-poor, VP-very poor.

[3] **Infiltration** Rate: B-moderate, C-slow, D-very slow.

[4] **Permeability Low**: Lowest permeability rate found in soil horizon (inches/hour).

[5] **Permeability High**: Highest permeability rate found in soil horizon (inches/hour).

[6] **Values** not available or not applicable.

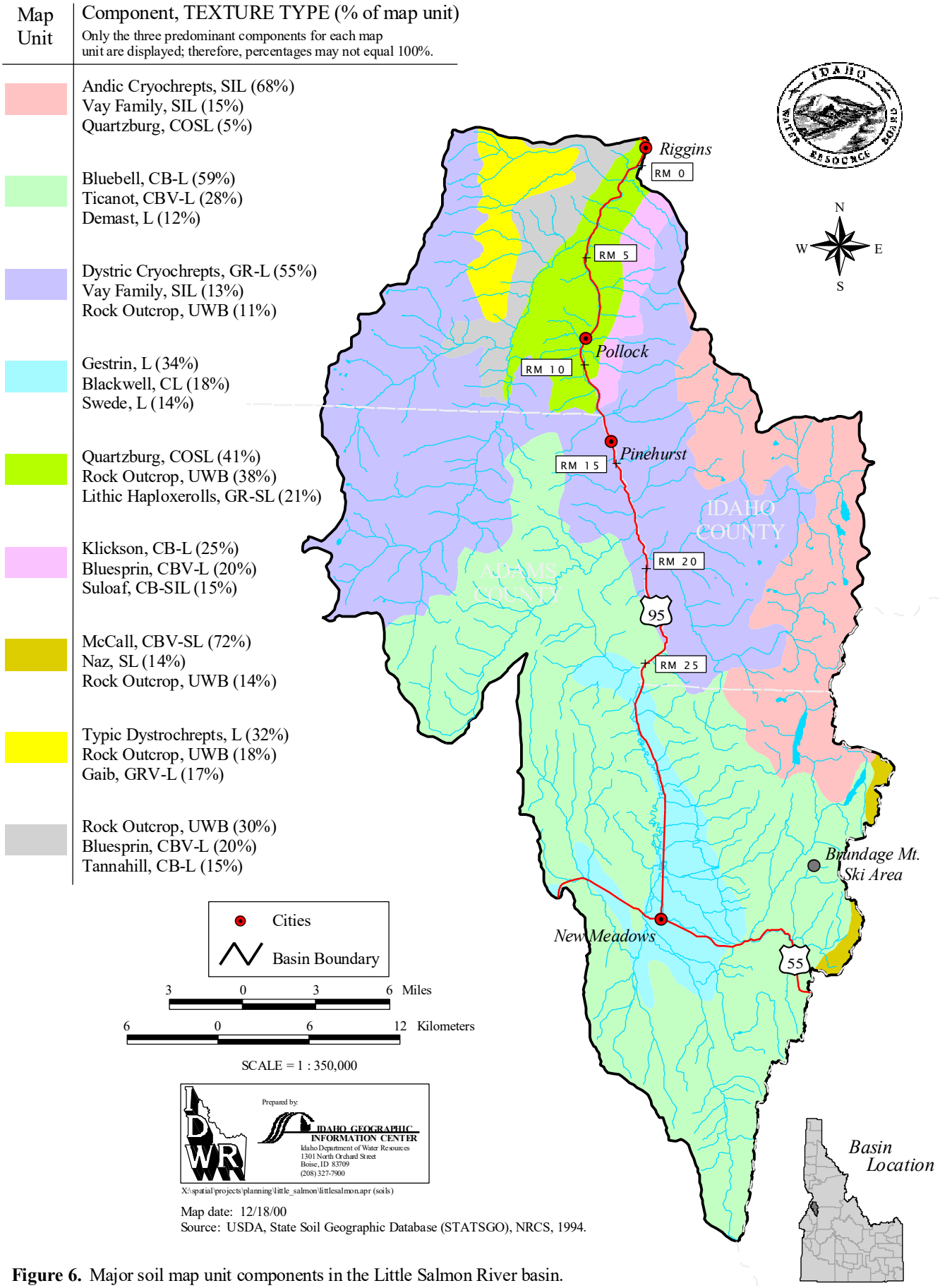


Figure 6. Major soil map unit components in the Little Salmon River basin.

4.1.4 Land Cover and Administration

The present patterns of vegetation cover and use are shown on Figure 7. More than two-thirds of the basin is forested with conifers, mixed timber stands, and aspen groves. More than one-fifth of the basin is rangeland (in grasslands and shrubs), most of which is utilized for livestock operations. All of Meadows Valley and some locations in the lower basin are cropland and pasture. Nearly seven square miles along the eastern margin of the basin, mostly in the Hazard Creek drainage, are recovering from the effects of a large wildfire in 1994. Also in 1994, about 5.5 square miles burned in the Rapid River drainage during a prescribed fire (Shaw 2000). Local residents and natural resource managers state that significant portions of the forested lands are in "unnatural conditions" (in other words, timber stand conditions are prime for more catastrophic fires and watershed disturbances).

There is significant concern that sites previously occupied by fibrous woody vegetation species (trees and shrubs) will convert to tap-rooted invasive species such as yellow starthistle (Cornwell 2001). Yellow starthistle is a noxious weed spreading quickly in the main Salmon River canyons and uplands, and may invade the Little Salmon River basin. When this occurs, runoff impacts could be worsened or intensified when combined with rain-on-snow events.

Figure 8 shows the current land ownership distribution. The public owns 68 percent of the land in the Little Salmon River basin. Federal agencies manage about 241,152 acres of this land; state and local governments oversee 12,228 acres (state jurisdiction includes major highway rights-of-way). Private interests own 115,200 acres, clustered primarily along the Little Salmon River and at the southern end of the basin. The Nez Perce Tribe also owns a small parcel (less than five acres) near Rapid River. Human settlement occupies about three percent of the basin's land.

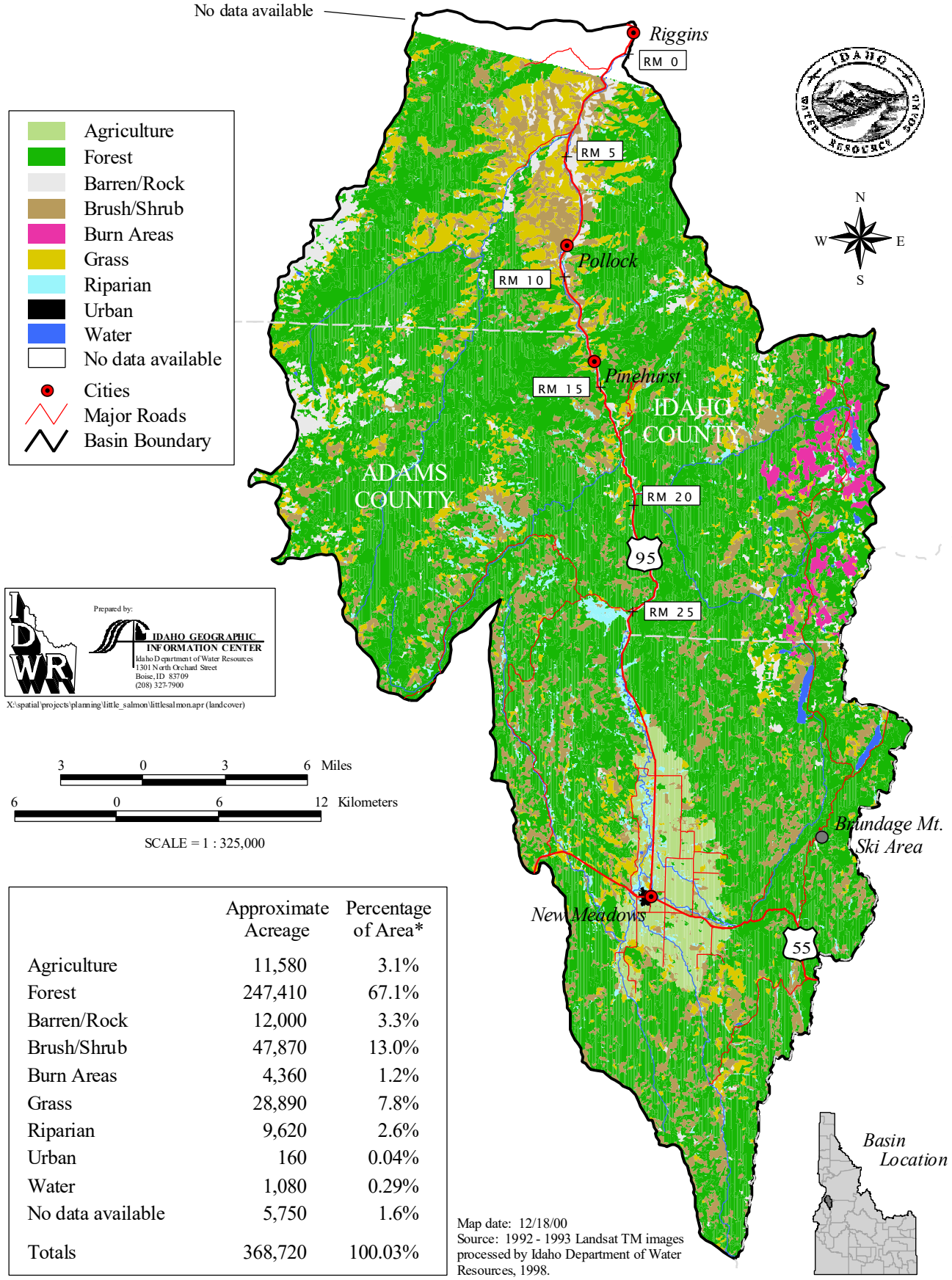
Special management areas, shown on Figure 9, highlight some unique resources in the basin. These include a federally designated Wild and Scenic River, portions of the Hells Canyon National Recreation and Wilderness Areas, and a county historic park site. In addition, the Pony Creek Research Natural Area is located in the middle part of the basin, along a tributary to Boulder Creek. Research Natural Areas are tracts of land or water protected under the management of the U.S. Forest Service. The Pony Creek Research Natural Area is an important study area for factors affecting the distribution of vegetation. Its location in a transition area between northern and southern Idaho offers the opportunity to study a variety of vegetation and aquatic evolutionary characteristics in one location (U.S. Forest Service 1988).

4.1.5 Cultural Resources

Humans have occupied the Little Salmon River basin for between 8 and 11centuries (Landeen and Pinkham 1999; U.S. Forest Service 1988). The Nez Perce and the Shoshone-Bannock Tribes claim to have occupied this area.

Tribal members grouped themselves in small semi-permanent villages, with groups of villages combining to form bands (Landeen and Pinkham 1999, Walker 1978). There was no permanent political body, but each band relied on the older males who came together as a council as needed. The tribes preferred local leadership to centralized authority (Walker 1978).

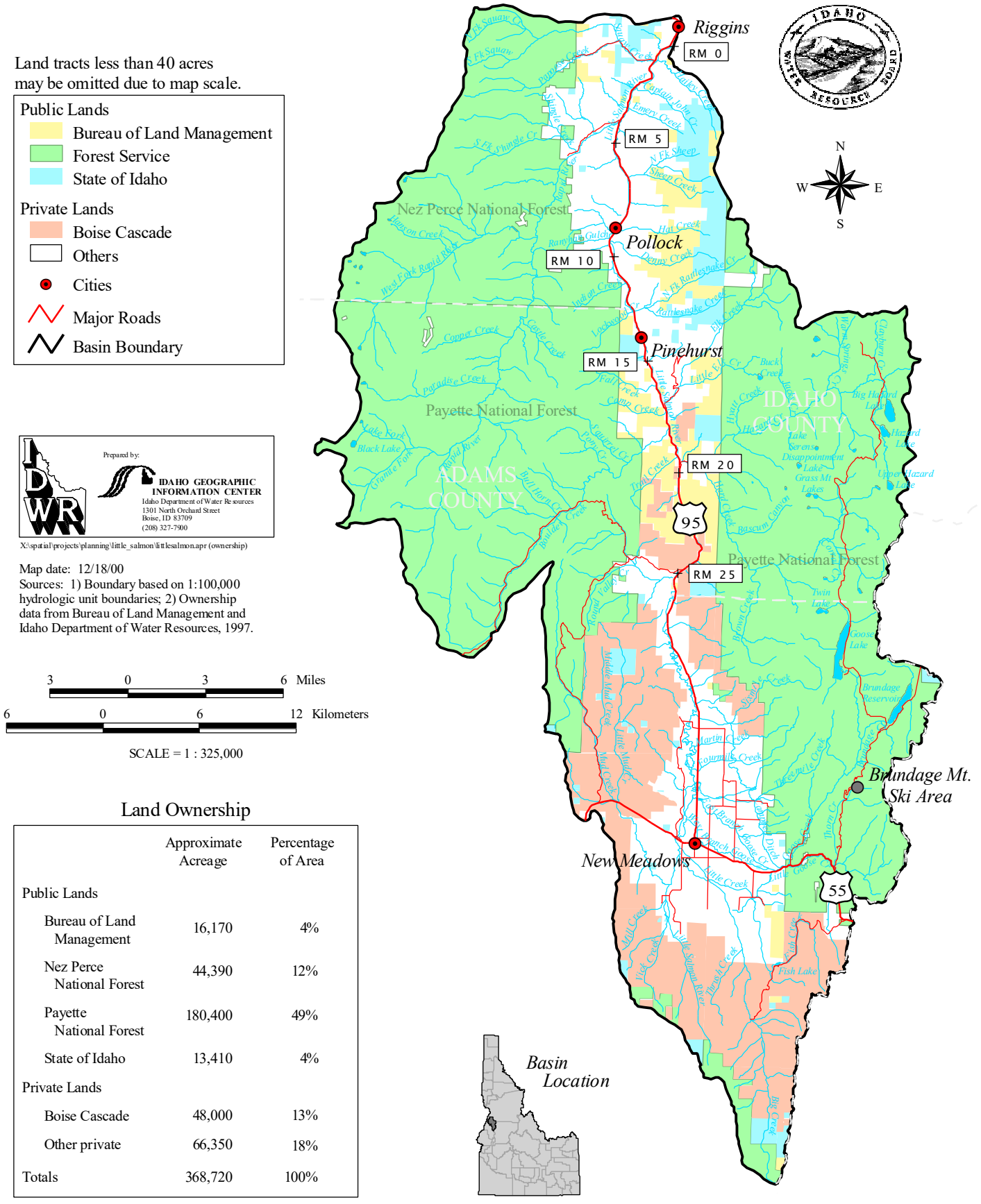
The Nez Perce Tribe considers salmon to be a part of their spiritual and cultural identity. The Indians Claims Commission concluded that the Indians economic cycle could be described as ten months of fishing and two months of berry picking, while hunting year-round. Each band had its own fishing places, which were respected by other bands (Landeen and Pinkham 1999).



	Approximate Acreage	Percentage of Area*
Agriculture	11,580	3.1%
Forest	247,410	67.1%
Barren/Rock	12,000	3.3%
Brush/Shrub	47,870	13.0%
Burn Areas	4,360	1.2%
Grass	28,890	7.8%
Riparian	9,620	2.6%
Urban	160	0.04%
Water	1,080	0.29%
No data available	5,750	1.6%
Totals	368,720	100.03%

*Does not total 100% due to rounding.

Figure 7. Land surface cover map of the Little Salmon River basin.



Land Ownership

	Approximate Acreage	Percentage of Area
Public Lands		
Bureau of Land Management	16,170	4%
Nez Perce National Forest	44,390	12%
Payette National Forest	180,400	49%
State of Idaho	13,410	4%
Private Lands		
Boise Cascade	48,000	13%
Other private	66,350	18%
Totals	368,720	100%

Figure 8. Land ownership and distribution in the Little Salmon River basin.

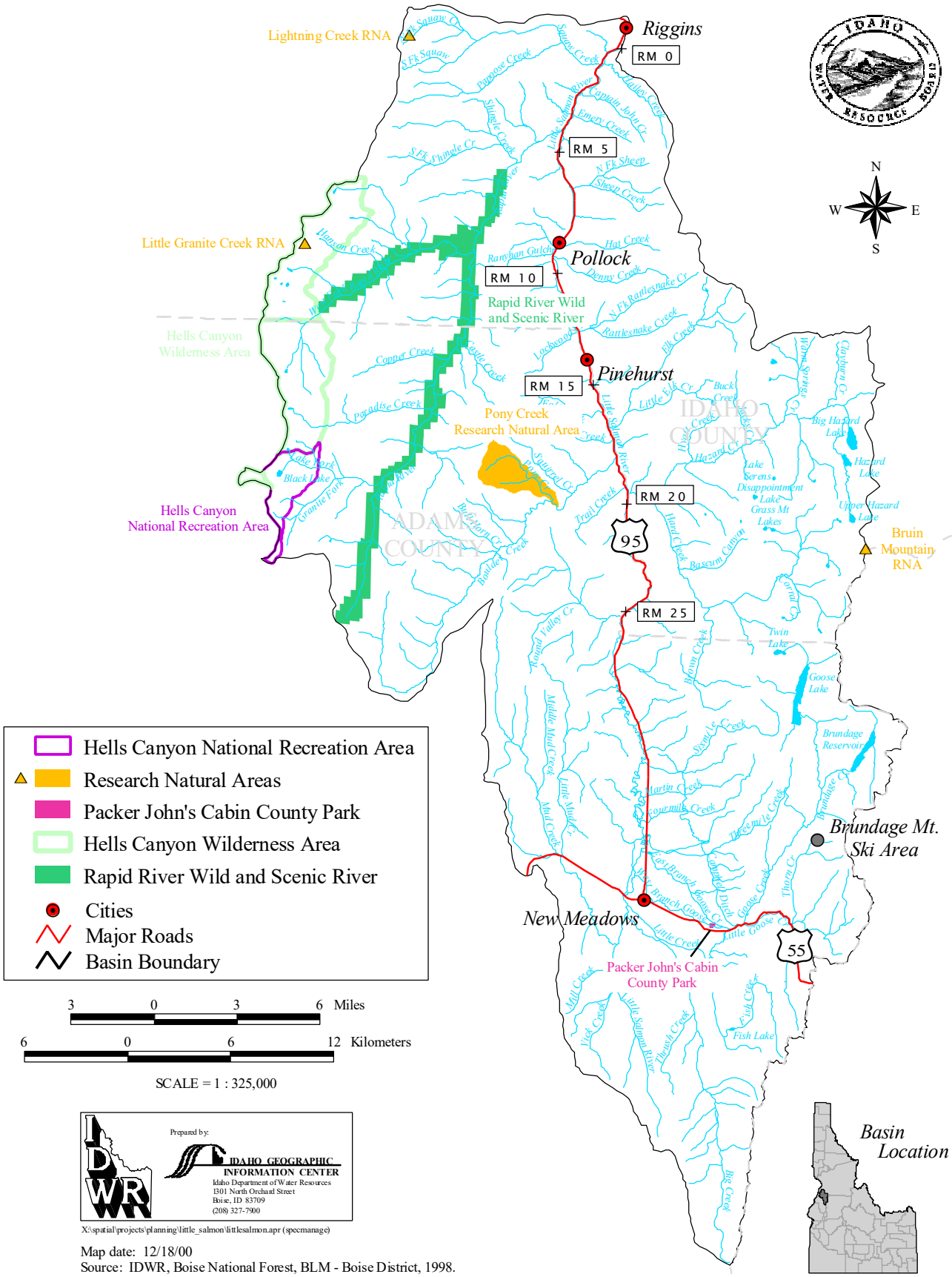


Figure 9. Special management areas for unique resources in the Little Salmon River basin.

Important changes came with the acquisition of horses in the early 18th century. Both the Nez Perce and the Shoshone-Bannock increased their areas of travel – the Nez Perce into the divide country, and the Shoshone-Bannock northward into the southwest Idaho mountains. Both of these tribes were wealthy because of the resource abundance of the central Idaho mountains and valleys and their use of horses for travel, hunting, and defense. Both tribes developed class societies based on wealth, which in turn was based on the ownership of horses (Walker 1978).

Changes came again with the influx of euro-americans in the 19th century. In 1836, Presbyterian missionaries introduced Christianity to the tribes, creating religious divides that influenced tribal government, treaty negotiations, and tribal and individual wealth (Landeen and Pinkham 1999). Conflicts with new settlers arose over access to lands and streams. The federal government became involved, and the tribes entered into treaty negotiations during the middle part of the 19th century. Tribal governmental systems changed; the U.S. government's demand for a single authority figure to act for the entire tribe was largely responsible for the creation of the head chief position (Walker 1978). The Nez Perce tribe ceded tribal lands in the Treaty of 1855. The Nez Perce reservation boundaries were further reduced by the 1863 Nez Perce Treaty and Cession Agreement in 1893.

In 1884, the Circle C Ranch, once one of the largest ranches in the country, was founded in the Meadows Valley by Charles Campbell. Other cattle and sheep ranches were developed; 67 ranches were reported in 1888 in the Little Salmon River basin (Eisensohn 1951). These new residents of the basin lived on the land. Support services were grouped into small towns and villages. The town of Meadows was supplanted by the city of New Meadows when railroad lines were built into the valley. The town of Riggins was established by ranchers, but timber extraction and mining also became important economic activities (Manser and Wilson 1983). Cattle and sheep ranchers lived in permanent structures on lands outside of the towns. Rugged terrain and the need to tend to livestock and homes limited travel of the new settlers both within and outside of the basin. Newspapers of the time noted the passage of Indians through the basin as they made their way to hunting grounds in the basin (Eisensohn 1951). Indians – probably Nez Perce – fished and camped along the Little Salmon River in the spring and fall during the late 1800s (Manser and Wilson 1983).

Packer John's Cabin, a building located somewhere in Meadows Valley during the early 1860s, was used by travelers and early euro-american settlers of the area. A reconstructed version of the cabin is now a county park, although not at the cabin's original location (Defenbach 1984). A road was built to connect Riggins with Meadows Valley in the early 1900s. The first six cars traversed the road in 1916, and by the 1920s, the road was graveled (Manser and Wilson 1983).

Nez Perce tribal members continue to use the basin to exercise their treaty fishing and hunting rights. The Little Salmon River basin continues to be important to the Nez Perce for fishing, hunting, social, and religious activities.

The federal government recognizes important historical sites by listing them on the National Register. The National Register is maintained by the National Park Service and lists properties of national, state, and local archaeological, historic, or architectural significance. Several buildings in the Little Salmon River basin are listed on the National Historic Register: the Meadows schoolhouse, the Pacific and Northern Railroad depot, the Col. E.M. Heigho House (all in Meadows Valley), and the Aitken Barn south of Riggins.

4.1.6 Social and Economic Characteristics

Demand for water depends on the levels and patterns of demographic and economic activities in the Little Salmon River basin. In this section, estimates of population, housing, income, employment, and unemployment are used to describe the demographic and economic characteristics of the basin. Data for this section were obtained primarily from the Census of Population and Housing (U.S. Bureau the of Census 1960, 1970, 1980, 1990, 1995, and 2000). As of the date this basin plan was last edited (Sept. 2001), Year 2000 census statistics were not available, other than general population figures. Specific information regarding agriculture, timber, mining, and recreation was compiled by IDWR to meet the needs of this plan and requests made by various advisory group participants (refer to Appendix G).

The Little Salmon River basin lies within portions of Adams and Idaho Counties, and the area of the basin is considerably smaller than either one of the counties. Consequently, county level data is not necessarily representative of local demographic and economic conditions within the basin. A more accurate representation is potentially achieved by using census county divisions (CCDs) (Figure 10). These are areas defined and used by the U.S. Bureau of Census for collecting and presenting information at a sub-county level. Three CCDs cover parts of the Little Salmon River basin, but only two are substantially within the Little Salmon River basin and are used in this plan, and are: the New Meadows CCD, which covers 421.3 square miles in Adams County, and the Riggins CCD, which covers 1,221 square miles in Idaho County. Nevertheless, great care must be exercised when interpreting CCD-level information because there may be significant levels of economic activity inside the CCD, but outside of the Little Salmon River basin.

Population

According to the latest partial release of Year 2000 census information (dated March 2001) and depicted in Figure 11, only two counties in Idaho have seen declines in their numbers of residents (those being Butte and Shoshone Counties). Both Adams and Idaho Counties have grown slightly in the last ten years, as well as the New Meadows and Riggins CCDs (Figure 12). Contrary to this growth trend, the City of Riggins has seen about a seven percent drop in its population. The City of New Meadows, on the other hand, has stayed at nearly its same size since 1990, losing only one person. No recent census information is available for the towns of Meadows, Pinehurst, and Pollock at this time. About one-half of the basin's population lives in New Meadows, Pollock, or Riggins. The remaining residents occupy older ranch properties or newer rural subdivisions and ranchettes. The full time residential population of the Little Salmon River basin was estimated to be 2,695 in Year 2000.

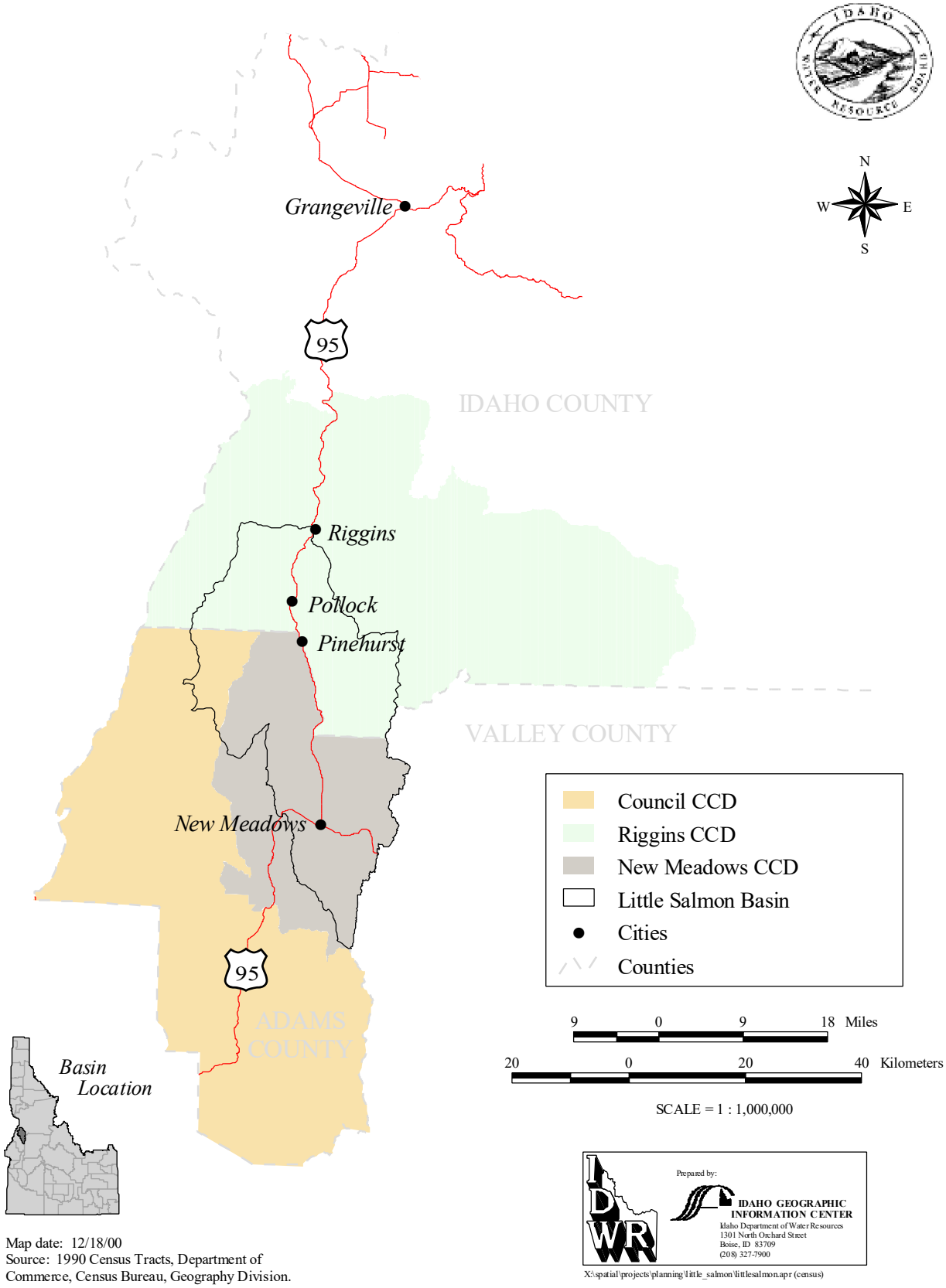


Figure 10. Census county divisions found in the Little Salmon River basin.

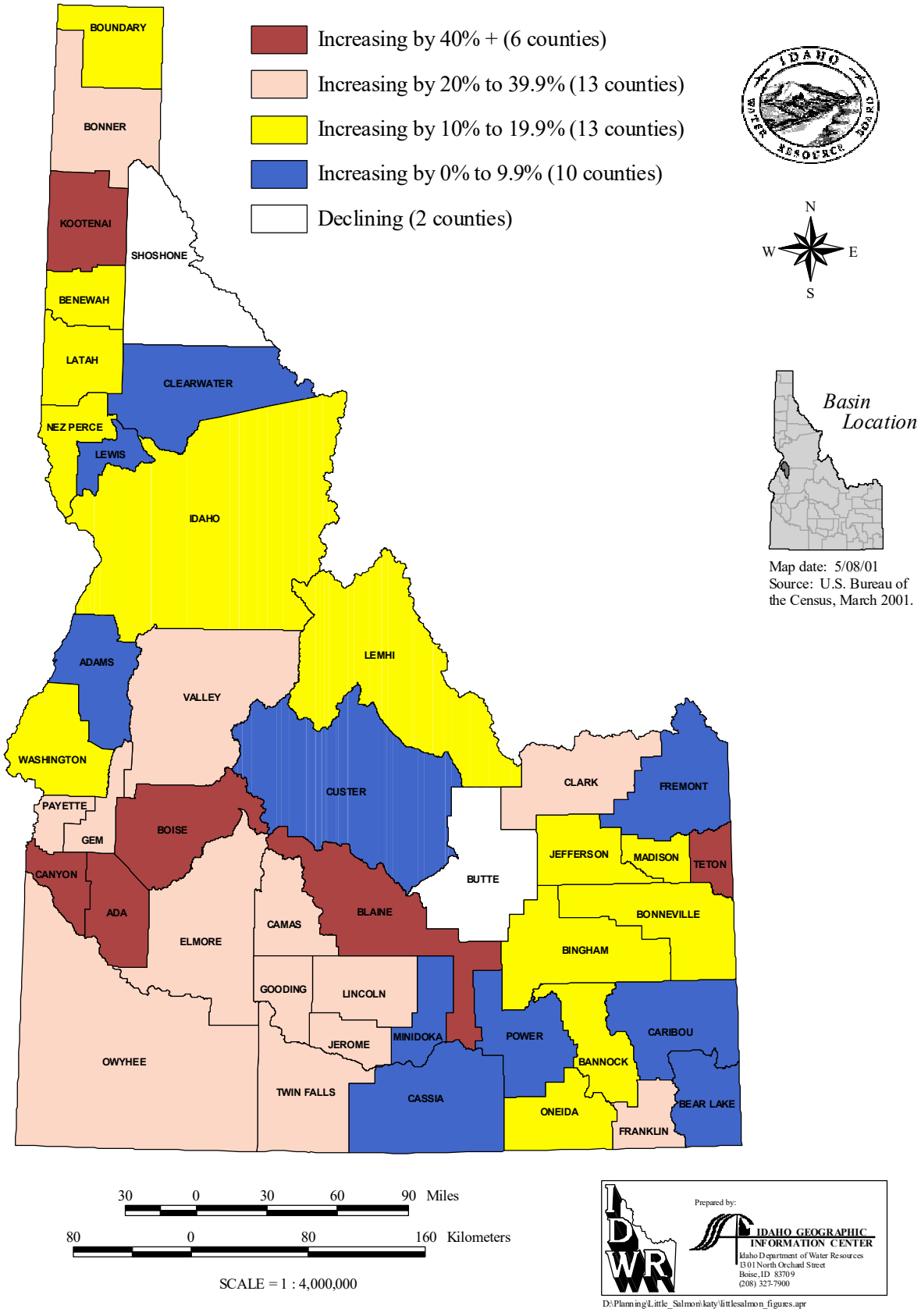


Figure 11. Percent change in population, 1990-2000 (Source: U.S. Bureau of the Census, March 2001).

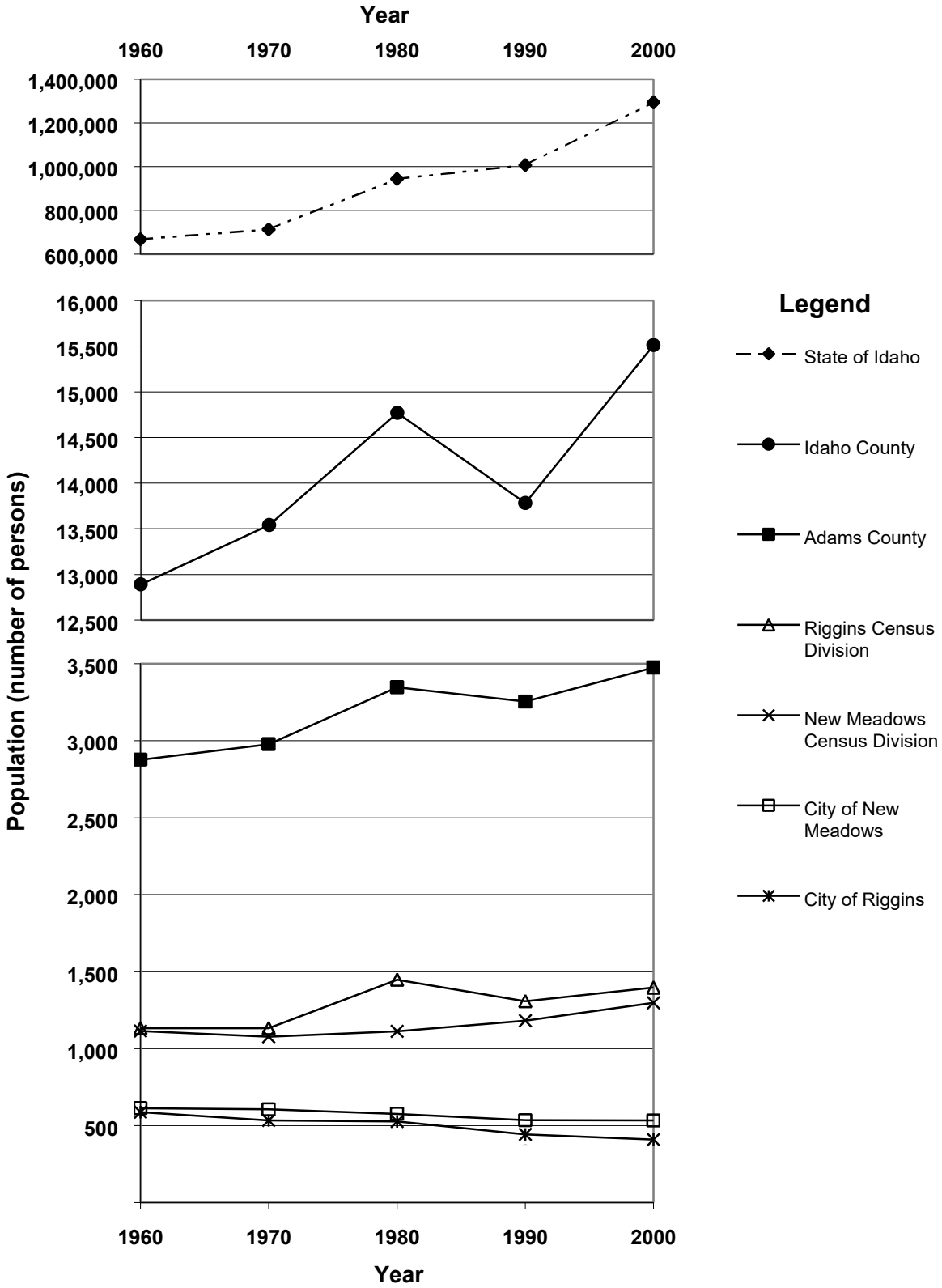


Figure 12. Population trends for selected locations in Idaho.

Age is another important aspect of the population of the basin. The basin's population is generally older than that of the state of Idaho. Figure 13 displays median age of the population in the New Meadows and Riggins CCDs, and the state. The increase in the median age of the basin's population can be explained by its decrease in the population of children under 18 years of age, and the increase in adults over 65 years of age.

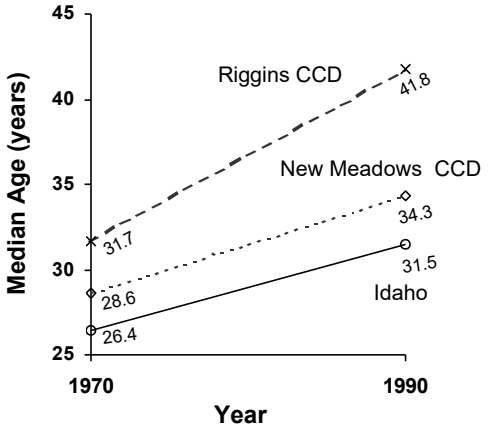


Figure 13. Median age of residents in the Riggins and New Meadows census county divisions, and in Idaho.

Projections of future population are only available by county units, not by county census divisions. By Year 2025, according to Idaho Power Company projections, the populations of Adams and Idaho Counties would increase about 15 percent each from today's numbers to 4,340 and 17,020 respectively (Idaho Power Company 2001).

Characteristics of Households

Figure 14 illustrates the number of households occupied on a year-round basis, in the basin and in the state, during the years 1970, 1980, and 1990. The New Meadows and Riggins CCDs are shown on the left scale, and the state is on the right scale. Between 1970 and 1990, the number of households in New Meadows increased by 27 percent, and in Riggins the increase was 45 percent. In comparison, the population increased by 12.6 percent in the basin as a whole over the same period.

The relatively higher growth rate of households compared with the population reflects an increase in persons per household in the two CCDs. There was a decrease in persons per household in New Meadows and Riggins from 2.99 and 2.95, respectively, in 1970, to 2.58 and 2.35, respectively, in 1990.

Seasonal or occasional housing use (second homes) is an important characteristic of the basin and distinguishes it from the state as a whole. The Census of Housing estimated that seasonal housing added 121 units to the 457 year-round units in the New Meadows CCD in 1990. Similarly, seasonal housing added 151 units to the 529 year-round housing units in the Riggins CCD. These estimates put seasonal housing at between 17 and 19 percent of all housing in the Riggins and New Meadows CCDs. Those percentages are higher than the rest of the state, as illustrated in Figure 15. Seasonal housing on a statewide level was 6 percent in 1990. Furthermore, seasonal housing in the basin has remained almost constant from 1980 to1990, whereas statewide seasonal housing fell from 8 to 6 percent, a decrease of 25 percent.

Income

Estimates of income and employment for the New Meadows and Riggins CCDs were obtained from the Census of Population and Housing for 1980 and 1990 (the Year 2000 Census income and employment statistics were unavailable as of the date this basin plan was written) (U.S. Bureau of the Census 1980, 1990). The residents of the New Meadows and Riggins CCDs had roughly the same per capita income in 1980 (Figure 16). However, between 1980 and 1990, per capita income almost doubled for New Meadows CCD residents, a growth rate mirrored at the state level. In contrast, Riggins CCD residents experienced an increase of only 50 percent over the same period.

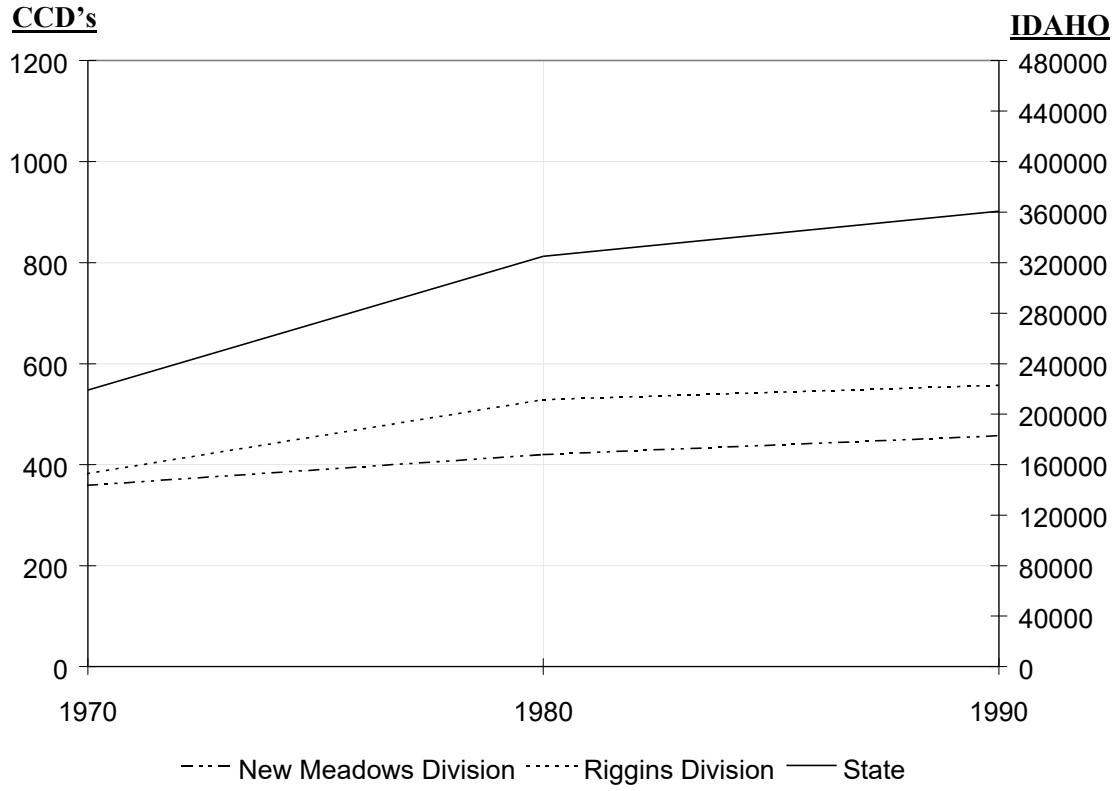


Figure 14. Number of households occupied on year-round basis in the Little Salmon River basin from 1970 to 1990.

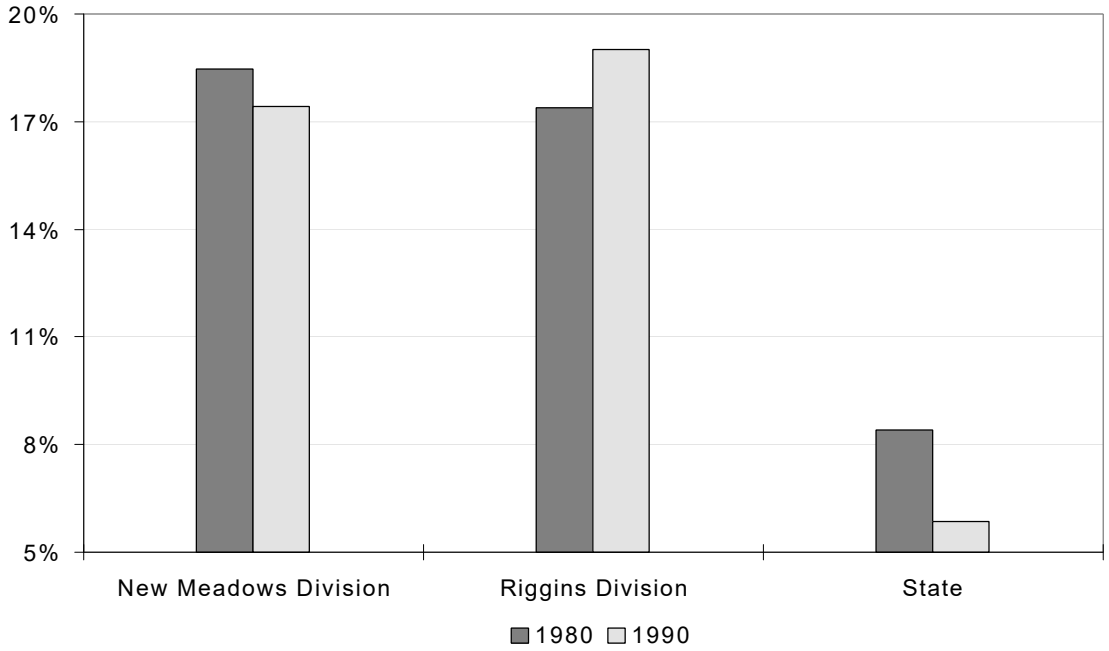


Figure 15. Percentage of seasonal housing in the Riggins and New Meadows census county divisions, and in Idaho (Source: U.S. Bureau of the Census 1980 and 1990).

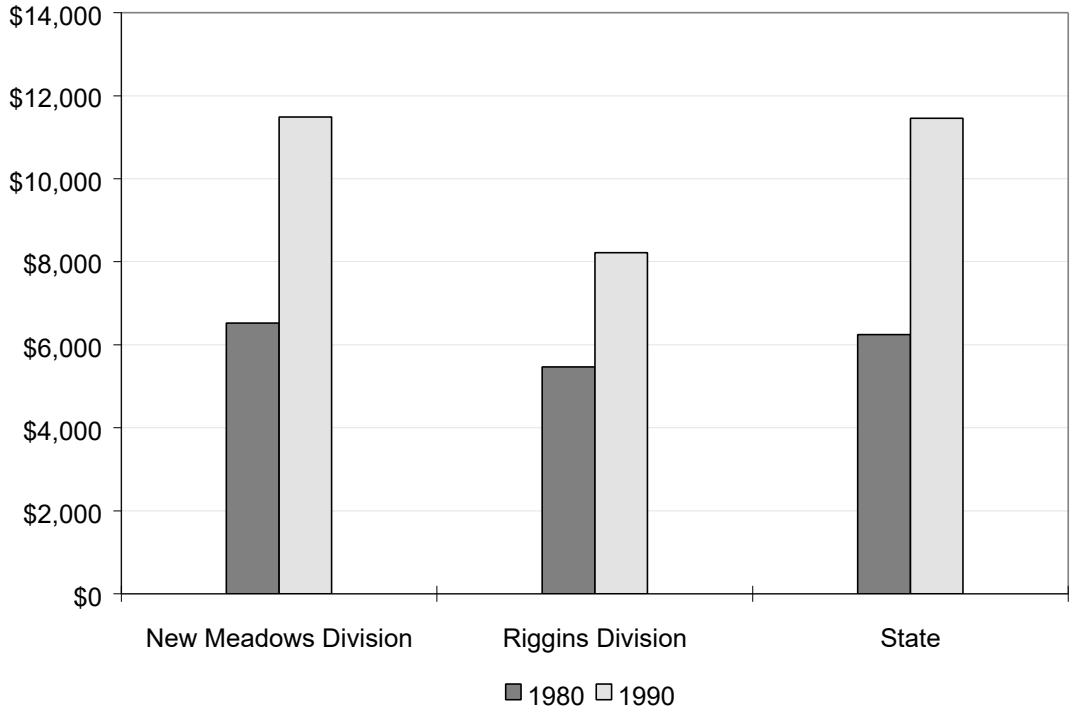


Figure 16. Per capita income in the Riggins and New Meadows census county divisions, and in Idaho (Source: U.S. Bureau of the Census 1980 and 1990).

To explain the income growth experienced by basin residents between 1980 and 1990, it is helpful to identify the primary sources of income as well as any changes that may have occurred during the period. Sources of income identified in the census included wages and salaries, self-employment, social security and interest, dividends and rents. In the New Meadows CCD, 71 percent of the income received in 1990 came from wage and salaries, 7 percent from social security, 7 percent from self employment and 12 percent from interest, dividends, and rents. In the Riggins CCD, a lower proportion of income came from wages and salaries (61 percent), a higher proportion from social security (13.4 percent) and self-employment (11 percent), and the same percentage from interest and dividend income (11 percent).

Employment

Figures 17, 18, 19, and 20 illustrate employment estimates. Industries are grouped into sectors corresponding to Standard Industrial Classification codes. Major employers of basin residents are the agricultural sector (including forestry, fishing, and mining), service sectors (business, repair, personal, entertainment, recreational, and professional services), retail trade, and manufacturing.
New Meadows and Riggins CCD residents are engaged predominately in agriculture. Primary activities are hay and cattle production. Some heavy equipment repair and forest product manufacturing are done within the CCD (but outside the Little Salmon River basin, as in the case of the Tamarack Sawmill). Nearby Brundage Mountain Ski Resort attracts visitors and has been expanding. Cattle ranches are scattered through the basin. Riggins is a popular fishing and rafting destination. It is also a traditional rest stop for travelers of U.S. Highway 95, Idaho's only major north-south road link.

Some Little Salmon River basin residents work outside the area. According to the census, 26 percent of New Meadows CCD residents and eight percent of Riggins CCD

residents worked outside their respective counties. Anecdotal evidence suggests that many New Meadows residents work just outside the basin at the Tamarack Sawmill and in nearby McCall, in Valley County. A small number of residents commute to Cascade, also in Valley County, and a few commute to Boise (Ada County).

Comparative and historical views of employment in the two CCDs are presented in Figures 17 and 18. About the same number of New Meadows and Riggins CCD residents were employed in agriculture in 1990. A greater number of New Meadows CCD residents were employed in retail and manufacturing, while more Riggins CCD residents were employed in service group employment. Between 1980 and 1990, total employment in the New Meadows CCD increased by 14 percent, whereas total employment in the Riggins CCD remained unchanged.

There were some important shifts in employment patterns from 1980 to 1990 in both CCDs. Retail and agriculture surpassed manufacturing as the largest employers of New Meadows residents. Services and public administration took over from manufacturing, construction, and transportation as the largest employers of Riggins residents. The increase in service employment in Riggins reflected a growth in recreation enterprises. Government employment increases were partly a result of the creation of the Hells Canyon National Recreation Area. Employment of Riggins residents in agriculture, forestry, mining, and fishing sectors fell slightly during the ten-year period.

Retail and services emerged as major sources of employment in the Little Salmon River basin reflecting an increased demand for goods and services. Some of the demand comes from part-time or seasonal users of the basin, including spillover from the resort town of McCall. Demand is also fueled by others outside of the basin, who have incomes that have more than kept pace with the state's rising average wages. Additional demand comes from an increase in vehicle traffic passing through the area. Average daily travel at the intersection of routes State Highway 55 and U.S. 95 in New Meadows is estimated to have increased from 4,580 vehicles per day in 1980, to 7,080 vehicles per day in 1990. The rate of growth in vehicular traffic has since slowed; in 1997, 7,700 vehicles per day passed through New Meadows (Fuller 1999).

The employment profile of the basin does not match that of the state (Figures 19 and 20). Compared with the state, the basin has a proportionately larger agricultural sector (20 percent vs. 10 percent). The basin also has a larger proportion of recreation and entertainment services (9 percent vs. 4 percent) and smaller proportions of professional services (13 percent vs. 22 percent) and wholesale trade (1 percent vs. 5 percent).

An additional indicator of economic activity in the basin is the unemployment rate. While the area experienced a recession in the early and mid 1980s, Figure 21 shows that between 1980 and 1990 unemployment fell from 38 percent to 15 percent in the New Meadows CCD, and from 24 percent to 12 percent in the Riggins CCD. Yet in contrast with the state as whole, the unemployment rate in the basin remained high. Unemployment in the state during that same period fell from 7.9 to 6 percent.

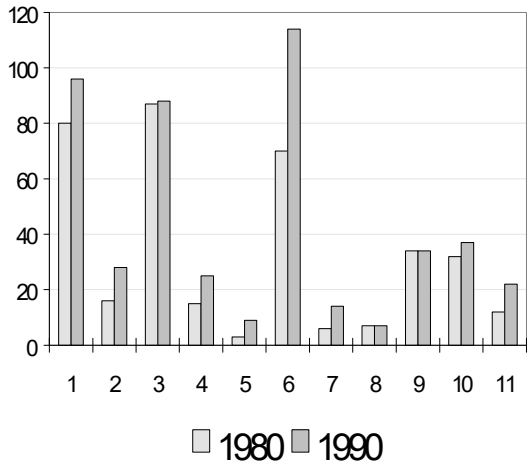


Figure 17. Number employed in New Meadows by census county division industry (Source U.S. Bureau of the Census 1980, 1990).

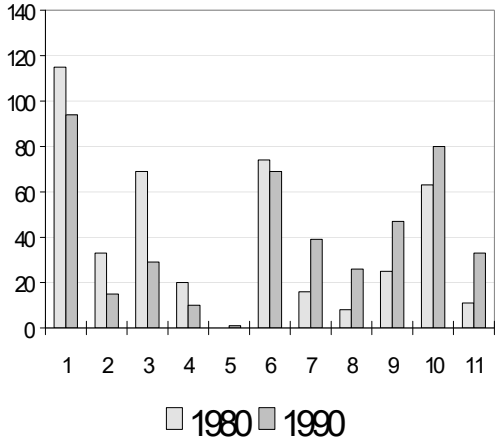


Figure 18. Number employed in Riggins by census county division industry (Source U.S. Bureau of the Census 1980, 1990).

Legend

1. Agriculture, Forestry, Fisheries, Mining
2. Construction
3. Manufacturing
4. Transportation, Communications, Public Utilities
5. Wholesale Trade
6. Retail Trade
7. Finance, Insurance, Real Estate
8. Services : Business
9. Services : Personal, Recreation, Entertainment
10. Services : Professional
11. Public Administration

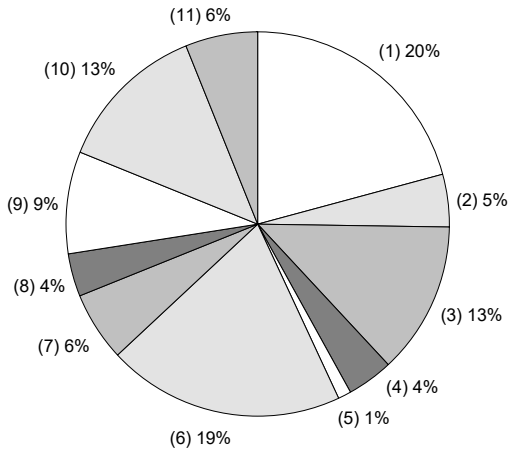


Figure 19. Percentage of employed in Little Salmon River basin by census county division industry (Source: U.S. Bureau of the Census 1990).

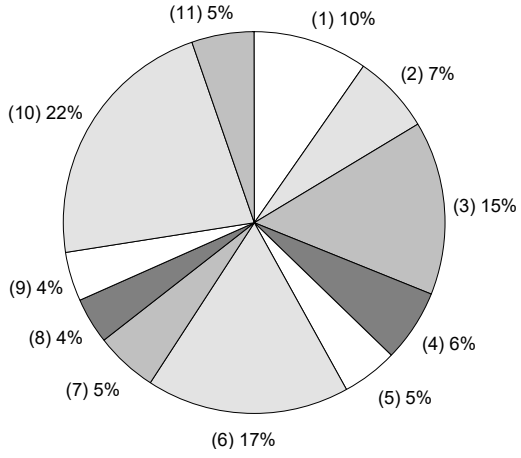


Figure 20. Percentage of employed in Idaho by census county division industry (Source: U.S. Bureau of the Census 1990).

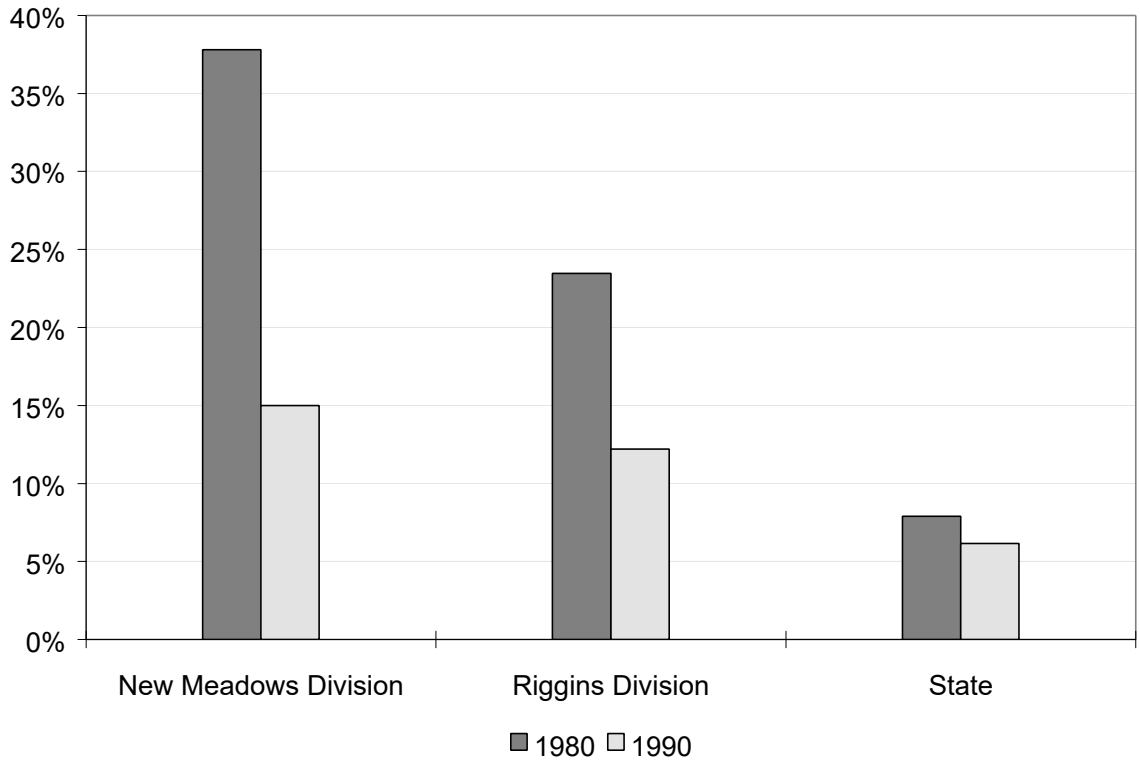


Figure 21. Unemployment rates in the Riggins and New Meadows census county divisions, and in Idaho (Source: Bureau of the Census 1980, 1990).

Old Economy vs. New Economy

There have been many debates regarding the economic values and worth of traditional employment sector jobs (such as in logging and ranching) when compared with river-based recreation sector jobs. In the last decade, float and power boating, salmon and steelhead fishing, and tourism have increased as part of the local economy. This trend is not unique to the Little Salmon River basin. Currently, tourism in Idaho ranks third in economic importance after agriculture and electronics manufacturing (with food processing #4, other manufacturing #5, timber/lumber #6, chemicals #7, and mining #8)(Idaho Dept. of Commerce 2001). Much attention has been directed to this issue, especially with the recent closures of area lumber mills and record salmon and steelhead returns in the Snake River system. One important message to learn from the data is that the basin's economy is diversifying and growing. In the end, growth of tourism and recreation sector jobs adds to the local economy.

Because the Little Salmon River basin does not conform to common boundaries used for making detailed economic investigations, and given the difficulty of making accurate comparisons, no conclusions were made in this document pertaining to the "old" vs. "new" economy of the basin. IDWR attempted to make employment sector comparisons within the basin using several different data sources; the results were deemed inaccurate. However, IDWR did make economic estimates for the different sectors. Based on these estimates, the annual value to the basin from fishing and related recreation jobs is about equal to the economic value of crops in the basin. Appendix G provides details about fishing, agriculture, mining, and timber sectors. For

more information regarding relationships between logging and recreation sector employment, refer to Section 4.4.2.

4.1.7 Energy Supply and Conservation

The Idaho Power Company supplies electrical energy to the Little Salmon River basin. Most of this energy is produced by company-owned hydropower facilities at the Hells Canyon Complex on the Snake River. A power transmission line from Oxbow Dam generators crosses the upper end of the basin, south of New Meadows, en route to a substation at McCall. From this station, electricity is distributed throughout the area.

Hydropower projects are discussed in the *Water Resources* section of this chapter. Existing projects are described in *Water Allocation.* The discussion on proposed hydropower projects in the Little Salmon River basin is located in the *Water Resource Development* section of this chapter.

Wood remains a popular choice for heating because of the convenience of the basin's private and public forest properties. The low efficiency of wood as a fuel is offset by its low cost. It is not known if supply and distribution limitations constrain wood as a source to meet future energy needs in the basin. Wood fuel is used in a co-generation plant at the Tamarack sawmill, located near the Little Salmon River basin's southwestern boundary (outside the basin).

There is some use of propane for heating fuel. Propane is a byproduct of crude oil refining and natural gas processing. Consequently, its price is somewhat dependent on those processes. In addition, propane prices can exhibit price spikes that are greater in intensity than would be expected from normal supply and demand influences (Energy Information Administration n.d.). Price increases are often seen in the winter, as demand increases and refinement production remains constant. In addition, the residents of the Little Salmon River basin must cope with winter storms that cause interruptions in the surface transportation system. These factors put propane users in a vulnerable position during the time of the year when supplies are most important.

The gasoline supply is adequate throughout the basin. Retail outlets are located in New Meadows and Riggins. As with other fuel sources, the basin remains vulnerable to stormy weather and interruptions in the surface transportation system. Natural gas, which is carried via pipelines to the end consumer, is not presently available in the Little Salmon River basin.

Conservation programs designed to increase efficiencies in energy use are expected to play major roles in meeting future energy requirements in the short-run (Idaho Power Company 2001). These efficiencies come about by encouraging less energy use in producing a given service while maintaining the desired amenity level.

The Energy Division of IDWR provides information, technical assistance, and financial support to promote cost-effective conservation and the use of energy-efficient resources. The Northwest Energy Code and locally-adopted building codes are examples of programs that support modern conservation standards for new building construction, and are usually administered by local governments. Existing buildings are eligible for energy conservation upgrading through several programs sponsored by state and federal agencies and the private utilities industries (Eklund 1997).

4.2 Water Resources

4.2.1 Water Supply

The term "water supply" refers to the amount of water in a particular area, in this case, the Little Salmon River basin. It is sometimes measured as precipitation or as stream flow. An accurate determination of the water supply in the Little Salmon River basin is difficult, as very little data on surface water flows have been collected. Stream flow measurements have been recorded for an extended duration at only

one location in the basin: the mouth of the Little Salmon River. Snow pack data are also collected at only one location: Brundage Reservoir. However, these data can be used to project stream flow conditions throughout the basin using established and accepted methodologies.

Surface Water

The Little Salmon River basin, compared with other hydrologic basins in Idaho, is atypical from a geomorphic and hydrologic perspective. Most often, the headwater portions of a basin have the highest elevation and correspondingly, the highest annual precipitation. The broad, relatively low relief of the Meadows Valley portion of the basin is not typical of a headwater area. The highest annual precipitation occurs mid-basin, along the eastern divide in the vicinity of Bruin Mountain and Hazard Lake, in Township 21N, Range 3E, and along the lower western divide in the upper Rapid River drainage, which is at the lower end of the basin (Ondrechen 1998).

Daily stream flow records are available for three locations in the basin: Little Salmon River at Riggins (1951– present), Mud Creek near Tamarack (1946-1959), and Boulder Creek near Tamarack (1938-1945). A comparison of the Little Salmon River and Mud Creek data indicate that the Mud Creek gage peaks much earlier than the Little Salmon River gage. Boulder Creek, a smaller watershed at a much higher elevation than Mud Creek, has a date of peak flow much closer to the Little Salmon River gage (Ondrechen 1998).

The *User Guide for Idaho Hydrologic Maps* (Warnick et al. 1981) provides rough estimates of average annual runoff at selected ungaged sites based on estimated average annual precipitation and runoff coefficients calculated for gaged sites. Estimated values are available for three sub-basins in the Little Salmon basin, as shown in Table 3. According to these estimates, 32 percent of the annual runoff from the basin originates above Round Valley Creek. The Hazard Creek drainage, which is downstream of Round Valley Creek, contributes 19 percent of the total flow of the Little Salmon River. The Rapid River, which empties into the Little Salmon River at the lower end of the drainage in Township 24N, Range 1 E, Section 32, contributes 23 percent of the drainage's total flow.

The estimated volumes and rates of flow do not include a temporal component. Typically, gradually warming temperatures in the spring create high runoff flows that then taper through the spring and summer to low flows in the winter. This pattern can be altered by winter rain events, as occurred in January of 1997, resulting in high stream flows. Or, a cool spring will maintain snowpack later into the year, which may result in heavy stream flows when temperatures increase sharply as summer arrives.

Table 3. Estimated average annual runoff.

Location	Drainage Area (mi^2)	Average Annual Precipitation (in.)	Estimated Average Annual Runoff (cfs)[1]
Little Salmon above Round Valley Creek	188	32.1	244
Rapid River (mouth)	126	32.0	172
Hazard Creek (mouth)	86	33.6	144
Little Salmon at Riggins	584	31.1	762[2]

[1]Cubic feet per second

[2]Observed average annual runoff (1951-1997) is 792 cfs. Source: Warnick et al. 1981.

The temporal aspect of runoff affects the use of storage facilities at Granite Twin Lake, Goose Lake, and Brundage Reservoir. These reservoirs are not large enough to contain all of the high flows in the spring. In the summer, usually by early July, water is released from the reservoirs to meet downstream water rights. Water right owners divert water from the stream system in accordance with their water rights. As a result, stream flow in the Little Salmon River between Goose Creek and the tributaries in the canyon area becomes reduced as the summer progresses.

IDWR designates standard irrigation seasons of use for the different areas of the state. The standards are based on the water requirements of alfalfa, and take into account climate and elevation data (Peppersack 1999). For most of the lower elevations in the Little Salmon River basin, the irrigation season is from April 1 to October 31 of each year. A portion of the downstream end of the basin has a longer season from February 15 to November 20.

Based on IDWR's irrigation seasons and other run-off calculations (Warnick et al. 1981), the basin produces an average volume of 322,875 acre-feet over the course of the irrigation seasons. Two-thirds of this water originates downstream of Round Valley Creek.

Ground Water

Data for ground water systems in the Little Salmon River are limited. Development has been almost exclusively for domestic and municipal uses. Four areas in the basin (New Meadows, Pinehurst, Pollock, and Riggins) have developed ground water, as described below.

New Meadows is situated on an alluvial basin (see *Geology* and *Soils* sections). Based on well drilling reports submitted to the IDWR, basalts are interlayered with clays, sands, gravels, and boulders, as one might expect in an alluvial environment. At lower depths, basalt becomes the dominant rock. Well depths range from approximately 40 feet (domestic) to over 600 feet (municipal). Ground water can be found at depths less than 20 feet to as deep as 550 feet. Available data suggest connectivity between deep and shallow ground water; both are part of a single aquifer without a consistent intervening confining layer. Well yields range from 15 to 20 gallons per minute for domestic wells, to over 400 gallons per minute for municipal wells. Recharge to the aquifer comes from the Little Salmon River, Big Creek, Little Creek, and the West Branch of Goose Creek.

The Pinehurst and Pollock areas display similar ground water hydraulic characteristics. Both areas are underlain by a shallow alluvial aquifer under the valley floor. Based on well drillers' reports, the main aquifer consists of course-grained alluvium ranging from a few feet to over 30 feet in thickness. Well yields range from 10 to 30 gallons per minute. Bedrock lies 30 to 60 feet below the surface. Ground water in the hard rock beneath the alluvium, and in the surrounding mountains, is found at variable depths associated with fracture zones. The bedrock in the Pollock area appears to be more fractured than near Pinehurst, resulting in slightly higher yields. Yields range from two to 15 gallons per minute in both areas.

Recharge to the alluvial aquifer is mostly from the Little Salmon River with minor amounts of water from tributaries. Recharge to the ground water in the hard rock is from surrounding creeks and streams and associated precipitation.

Data for the Riggins area are more limited than for the rest of the basin. There are only four well drillers' reports on file with the IDWR. Although no well logs are available for the two municipal wells that serve the city of Riggins, it has been reported that each well produces 300 to 350 gallons per minute. It can be assumed that the hydrogeology in Riggins is similar to the Pinehurst and Pollock areas – a shallow alluvial aquifer underlain by hard rock. Recharge is principally from the Little

Salmon and Salmon Rivers (Bendixsen 2000).

Geothermal Water

There are a number of geothermal springs and wells in the Little Salmon River basin. Most of them are located along the Little Salmon River corridor in the Meadows Valley.

The IDWR investigated the geothermal resources of the state and issued a report in 1980. No geothermal wells or springs were found in the Idaho County portion of the Little Salmon River basin, but several were located and measured in the Adams County portion. Krigbaum Hot Springs, located east of the city of New Meadows, flows from a northeast trending fault in Cretaceaous granitic rocks near Miocene basalt. Two separate vents were measured at 567.75 gallons per minute, at temperatures of 104°F and 107.6°F. IDWR estimates subsurface temperatures of 166.8°F and 204.8°F, respectively (Mitchell et al. 1980). A geothermal well at Zims, a commercial establishment next to the Little Salmon River north of New Meadows, was measured at 166°F, and produced approximately 36 gallons per minute (Idaho Department of Water Resources 2000a).

The IDWR has measured other geothermal springs and wells located along the Little Salmon River corridor north of New Meadows. Temperatures range from 78.8°F to 166.8°F, with discharges of 5 to 10 gallons per minute. Some wells and springs have not been measured by IDWR, but owners report temperatures up to 138°F and flows of nine to 378 gallons per minute (Idaho Department of Water Resources 2000a).

4.2.2 Water Allocation and Use

The constitution and statutes of the state of Idaho declare all waters to be property of the state. This includes streams and rivers flowing in natural channels, springs and lakes, and all ground waters. A water right represents permission from the state to put its waters to a beneficial use. Water rights describe the source of water, a priority date, the amount of water to be used, what the water is to be used for, and where and when the water will be used. The IDWR administers water rights in Idaho based upon the Doctrine of Prior Appropriation, (i.e., first in time is first in right.) See Chapter 4.3.1 for information regarding moratorium orders issued by the director of IDWR.

Court Decrees and the Snake River Basin Adjudication

There have been eight court decrees of water rights in the Little Salmon River basin prior to the Snake River Basin Adjudication (SRBA). The decrees are listed in Appendix D. Water right decrees sometimes require a watermaster to deliver the rights as described in the decree. One watermaster serves both Big Creek (District 78A) and Goose Creek (78C) in the southeastern portion of the basin at this time.

A verification of all water rights in the Snake River Basin, for both surface and ground waters, is being conducted for the Snake River Basin Adjudication. The IDWR is responsible for the verification process, including field examinations. A final determination of each claim is the responsibility of the SRBA Court, located in Twin Falls.

The SRBA verification of claims in the Little Salmon River basin for all uses other than *de minimus* domestic and/or stock water is scheduled for 2004, with IDWR's recommendations to be submitted to the court in early 2005 (Warntjes 1998, Kelly 2000). Included in this verification will be claims on Granite Twin Lakes, Goose Lake Reservoir, and Brundage Reservoir, all important water storage facilities in the upper end of the basin.

Three Indian tribes, the Nez Perce, the Shoshone-Bannock, and the Shoshone-Pauite, along with the United States Bureau of Indian Affairs, have filed claims for instream flows throughout the basin. The validity of these claims will be determined through negotiated settlements between the Tribes and the State of Idaho, or by legislature, or the SRBA court.

Other filings in the SRBA include claims for rights to flood waters that have not been previously recorded with the IDWR. The SRBA court will determine the validity and extent of these claims.

Volume and Season of Use

Water stored in reservoirs may be used to supplement water from a flowing stream (natural flow rights), depending on valid water rights, water availability, and other factors. Generally, irrigation water from storage facilities is not used until later in the season when stream flows have decreased. Use from a particular source may depend on weather conditions such as temperature and precipitation, or on traditional practices. It is difficult to determine with certainty how much water is diverted from specific tributaries because of these variable irrigation patterns. Inadequacy or lack of measuring devices may compound the problem, especially in drainages where there is no organized water district and watermaster to properly measure diversions and manage water use. In the Little Salmon River basin there are only two organized water districts with watermasters; Big Creek (78-A), and Goose Creek (78-C). However, it is possible to estimate water use based on estimated irrigated acres, and water use allowed by IDWR.

The IDWR designates standard irrigation seasons of use for different areas of the state. The standards are based on the most water-consumptive crop in the area, and take into account climate and elevation data (Peppersack 1999). For the majority of the Little Salmon River basin agriculture lands, the irrigation season is from April 1 to October 31 of each year. The lower elevation portion of the basin has a longer season, from February 15 to November 30.

In addition to designating seasons of use, IDWR also calculates the volume of water necessary for diversion to grow crops over the course of a specific irrigation season. Some of this water, between 25 and 33 percent, is assumed to return to the system, either through percolation into the ground water or surface runoff.

The estimated field headgate requirement for diversion of water in the upper basin (including Round Valley Creek) is three acre-feet of water per acre during the irrigation season. For the lower basin, four acre-feet per acre is required during the irrigation season. Using this field headgate requirement, the estimated 15,100 acres irrigated in the upper basin would need 45,300 acre-feet per year. For the estimated 1,300 acres irrigated in the lower basin, 5,200 acre-feet of water would be needed, for a total of about 50,500 acre-feet per year in the basin. The actual water use is unknown since it is based on all existing water rights and the annual use of each right. The actual water use cannot be determined until the formation of water districts with watermasters throughout the basin or the completion of the basin adjudication process (SRBA).

4.2.3 Irrigation

Surface Water

Nearly all irrigation in the Little Salmon River basin is accomplished with the use of surface water in gravity flood or gated pipe systems. These systems operate by means of a physical barrier in the stream that directs water into a canal or ditch. Smaller ditches or laterals run from the main ditch to specific properties, where even smaller ditches may diverge. Soil, rock, or canvas dams, or small headgates divert the water into gated pipes or ditches. The water is then directed out over the fields. Water floods over the ground to irrigate the crop. Excess water percolates down into the ground or runs down-gradient over the ground to a drainage ditch or natural drainage way.

Upper Basin

About 92 percent of the irrigated acres in the Little Salmon River basin are located upstream of the confluence of Round Valley Creek and Little Salmon River. The majority of these 18,500 acres are irrigated with water from Twin Granite Reservoir, Goose Lake Reservoir, and Brundage Reservoir (Idaho Department of Water Resources 1998). These three storage facilities are in

the headwaters of Goose Creek and its tributary, Brundage Creek.

Goose Lake Reservoir is the oldest of the three facilities. It was originally constructed in 1919 to irrigate 4,800 acres in Meadows Valley. The height of the dam was increased in 1924, in 1931-32, and in 1951. The reservoir's current capacity is 6,550 acre-feet, with a surface area of 386 acres; its catchment area is about 8.3 square miles (Goose Lake Dam and Reservoir Operation Plan 1996). The earth embankment dam is now 27 feet high, with a hydraulic height of 21 feet, 1,250 feet long, and is classified as a large size, high-risk dam by the IDWR, because of its location above residential development in the valley. There are no instrumentation or monitoring devices on the dam. Visual inspections are conducted weekly when the reservoir is filling in the spring, and every other day during the irrigation season. Goose Lake Reservoir is filled during spring runoff, and is usually at capacity by late May or early June. Releases usually start by the end of June to meet irrigation water rights in the valley. The maximum discharge at full pool is 80 cubic feet per second (Goose Lake Dam and Reservoir Operation Plan 1996).

Twin Granite Reservoir is located about two miles upstream of Goose Lake Reservoir. Twin Granite is an earthen dam, originally constructed in 1920 to store water for irrigation purposes. In 1958, all of the previous cribbing was removed and a cut-off trench dug down to bedrock. The dam is now 20 feet high, with a crest length of 620 feet plus an additional 160-foot dike. Draining 0.6 square miles, the reservoir has a 600 acre-foot capacity. There is no written operation plan for the reservoir. The dam outlet is opened in the fall, and water is not stored until spring run-off is well underway. Water is released after spring run-off, when space is available in Goose Lake Reservoir. The maximum discharge is 19 cubic feet per second (Dam Summary Sheet 1999a).

Brundage Reservoir was originally built as a Work Progress Administration project in 1936. The earth embankment dam was replaced and enlarged in 1987 as a cost-sharing project (sponsored by the Adams Soil Conservation District) with the local users, the Idaho Water Resource Board, and the Soil Conservation Service. The dam is now 92 feet long and 63 feet high, with a hydraulic height of 56.5 feet. Located at 6,238 feet above mean sea level, it has a capacity of 7,330 acre-feet and a surface area of 270 acres. The reservoir usually fills sometime between late May and early July. Releases of water start in late June and continue through early September. Per an agreement worked out between Brundage Water Users Association and the U.S. Forest Service in May 1985, the U.S. Forest Service now holds a 500 acre-foot water right in Brundage Reservoir, with the designated beneficial use being recreation storage. The water is maintained by the Forest Service as a conservation pool year-around for fish and wildlife habitat.

At full pool, the maximum release is 291 cubic feet per second (Dam Summary sheet 1999b). The IDWR has classified Brundage Dam as a large size, high-risk dam and has an automated, piezometric seepage monitoring system. The embankment, drains, and spillway are also inspected every other day during the irrigation season. While filling in the spring time, the dam is inspected weekly. There is also a Natural Resources Conservation Service SNOTEL site adjacent to the reservoir that is used for monitoring the water content of snow and run-off conditions. In addition, the dam owners must complete an annual written inspection report. The Idaho Department of Water Resources and the U.S. Forest Service inspect the dam bi-annually (Brundage Dam and Reservoir Operation Plan 1996).

Lower Basin

About eight percent of the irrigated acres in the Little Salmon River basin are located downstream of the confluence of Round Valley Creek. Water right records on file with the IDWR indicate that approximately 1,300 acres of irrigation are from various surface water sources.

Ground Water

Less than 100 acres, all located in the lower basin, are irrigated with ground water as the sole source of water. Using the IDWR volumetric standard of four acre-feet per acre per irrigation season as a guide for estimating volume of use, the total maximum of diversion is about 400 acre-feet of water. Five hundred fifty-five additional acres are irrigated using ground water supplemental source (Idaho Department of Water Resources 1998). The term "supplemental source" means that there are other sources of water for these acres, and the ground water is used only as a supplement or back-up to the primary source. Diversion volume for supplemental use in the Little Salmon River basin ranges from a high of four acre-feet per acre, to zero, if the supplemental source is not used during an irrigation season. Supplemental use may add as many as 2,220 acre-feet to the 400 acre-feet diverted for sole source ground water rights (Idaho Department of Water Resources 1998). These volume estimates do not include any half-acre parcels that may be irrigated in conjunction with a domestic use.

4.2.4 Stock Water

Most of the water provided for livestock consumption in the Little Salmon River basin comes from surface water. Table 4 shows the estimated number of livestock in the Little Salmon River basin. In federal management areas, estimates are based on the number of grazing permits issued. In privately owned areas of irrigated pasture, local experts provided estimates.

Standard water use, as defined by the IDWR, is 12 gallons of water per day for range cattle and horses, and two gallons per day for sheep. Total stock water use was estimated by multiplying the number of gallons typically used in a day by an estimate of days of livestock water use. Total annual livestock water use in the basin is estimated at 18 million gallons, or about 56 acre-feet. The estimates do not allow for evaporation and any additional water required other than that which is directly consumed, or for the same animals that pasture in more than one management area.

Up until recently, Idaho water law did not allow diversion of stock water from live streams to watering troughs unless the landowner held a permitted water right. This law was a disincentive for livestock owners who wanted to develop off-stream water facilities for water quality and stream protection purposes. A law recently passed now allows diversion of in-stream stock water to troughs without the previously required water right. Refer to *Idaho Code § 42-113* for other requirements related to off-stream livestock water facilities.

Table 4. Estimated numbers of livestock by land management/ownership (Sources: 1. Kwader, J., 2. Daly, L., 3. Lake, L., 4. Grinde, P., 5. Dryden, D.).

Land Ownership	Cattle	Sheep	Horses	Grazing Period
Boise Cascade[1]	1,277	*		June-October
Bureau of Land Management[2]	710	8,000	1	May-October
		1,070		July
U.S. Forest Service (Nez Perce National Forest)[3]	355			June-October
U.S. Forest Service (Payette Forest)[4]	2,125	4,000	100-200	July-mid October
Other Private Land[5]	9,000			June-September

* Included in cattle numbers.

4.2.5 Domestic, Commercial, Municipal, and Industrial

This section describes the amount and sources of water in the basin for domestic, commercial, municipal, and industrial uses. One exception is commercial water, where no amount is described because of its minimal use for that purpose. In general, domestic is defined as single family use, commercial is defined as non-manufacturing businesses, municipal is defined as in *Idaho Code § 42-202B(2)* as "municipal provider," and industrial is defined as manufacturing industries.

Domestic

Domestic use is defined in *Idaho Code § 42-111*. For the purposes of this analysis, domestic use will be considered one home; with irrigation limited to 1/2 acre and total use not exceed 13,000 gallons per day.

According to IDWR records, there are approximately 100 domestic users of surface water in the basin. About 40 percent of the use is from springs located on or near the users' property. If each user were to divert 13,000 gallons per day, daily use would total 1.3 million gallons (about four acre-feet.) Actual use is undoubtedly a much lower amount because the use of surface water for domestic purposes is usually seasonal; there may be no use other than lawn and garden irrigation. Domestic use from surface water is scattered throughout the basin, but several users may be concentrated on the same spring or small stream. This may result in localized supply conflicts that are not indicative of basin-wide water supplies.

Because withdrawals from domestic wells are not typically measured, actual domestic ground water use is difficult to calculate with certainty. Based on U.S. Bureau of the Census data (2000), approximately half of the homes in the basin are not served by a municipal system. Assuming each of these homes diverts 13,000 gallons a day, daily withdrawals from the basin would total 6.5 million gallons (about 20 acre-feet). Actual use is probably lower, as it is rare for a user to divert 18 gallons a minute (0.04 cubic feet per second) for 12 hours each day, every day (13,000 gallons per day, as allowed by Idaho law.) No map of well locations is provided in this document because the locations have not been recorded consistently before 1984, and since 1984, locations were only generally located.

Commercial

Surface Water

For surface water, one commercial swimming pool uses hot springs for its pools and to heat the buildings. For ground water, several small businesses in the basin that are not served by municipal systems rely on small wells. These uses are minimal.

Municipal

Surface Water

Surface water is used for several community systems in the basin. The Pollock Water Users system serves 11 residences from a spring that is a tributary to Hat Creek. Three of these residences have their own wells in addition to the community system. Other multiple home uses of surface water are restricted to non-culinary uses. Subdivisions located on Thrush Creek and Boulder Creek have water right permits to divert water from those creeks for external use.

The city of Riggins' original municipal system diverted water from Squaw Creek into an open ditch/wooden flume system. Residents not on the flume would bring buckets to a cistern located near the town's hotel (Manser and Wilson 1983). While Squaw Creek diversion is no longer used for culinary water needs, it still supplies irrigation water (as does the Little Salmon River) to city residents and businesses.

Ground Water

Most of the municipal systems in the basin use ground water. The most significant municipal providers are the city of New Meadows, located in the upper basin, and the city of Riggins, located at the mouth of the Little Salmon River. Municipal use may include some irrigation (lawns and gardens), commercial, and industrial uses, along with

uses inside domestic dwellings, as well as hook-ups outside of the city limits. For instance, in 1997 New Meadows identified 11 commercial users on the municipal system, and provided service to customers outside of the city limits (Idaho Department of Commerce 1997).

The city of New Meadows has recently completed an upgrade of its water delivery system. The Idaho Water Resource Board has been a financial partner with the city in the design and construction improvements, providing $5,000 grants in both 1995 and 1997. The current upgrade replaced dead-end lines in the delivery system with a closed loop system, replaced a well, resurfaced the system's storage tank, and repaired the pump on the city's second well.

The city of New Meadows has filed a claim in the Snake River Basin Adjudication for 2.0 cubic feet per second (900 gallons per minute). The claim is based on a license issued by the IDWR for 1.3 cubic feet per second (585 gallons per minute). The discrepancy between the claim filed in the SRBA and the previously issued water right license will be resolved during the adjudication process.

The other principal municipality in the basin is the city of Riggins. The city has maintained its municipal delivery system since it was purchased from a special service district in the 1970s and has recently completed an upgrade of the system. The city of Riggins filed a statutory water right claim for 0.71 cubic feet per second (approximately 320 gallons per minute). The IDWR did not investigate statutory claims, and the actual beneficial use of the water right has not been verified. The city filed a claim on the same water right in the SRBA for 0.89 cubic feet per second (approximately 400 gallons per minute). The discrepancy between these two claims will be resolved in the SRBA process.

Other municipal systems using ground water include one multiple-family system serving five mobile homes and a 27-space RV park, and another facility of 17 mobile homes and two cabins. The first system has a water right license for 9.4 acre-feet per year, and the second system has not yet been measured by the IDWR.

Industrial

There is one water right for industrial use in the basin. It is for a milling operation near Riggins, and is licensed for 41.3 acre-feet per year.

4.2.6 Water Quality

Idaho's primary water quality protection responsibilities lie within the Department of Environmental Quality (DEQ). The DEQ works to implement federal and state water quality standards, including the regulation of pollutants that are discharged to the state's waters. The IDWR also has water quality responsibilities as they relate to water quantity. Comprehensive state water plans such as this document are generally coordinated with DEQ's water quality protection efforts.

Water Quality Limited Water Bodies

In 1994, the U.S. Environmental Protection Agency (EPA), under the authority of Section 303(d) of the federal Clean Water Act, listed the Idaho waters with water quality problems. These water quality limited designations require that the State of Idaho develop Total Maximum Daily Load (TMDL) standards for these waters. A TMDL is the sum of all contributions for a given constituent pollutant allowable in a specific waterway each day, plus some seasonal variations and a margin of safety. The TMDLs must be at or below the level established for the waterway's designated uses. For instance, the Little Salmon River is currently designated as supporting salmonid spawning, coldwater biota, domestic and agricultural water supplies, and recreation. The TMDLs become the basis for plans to restore the water quality to a level that supports its designated uses. TMDLs are to be established for the Little Salmon River basin by the end of 2004.

The proposed 1998 303(d) list for Idaho recommended the Little Salmon River be

listed only below Round Valley Creek. However, in April of 2000, the EPA amended Idaho's 303(d) list and the upper Little Salmon River segment (upstream from Round Valley Creek) was added back to the list. The EPA sought the listing because available data indicated exceedence of the temperature standard in that stream segment (Shepard 2000).

The eight water quality limited water bodies in the basin that are not currently meeting applicable water quality standards for specific designated beneficial uses–the basin's 303(d) streams–are identified in Table 5 (Zaroban 1993). Two reaches, Squaw Creek and the Little Salmon River, were included by the EPA because studies exist indicating there is a water quality problem, but the contaminants and sources have not yet been established (Essig 1998). Several water bodies have listed unknown contaminants or sediment listed as the pollutants. A stream is listed for unknown contaminants when beneficial use reconnaissance monitoring indicates possible impairment of aquatic species. All listed streams are considered low in priority for development of TMDLs, indicating that the designated uses may not be fully supported, but that risks to human health, aquatic life, recreation, economic, or aesthetics of the water body are minimal.

Special Resource Waters and Outstanding Resource Waters

The Little Salmon River and the Rapid River are designated as "Special Resource Waters." Special Resource Waters are specific water bodies identified by the DEQ as needing intensive protection to preserve either outstanding or unique characteristics, or to maintain a designated beneficial use. One of the purposes of Special Resource Waters is to prevent degradation from point source pollution, such as municipal or industrial pollutants. New discharge sources are allowed only if water quality of the receiving water remains unchanged. No "Outstanding Resource Waters" designations have been approved by Idaho legislators.

Surface Water Quality Studies

In 1979, the DEQ reported on the water quality of the upper Little Salmon River basin, with an emphasis on the impacts of the New Meadows wastewater treatment facility (Wroten and Clark 1979). The 1979 study concluded the following for the mainstem Little Salmon River:

- wastewater treatment lagoon discharge from the city of New Meadows did not violate fecal coliform standards;
- animal waste was the primary source of bacteria in the river; and
- dissolved oxygen, pH, temperature, turbidity, and bacteria measurements downstream from the wastewater lagoon were not affected.

Table 5. Water quality limited water bodies (303(d) listing (U.S. Environmental Protection Agency 1996)).

Waterway	Pollutant	Priority
Big Creek	nutrients, sediment, temperature	low
Elk Creek	sediment	low
Indian Creek	sediment	low
Squaw Creek	contaminant(s) unknown	low
Shingle Creek	sediment	low
Little Salmon River:		
Round Valley Creek to Salmon River	temperature, unknown	low
Headwaters to Round Valley Creek	temperature	low
Brundage Reservoir	temperature	low

Between 1980 and 1983, the DEQ and Boise State University assessed the water quality of the upper Little Salmon River and some tributaries near New Meadows (Edmondson 1985). The study concluded that:

- the fecal coliform bacteria standard was exceeded during both high and low flows;
- turbidity in the Little Salmon River increases with increased runoff because of streambank erosion;
- activities with the greatest likelihood of impacting water quality in the New Meadows area were the wastewater treatment facility, hot spring discharges, and livestock;
- nitrate and nitrite nitrogen and total phosphorus did not consistently exceed recommended levels during sampling period even with the presence of livestock; and
- water quality was similar to other streams in mountainous areas where livestock are present.

Water quality testing has been done on the Little Salmon River, the Rapid River, and Fourmile and Sixmile Creeks by the U.S. Geological Survey, U.S. Forest Service, EPA, and DEQ. The results of these tests are summarized below.

- **Temperature** (seasonal) at some locations in the Little Salmon River and Fourmile and Sixmile Creeks, may temporarily exceed the standard (22°C maximum daily temperature, 19°C maximum daily average) for coldwater biota, but the mean values remain within the accepted standard. In 1994, the Bureau of Land Management measured temperatures on the Little Salmon River at several locations and found water temperatures often exceeded 18°C in July and August. Temperatures measured during July and August in Rapid River, where water temperature is typically lower than the mainstem, often exceeded 15°C, but never exceeded 18°C, even during the summer of 1994, which was the hottest and driest on record (U.S. Forest Service 1995).
- **Suspended sediment**: during early spring runoff in March and April, the Little Salmon River runs turbid and is a major contributor of suspended sediment to the Salmon River (U.S. Forest Service 1995). Throughout the summer months, turbidity improves in the Little Salmon River from Hazard Creek to the mouth. There have been several flooding events over the last few decades (1974, 1976, and 1997) that have contributed large amounts of mud and debris to the Little Salmon River. Seasonally and periodically, even before recent human activity modified the watershed, the Little Salmon River experienced high suspended sediment loads from natural erosion and mass movements. Generally, the Rapid River runs very clear (U.S. Forest Service 1995). The total sediment yield (suspended and bedload sediment) between 1986 to 1993 averaged 3,093 tons per year (Gloss 1995). The high during that period was estimated at 11,565 tons for 1993, the majority of which was from natural causes (U.S. Forest Service 1995).
- **Fecal coliform bacteria** counts are consistently high in Sixmile and Fourmile Creeks, and occasionally, the Little Salmon River downstream from New Meadows exceeds the standard.
- **Nutrients**: nitrate and nitrite nitrogen in excess of the 0.3 mg/l standard have been detected only at the mouth of the Little Salmon River at Riggins. While individual counts may occasionally exceed the standard, the mean value remains low. Total phosphorus exceeds the EPA recommended criteria (0.10 mg/l), on the Little Salmon River below New Meadows and on Fourmile and Sixmile Creeks.

Ground Water Quality Studies

The IDWR's Statewide Ambient Ground Water Quality Monitoring Program

measures water quality in wells throughout the state. No serious ground water quality concerns have been found in the Little Salmon River basin (Crockett 1998). The water in the basin is naturally soft with low dissolved solids. Iron and manganese were elevated in several wells, which can cause plumbing problems and/or aesthetic concerns, particularly laundry staining. Radon was tested at six sites, with results as high as 1500 picocuries per liter. The standard for radon is still under review, but is deals with the contribution of radon in the water to airborne radon. Idaho health districts recommend that all households in Idaho test for airborne radon.

Nitrates were slightly elevated at two sites (samples ranged from 2.4 to 4.0 mg/l). Anything above 2.0 mg/l is considered elevated (Crockett 1995); ten mg/l is the maximum contamination level allowed for public water supplies. Pesticides or volatile organic compounds have not been detected. At one site, three colonies of fecal coliform bacteria were detected. One colony is considered the maximum contamination level.

Critical Tributaries for Maintenance or Improvement of Water Quality for Salmonids

As reported below by various authors, certain specific tributaries in the Little Salmon River basin have been identified as being important for salmonid production (Anderson, D. 1998; Apperson 1998; Janssen 1998; U.S. Forest Service 1995).

- **Rapid River** is the most important tributary in the basin for bull trout production in addition to the production of other salmonid species. Water temperatures are always below the salmonid maximum (22°C maximum daily temperature, 19°C maximum daily average) in Rapid River, and its contribution of cold water to the Little Salmon River is critical to significantly mitigating adverse temperature conditions below their confluence. Development and grazing have affected riparian areas in localized areas along the lowest reach of Rapid River.
- **Boulder Creek** has been impacted by stream alterations including, removal of large wood from the floodplain and hardening of the streambanks. These alterations are believed to have lead to decreased production of chinook salmon, steelhead trout, bull trout, and Westslope cutthroat trout in the creek.
- **Hazard/Hard Creeks complex** provides a sustained contribution of cold water that supports downstream salmonid habitat.

4.2.7 Hydropower

Two elements are needed to create hydroelectric power: flowing water and elevation drop. Steep gradients throughout the Little Salmon River basin and available instream flows provide the ideal physical environment for hydroelectric power generation. Although hydroelectric power generation does not produce pollutants or wastes, construction impacts and changes to the natural hydrologic regime can effect fish, wildlife, and vegetation resources. Due to numerous regulatory and financial hurdles, few if any new hydropower projects are expected to succeed in the basin. While there are no specific state licensing requirements for hydropower projects, all hydropower projects must have a water right issued by the IDWR. Consequently, there are no projects with water rights issued by IDWR that may be exempt from FERC licensing.

All non-federal hydropower projects that are connected to the power grid or are located on public lands or reservations must be authorized by the Federal Energy Regulatory Commission (FERC). Federally built or operated hydropower projects are authorized by public law (Congress). In the mid-1980's arduous attempts were made to obtain FERC authorization on several projects in the Little Salmon River area. All but a few of these projects were abandoned largely because of sedimentation concerns in the anadromous fishery basin.

Existing Hydropower Projects

There are two existing projects that have received water right licenses from IDWR and licenses from FERC. Together, they have an installed capacity of 2.544 megawatts and produce an average of 6,980 megawatt hours annually (Figure 22). Three additional projects have received permits from IDWR. These projects either are completed or are nearing completion. None of these projects require FERC licenses, as the use of the power is limited to the owners' properties.

Four older hydropower projects that have received licenses from IDWR or decreed rights from a court have not filed claims in the Snake River Basin Adjudication. Since the owners of these projects have not sought protection of their rights through the SRBA, it is assumed that these projects are no longer functional.

4.2.8 Navigation

There is no water navigation involving items of commerce in the Little Salmon River basin. The average annual discharge of the Little Salmon River, 570,000 acre-feet, is less than seven percent of the average annual flow of the main Salmon River below Riggins (Brennan et al. 1996). In turn, the discharge volume and flow of the Little Salmon River contributes an average of 1.5 percent of the total volume and flow of the Snake River near Lewiston, with monthly variability from 0.83 to 2.2 percent, contributing little to the navigability of the Snake River downstream of Lewiston (Ondrechen 1999, U.S. Geologic Survey 1999).

4.2.9 Floods and Landslides

There are few flood and related landslide management or control practices found in the Little Salmon River basin. Exceptions to this are structures installed by state and local highway departments and private individuals for road and river bank protection, and the presence of basic flood insurance program activities.

For the most recent update regarding Little Salmon River Basin flooding and landslide issues, please refer to the attached supplement, the *Little Salmon River Comprehensive State Water Plan-Part B: Supplement—Flood and Landslide Management Information.*

4.3 Water Resource Development

4.3.1 Surface Water

Introduction

The consumptive use of surface water in the Little Salmon River basin is mainly for irrigation purposes. Based on diversion rates, irrigation uses approximately 52 percent of the volume of surface water available in the upper end of the basin, including Round Valley Creek. Downstream diversions divert about 3 percent of the volume available in that portion of the basin. Overall, about 20 percent of the volume of water produced during the irrigation season is diverted for consumptive use.

Several factors limit the development potential of the surface water in the Little Salmon River basin. These include administrative actions by IDWR (a moratorium order); the importance of the basin's fisheries; a lack of land in the basin suitable for irrigation; a lack of sites for reservoir storage facilities; and an isolated geographic location that limits commercial or industrial development. Each of these factors is described in detail below.

Salmon and Clearwater River Basins Amended Moratorium Order

In 1993, the director of the IDWR, under the authority of *Idaho Code § 42-1805*, issued an *Amended Moratorium Order for the Salmon and Clearwater River Basins* (Appendix F). The Little Salmon River is a tributary of the Salmon River and comes under the management umbrella of the Order. New developments of surface water are heavily

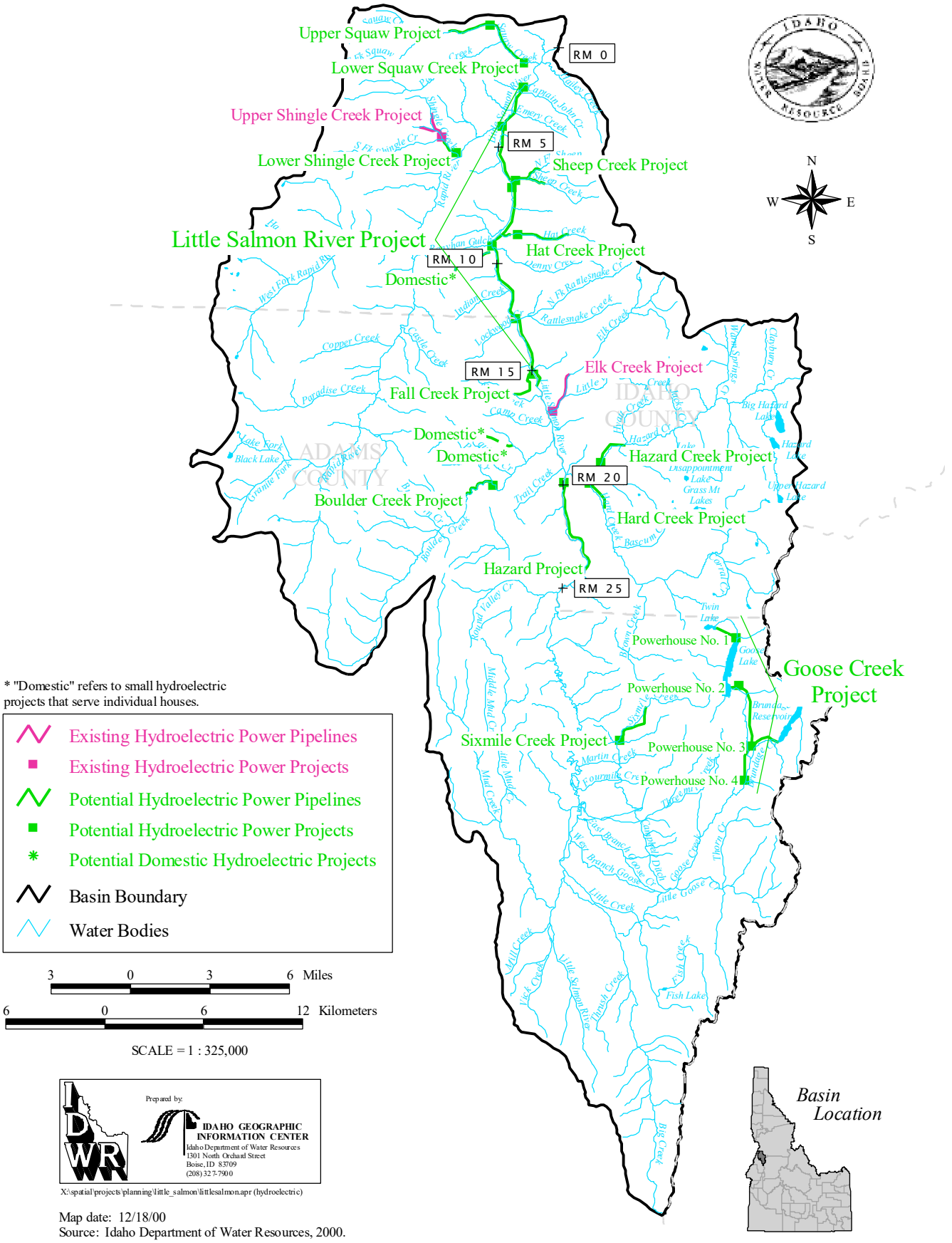


Figure 22. Hydroelectric power development in the Little Salmon River basin: potential and existing.

restricted. The moratorium does not apply to domestic use of surface water, ground water, and non-consumptive uses. Insignificant consumptive uses are reviewed on a case by case basis. Applications for other consumptive uses of the basin's surface water will not be considered until the Director either lifts or changes the restrictions of the Order, although applications may be submitted in order to establish a priority date.

Fisheries

Three fish species listed under the Endangered Species Act spend part of their life in the Little Salmon River basin. Some waterways in the basin provide viable fisheries, however, several waterbodies are water quality limited and are on the state's 303(d) list. Development of additional irrigation water diversions will be constrained by concerns over these listed species.

Development of Additional Irrigated Lands

The Idaho Water Resource Board published a series of reports in 1969, summarized in a state-wide document in 1970, that identified the potentially irrigable lands in the state. Lands were categorized by their physical capabilities for irrigated agriculture. Three land classes were delineated: Class 1 lands have little or no limitations for irrigated agriculture; Class 2 lands are moderately limited for irrigated agriculture because of development problems such as stone removal, land smoothing, or drainage; and Class 3 lands have severe limitations for irrigated agriculture (Idaho Water Resource Board 1970).

In the upper end of the Little Salmon River basin (in Adams County), only small acreages were identified as possible new sites for irrigation. These sites are located along the riparian area of Mud Creek and in other very small parcels (Idaho Water Resource Board 1969). All are identified as Class 2 lands. No Class 1 lands were identified anywhere in the basin (Idaho Water Resource Board 1970).

Storage

The *Idaho State Water Plan*, Part A, identifies 17 potential reservoir sites in the state. None of these sites are in the Little Salmon River basin. As explained in other sections of this plan, neither additional storage facilities nor increasing capacities at existing facilities are feasible options in the Little Salmon River basin.

Geographic Isolation

The Little Salmon River basin is bracketed by rugged terrain, including Hell's Canyon, one of the deepest river canyons in North America (second only to King's Canyon in California). Surface transportation systems in and out of the basin are limited. Residents of the basin rely on the road corridors that are located in sometimes steep and hilly terrain, in an environment where snow, rain, and landslides are common experiences. This environment provides considerable challenges for extensive commercial or industrial development in the basin.

The Interior Columbia Basin Ecosystem Management Project, in its review of economic and social conditions in its study area, categorized both New Meadows and Riggins as "isolated communities" (Interior Columbia Basin Ecosystem Management Project 1998). The study attempted to identify communities where residents cannot reasonably access the economic and social benefits offered by larger cities because of distance or difficult traveling conditions. These benefits include access to air and surface transportation, educational opportunities, cultural amenities, higher order goods and services (such as medical services), and job opportunities.

Other Water Use Opportunities

Surface Water

There are many "non-consumptive" uses of water in the Little Salmon River basin. Non-consumptive uses result in no water loss from the system (except for evaporation or transpiration losses).

Fisheries

One non-consumptive water use with great potential for meeting the state's interests is the maintenance of the basin's fisheries. Three fish species in the Little Salmon River basin are protected by the Endangered Species Act. Members of Indian tribes and local economies depend on healthy fisheries in order to maintain traditions and cultures, enhance economic wealth, and maintain stable communities. Flows to maintain the basin's fisheries have not been quantified, although claims in the SRBA have been filed by various parties.

The Idaho Water Resource Board is the only entity given the authority by the state to file application for and hold water rights for minimum stream flows. The Board does not currently hold any minimum stream flow rights in the Little Salmon River basin, although the Board may submit applications for these types of rights as a result of this *Plan*.

The IDWR's *Amended Moratorium Order for the Salmon and Clearwater River Basins* does not apply to applications for non-consumptive uses of water or for ground water. However, given the presence of three endangered fish species, non-consumptive uses that may significantly reduce flows in a portion of a stream or impact the physical structure of a stream system must be carefully evaluated to determine if it is in the public's best interests.

Hydropower

Seventeen hydropower projects that require FERC licensing have been proposed, but not built, in the Little Salmon River basin. After accounting for overlapping proposals and proposals with multiple powerplant sites, there are 20 identified potential hydropower sites that could produce an estimated 213,695 megawatt hours of electricity annually.

In addition to these 20 projects, three other applications for hydropower generation are on file with the Idaho IDWR. These proposals either do not require FERC licensing, or have not yet initiated the licensing process.

A summary of potential projects is shown in Table 6 and also on Figure 22. Unless otherwise stated, all data about potential projects is from FERC licensing information on file at the IDWR.

A preliminary feasibility analysis was conducted for each site to determine its Benefit/Cost ratio. A feasible project (i.e., benefits greater than costs) will have a ratio greater than one, while a non-feasible project (benefits less than costs) will have a ratio of less than one. To determine feasibility, a 30-year project life was assumed. It was also assumed that the entire construction cost would be financed at 7.5 % for 50 years. A power sales cost of 51.71 mills per kwh was used, and it was assumed that the power sales cost would rise with the general inflation rate. Construction costs and annual operations and maintenance costs were estimated by the U.S. Army Corps of Engineers as part of the Pacific Northwest Hydropower Database and Analysis System, and corrected to mid-2000 price levels. Capitol costs, engineering, licensing fees, and administration costs are included in this analysis (added to analysis by IDWR)(Patton 2000). The three projects permitted by the IDWR, but not required to obtain FERC licenses, are not included.

Goose Creek No. 4 is the only project that is identified as a potentially feasible undertaking. Given the additional costs associated with building and maintaining the project, Goose Creek No. 4 is unlikely to proceed (Patton 2000).

4.3.2 Ground Water

Ground water in the Little Salmon River basin is recharged mostly by the surface water systems and somewhat by precipitation (see *Water Supply* section in this chapter). Ground water levels tend to fluctuate with stream flows, although there may be some lag time in the ground water aquifer's response to changing surface water flows. Alluvial materials yield water at shallow depths, but yields tend to be low

(two to 15 gallons per minute). Wells drilled into the underlying basalts have yielded more water, but development to deeper systems has been limited, making realistic predictions of ground water supply there very difficult (Bendixsen 2000).

Irrigation

Some areas of the basin may have ground water supplies that would support irrigation. However, based on previous studies by the Idaho Water Resource Board, most of the land in the basin that supports irrigated agriculture has already been developed for that purpose. In addition, the IDWR has not generally supported changing the source of irrigation water from a surface water source to ground water. Development of ground water for irrigation, other than for lawn and garden use, will be minimal for these reasons.

Table 6. Potential hydroelectric power development.

Powerplant Site	Installed Capacity (MW)[1]	Average Annual Generation (MWH)[2]	Total First Cost (2000)	Total Annual Cost	Benefit-Cost Ratio
Boulder Creek	2.02	5,970	$26,270,282	$2,363,475	0.13
Fall Creek	0.90	2,600	$2,609,435	$225,131	0.60
Goose Creek No. 1	0.49	1,986	$3,602,365	$405,789	0.25
Goose Creek No. 2	0.25	1,013	$2,257,776	$181,362	0.29
Goose Creek No. 3	0.55	2,229	$6,223,668	$518,363	0.22
Goose Creek No. 4	3.70	14,993	$8,349,858	$729,436	1.06
Hard Creek	1.31	4,200	$6,825,589	$578,899	0.38
Hazard Creek	2.47	8,500	$9,541,416	$834,838	0.53
Little Salmon No. 1	6.83	35,365	$26,776,637	$2,338,715	0.78
Little Salmon No. 2	6.09	31,534	$27,790,388	$2,387,131	0.68
Little Salmon No. 3	6.96	36,038	$26,892,399	$2,347,640	0.79
Little Salmon No. 4	6.38	33,035	$25,668,361	$2,235,272	0.76
Little Salmon No. 5	3.19	16,518	$21,169,256	$1,760,196	0.49
Lower Hat Creek	1.29	2,753	$3,365,670	$51,080	0.19
Lower Squaw Creek	0.64	2,702	$3,642,757	$303,016	0.46
Upper Squaw Creek	0.61	2,600	$5,007,333	$410,009	0.33
Rattlesnake Creek	1.48	4,539	$5,930,931	$508,582	0.46
Sheep Creek	0.86	2,393	$4,807,665	$427,927	0.29
Lower Shingle Creek	0.62	1,127	$3,150,768	$267,909	0.22
Sixmile Creek	2.10	3,600	$9,531,214	$742,887	0.25

[1]MW=Megawatts
[2]MWH=Megawatt hours

Municipal

Population projections forecast an increase of 0.14 percent to 10.8 percent for the counties in the Little Salmon River basin in the next decade. Recent system efficiency upgrades have been designed to meet increases in demand of 2.5 percent per year, which would meet the demands of projected population increases. Other uses of the municipal systems (commercial and/or industrial) may require increased use of the ground water supply.

Development of housing subdivisions outside of the municipal water providers may lead to increased use of ground water. It is difficult to anticipate whether subdivisions will use one community well, or if each homeowner will drill their own well. Each well represents a conduit for contaminants, both between aquifers and from the surface into aquifers. Community wells are more efficient, but require water right permits and regular water quality testing. Single family homes do not have permit or testing requirements. Consequently, single home systems may dominate the development of ground water, regardless of the inefficiencies and aquifer protection concerns.

4.4 Other Resources

4.4.1 Fish and Wildlife

Fish

The Idaho Department of Fish and Game is responsible for the state's management of fisheries resources. Idaho Department of Fish and Game shares management responsibility with Idaho's Indian Tribes and the federal government. Idaho Department of Fish and Game's *Fisheries Management Plan 1996-2000* (Idaho Department of Fish and Game 1996) sets out statewide fisheries management objectives, including those for the Little Salmon River basin. The management plan identifies the Little Salmon River drainage, from its mouth upstream to, and including, Hazard Creek, as habitat for spring chinook salmon, steelhead, rainbow trout, cutthroat trout, bull trout, brook trout, mountain whitefish, and

nongame species. The Rapid River is singled out as extremely important to Idaho's anadromous fish. This drainage provides essential, high quality spawning and rearing habitat for bull trout, salmon, and steelhead. It also is an important source of clean, cold water. Water temperatures within Rapid River never exceeded 18°C during the summer of 1994, considered an extremely hot and dry summer (U.S. Forest Service 1995). The July and August average daily water temperatures within Rapid River were 11.3°C and 12.9°C respectively. Temperatures below 18°C are considered acceptable for maintaining coldwater biota. The Rapid River's low temperatures help to decrease water temperatures downstream in the Little Salmon.

The Rapid River Fish Hatchery, which spawns and rears spring chinook, relies on cold, clean water from the Rapid River for successful operation. Anadromous fish management emphasizes hatchery production to provide spring chinook for harvest as the first priority. The Rapid River Hatchery has also supplied eggs for a number of programs outside the drainage (Idaho Department of Fish and Game 1996).

Fish passage for resident and anadromous fish on the Little Salmon River above its confluence with Round Valley Creek is blocked by a series of steep gradient falls. "The Falls" are a series of sharp cascades located at the point where the Little Salmon River becomes constricted as it enters the canyon section of the drainage, just downstream of the mouth of Round Valley Creek. The Northwest Power Planning Council's Fish and Wildlife Program has targeted The Falls for removal. Given the current paucity of suitable habitat upstream of The Falls, the Idaho Department of Fish and Game does not, at this time, support removal of the barrier (Idaho Department of Fish and Game 1996).

Fish Lake Reservoir lies on a headwater tributary to the Little Salmon River southeast of the town of New Meadows. The Idaho Department of Fish and Game owns the dam and most of the reservoir at Fish Lake. Idaho Department of Fish and Game manages a broodstock of westslope cutthroat trout for egg-taking purposes, producing between 200,000 to 300,000 eggs annually. Westslope cutthroat trout are considered a sensitive species and were petitioned for listing under the Endangered Species Act in 1997. After review of the petition, the U.S. Fish and Wildlife Service did not feel that a listing was warranted (U. S. Fish and Wildlife Service 2000a).

In 1996, the four Columbia Basin treaty tribes (Nez Perce, Umatilla, Warm Springs, and Yakama) along with the Columbia River Inter-Tribal Fish Commission, developed a fish restoration plan, the *Wy-Kan-Ush-Mi Wa-Kish-Wit* (Spirit of the Salmon). The document lists the Tribes' recommendations to restore all anadromous fish stocks above Bonneville Dam. There are 11 institutional recommendations, 13 technical recommendations, and watershed or subbasin-specific recommendations. Eight recommendations are specific to the Salmon River basin, of which the Little Salmon is tributary. The recommendations address the legal limitations of diversions of water rights, protection of the physical integrity of stream and riparian systems, the development and enforcement of water quality standards, and new broodstock programs. The plan goes on to describe specific actions that are recommended to assist in the implementation of the recommendations (Columbia River Inter-Tribal Fish Commission 1995).

Fish production is limited by high summer water temperatures, particularly in the upper basin (U.S. Forest Service 1995). Riparian vegetation can be an important factor in controlling stream temperature. Riparian vegetation is also important in controlling streambank vegetation and plays an important role as large woody debris is incorporated into the channel.

Riparian vegetation along the Little Salmon River has been impacted by several factors including development for housing, livestock grazing, and road construction. Several federal and state agencies, including the Idaho Department of Fish and Game, Idaho Soil Conservation Commission, U.S. Bureau of Land Management, U.S. Dept. of Agriculture - Natural Resources Conservation Service, and U.S. Fish and Wildlife Service, as well as Boise Cascade Corporation, are actively involved in establishing riparian rehabilitation partnerships with private landowners. For instance, the Meadow Creek subdivision excluded livestock several years ago in an effort to improve the riparian habitat (Kwader 1998).

Fish Species Listed Under the Federal Endangered Species Act

Chinook Salmon (Oncorhynchus tshawytsch)

The Snake River spring/summer chinook was listed as a threatened species under the federal Endangered Species Act in 1992. The Little Salmon River and some tributaries provide travelways, spawning, and rearing habitat for the chinook. The majority of quality habitat is associated with the larger tributaries, such as Rapid River, and Boulder, Hazard, and Hard Creeks. Spring/summer chinook salmon historically used habitat throughout the entire basin, but road construction in the early 1900s altered the mainstream, creating a cascades barrier that blocked fish passage to the upper basin at river mile 21.0 (U.S. Bureau of Land Management 1993). Consequently, the barrier has been considered for removal in the Northwest Power Planning Council's Fish and Wildlife Program, but not until the fish habitat has been improved in the upper basin (Idaho Department of Fish and Game 1996).

The Little Salmon River provides limited spawning habitat because of the large size substrate, but the river does provide summer and winter rearing habitat (U.S. Bureau of Land Management 1993). The most important habitat in the basin is found in the

Rapid River and Boulder Creek (U.S. Bureau of Land Management 1994). Juvenile and adult chinook salmon use the Rapid River as a refuge from high summer mainstream temperatures (U.S. Forest Service 1995). The cold, clean waters of the Rapid River also help to lower water temperatures and improve fish habitat in the lower Little Salmon River (Anderson, D. 1998).

Boulder Creek flows into the Little Salmon River at river mile 17.7, and second, to the Rapid River, provides the most accessible salmon habitat. Lower in the basin, Hazard and Hard Creeks, tributaries to the Little Salmon River, also provide suitable chinook spawning and rearing habitat. Natural barriers beyond 0.6 miles on Hard Creek and 2.5 miles on Hazard Creek restrict chinook passage. Potential but limited rearing habitat is found in the lower portions of several smaller tributaries, including Squaw, Sheep, Denny, Hat, Lockwood, Rattlesnake, Elk, and Trail Creeks (U.S. Bureau of Land Management 1993, 1994).

Current salmon populations are artificially supplemented with fish from the Rapid River Hatchery. The numbers of returning spring/summer chinook to the Rapid River Hatchery from 1984-1994 indicate a declining population trend. A regulated harvest exists for hatchery adult spring chinook on the Little Salmon River up to the mouth of the Rapid River. The season length is established by the Idaho Department of Fish and Game. This sport fishery was closed completely between 1979 to 1984. The Nez Perce Tribe cooperates on many fisheries management decisions.

Steelhead Trout (Onchorhynchus mykiss)

Steelhead trout were listed as threatened under the Endangered Species Act in 1997. The Idaho Department of Fish and Game has been involved in a steelhead natural production monitoring project in the Little Salmon River basin since 1984 (Apperson 1998). Idaho Department of Fish and Game manages the steelhead in the basin as though there are only hatchery populations remaining (Byrne 1998). Rapid River has the only truly wild population in the basin, but populations are declining. In addition to Rapid River, the Idaho Department of Fish and Game monitoring sites are located on Little Salmon River, Boulder Creek, and Hazard Creek.

Bull Trout (Salvelinus confluentus)

The bull trout was listed as threatened under the Endangered Species Act in 1998. The Idaho Department of Fish and Game and the U.S. Forest Service have found bull trout in the Little Salmon River, Rapid River, and Boulder Creek (Elle 1998). In the spring, the migrant adults move into the Little Salmon River and then to the Rapid River as water temperatures reach 7-8° C. In September and October they reverse their travel along the same routes. Adults do not overwinter in the Little Salmon River basin. Bull trout use the Little Salmon River only as a migratory corridor in and out of the basin.

Wildlife

Wildlife habitats located in the Little Salmon River basin are shown on Figure 23. These habitats have been identified in studies by various government agencies and observations of the residents and visitors to the basin.

Big Game

Most of the large game mammal populations in the Little Salmon River basin, including mule deer, elk, black bear, and mountain lion, are stable or expanding (Rohlman 1998). After dramatically increasing in number in the late 1980s, mule deer are recovering from a harsh 1992-1993 winter. Elk were introduced from Yellowstone National Park to the New Meadows area in the 1930s. Elk populations remained suppressed until the 1970s when regulations changed to permit only bulls to be harvested. Whitetail deer populations are either stable or increasing (Kinner 1998). According to Idaho Department of Fish and Game, prime elk habitat has been eliminated by development and sloughing of hillsides (from roading) into the stream near Pollock, resulting in the displacement of approximately 300 elk.

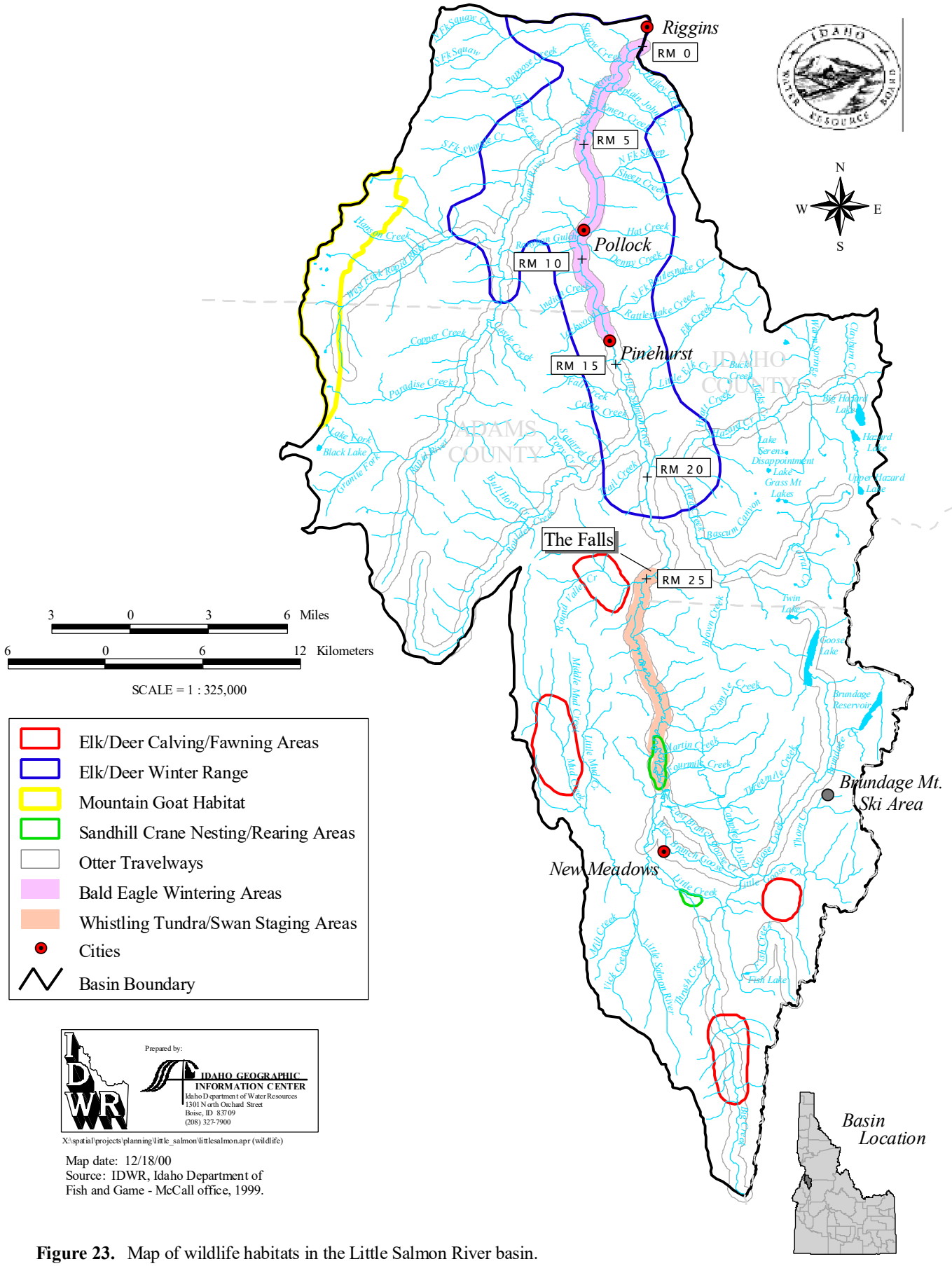


Figure 23. Map of wildlife habitats in the Little Salmon River basin.

Birds and Mammals Listed Under the Endangered Species Act

Bald Eagle (Haliaeetus leucocephalus)

Bald Eagles are currently listed as threatened. Originally listed as endangered on March 11, 1967, they were downlisted to threatened on July 12, 1995. On July 6, 1999, the U.S. Fish and Wildlife Service proposed delisting the bald eagle because available data suggests that the species has recovered to population levels necessary to maintain a viable population (U.S. Fish and Wildlife Service 2000b).

Bald eagles have wintered along the Little Salmon River, but U.S. Forest Service surveys have not yielded any wintering birds on the Little Salmon River since 1993 (Bonn 1998). No summer nesting locations have been recorded in the basin (Rohlman 1998).

Canada Lynx (*Lynx canadensis*)

This species is listed as threatened, effective April 24, 2000. The U.S. Forest Service is currently in consultation with the U.S. Fish and Wildlife Service about the possible effects on the Canada Lynx of the Goose Creek Watershed Projects (Brandel 2000).

Gray Wolf (*Canis lupus)*

The Idaho population of gray wolves was listed on November 22, 1994, is an "Experimental Population – non-essential." On July 13, 2000, the U.S. Fish and Wildlife published a proposal to reclassify populations of gray wolf. Under this change, Idaho's population would retain Experimental Population designation, and would be a part of the Western Distinct Population Segment, subject to rules specific to that Distinct Population Segment. Comments on this proposal are due by November 13, 2000 (U.S. Fish and Wildlife Service 2000b).

Since being introduced into Idaho's backcountry, the gray wolf makes infrequent visits to the Little Salmon River basin. The species is not a resident, and the basin is not in the proposed wolf recovery area (Rohlman 1998).

Northern Idaho Ground Squirrel (*Spermophilus brunneus brunneus*)

Found only in Adams and Valley counties, Idaho, this animal was listed as threatened effective May 5, 2000. Remaining populations are threatened by the invasion of conifers into meadows. Fire suppression, recreational hunting, land development, and dense regrowth of conifers after logging has significantly reduced ground squirrel habitat over the last forty years, and has reduced travelways and created isolated populations (U.S. Fish and Wildlife Service 2000b).

Additional Sensitive Species

The Little Salmon River basin is home to many species not on the U.S. Fish and Wildlife Service threatened or endangered list, but whose populations may be at risk. These species include:

- ***Mammals***: fisher, wolverine, and Townsend's big-eared bat
- ***Birds***: pygmy nuthatch, northern goshawk, great gray owl, black-backed woodpecker, white-headed woodpecker, three-toed woodpecker, Lewis woodpecker, mountain quail, flammulated owl
- ***Amphibians***: Columbia spotted frog, giant salamander
- ***Fish***: westslope cutthroat trout, Pacific lamprey, redband trout
- ***Invertebrates***: Columbia pebblesnail
- ***Plants***: puzzling halimolobos, Borsch's stonecrop, rock stonecrop, shortface lanx, small northern bog-orchid, swamp onion, Hazel's prickly phlox, Idaho subalpine maidenhair fern, Lyall's phacelia, green-band mariposa lily, broad-fruit mariposa lily

Little is known about the distribution and abundance of most of these species in the basin. However, it is known that the white-headed woodpecker, flammulated owl, and

northern goshawk numbers are declining in the basin due to the loss of the large ponderosa pine trees and their associated ecosystems (Rohlman 1998).

4.4.2 Recreation

Federal, state, and local entities manage lands and facilities that provide recreation opportunities in the Little Salmon River basin. Based on land area, the primary recreation provider is the U.S. Forest Service. The Idaho Department of Fish and Game is the next largest provider, followed by the U.S. Bureau of Land Management, Adams County, and some private enterprises. It is difficult to quantify total recreation use because of the different measurement methods used by different organizations. There is also considerable dispersed use (use outside developed facilities).

Many debates have been given lately to making economic comparisons between logging, mining, ranching, recreational-based employment, and inputs to the local economy. However, a lack of information precludes any conclusive observations from being made in this plan. Nevertheless, some studies warrant mention and are found below. In general, and extrapolating from a study published last year for Valley County, Idaho (a county adjacent to the Little Salmon River basin with some similarities), four recreation jobs are worth one sawmill job in terms of economic impact on a community (Guaderama et al. 2000).

Fishing

The Little Salmon River basin offers a diverse combination of angling opportunities. Chinook and steelhead fishing, available on only a few waterways in the state, are both available in this basin. Only 16 lakes or reservoirs are managed for trophy or quality trout in Idaho and two of them are located in the Little Salmon River basin: Brundage Reservoir and Lake Serene.

Studies have been conducted that directly or indirectly measure how much value is created by steelhead and salmon fishing in and surrounding the Little Salmon River basin. Appendix G presents these studies as well as estimated economic values for other sectors in the basin (see Table G-1).

Chinook Salmon

The Rapid River supplies major tribal ceremonial and subsistence opportunities for chinook salmon for members of the Nez Perce Tribe. In addition, chinook salmon sport fishing occurs in the spring and early summer. The fishing season usually begins in May, and had been open through July. Angler effort is greatest on weekends, comprising about 50% of the season angler effort between 1986 and 1997.

Spring chinook salmon returning to the Rapid River hatchery provide sport fishing opportunities on the Little Salmon River. From 1978 to 1990, the area provided the only opportunity to harvest chinook salmon in Idaho (Hassemer 1991). Returning hatchery chinook were not adequate to allow sport angling in 1989, 1991, or 1994 through 1996. Fishing in May 2001 has proven to be one of the best years on record for sport fisherman.

The Idaho Department of Fish and Game tracks chinook angling activity in the basin. The number of angler hours as well as the length of the season and open reaches have varied over the years. Length of season as well as angler hours must be considered when attempting to discern trends. Most years have experienced an increase in angler hours since 1986, with 1998 having the highest increase (78%).

Steelhead and Trout

Steelhead fishing on the Little Salmon River is unique because no specialized equipment is necessary. The small size of the river and easy access via U.S. Highway 95 allow for bank fishing, unlike steelhead fishing on the Clearwater or Snake rivers, where motorized boats are required (Anderson, B. 1998).

The Rapid River, a large tributary in the lower basin, is managed as a wild trout fishery with a two fish limit. Angling pressure is minimal (Lowell 1999). The Rapid River is the only tributary in the

Salmon River basin open during steelhead season (Idaho Department of Fish and Game 1996). The season has fall and spring runs with most angling activity occurring in the fall. According to the Idaho Department of Fish and Game, angler hours increased about 34 percent between 1992 and 1998.

Lake Fishing

With 42 alpine lakes, lake fishing opportunities are abundant in the Little Salmon River basin. Brundage Reservoir is managed for quality rainbow trout fishing experiences. Fish Lake contains a broodstock of westslope cutthroat trout, and is a major source of eggs for the state (Anderson, D. 1998). Many of the other lakes are stocked with westslope cutthroat. Lake Serene is a trophy fishery. Goose and Hazard lakes receive the most use (Anderson, B. 1998).

Boating

River boating in the Little Salmon River basin is generally limited to the spring when adequate flows are available. Table 7 lists river and stream reaches where float boating occurs. No estimates of boating activity are available, but boating activity is increasing, particularly with kayakers (Grussing 1999).

Boating on lakes and reservoirs in the basin is generally associated with fishing. Hazard Lake allows only non-motorized boating. Although the Little Salmon River basin is only a part of the two counties, Adams and Idaho counties contain 4.5 percent of the boatable surface acres in the state (Murphy 1996). Approximately 1.6 percent of registered boaters identified Adams or Idaho county as their primary use area (Hiatt 1999). Boater registration increased about 24 percent in Adams County between 1988 and 1998, and remained level in Idaho County for the same period.

Rapid River Wild and Scenic River

The Rapid River is a tributary of the Little Salmon River located in the lower basin. The portion of the Rapid River that runs through public land was designated as a Wild and Scenic River as a part of the legislation (*Public Law § 94-1990*) that created the Hells Canyon National Recreation Area in 1975. The designation is to preserve the river's remarkable water quality values. Most of the watershed is managed as a roadless area providing primitive non-motorized recreation opportunities.

Table 7. River and stream float boating (Sources: Amaral 1990; Moore and McClaran 1989; McClaran 1999).

Put In-Take Out	Flow Range (cubic feet per second)	Class/Skill level	Season
Little Salmon River			
Zims Hot Springs to Smokey Boulder Rd		I / Beginner	Spring
Below 3rd waterfall to Hazard Creek	1,000 – 2,500	V- V+ / Expert	Spring
Hazard Creek to Riggins	500 – 1,000	III+ / Advanced	April - June
	1,000 – 3,000	IV (V-Amphitheater Hole)	
	>3,000	IV+ (V- Amphitheater Hole)	
Hazard Creek			
Hard Creek to Little Salmon confluence	500 – 1,000	III – IV/Advanced	May-June
Hard Creek			
Headwaters to Hazard Creek confluence	200	IV	May

The area attracts recreationists regionally from Idaho and Washington states. The trail paralleling the Rapid River is one of three access sites into the Hells Canyon National Recreation Area. Trail use has a long season, usually from late March to Thanksgiving. Spring arrives in the lower Little Salmon River basin in March, allowing early hiking access. Use drops off as the summer heatintensifies, then picks up again in the fall. The trail receives high use by hunters from mid-October to mid-December. Approximately 90 percent of the hunters access the area by horseback. A large number of non-resident hunters use the area, predominately from Washington. Use is intermittent with the majority of use occurring around weekends (Anderson, B. 1998; Lowell 1999).

The Idaho Department of Fish and Game manages a fish hatchery on the lower Rapid River (outside of the national forest boundary) for the Idaho Power Company. Visitation is estimated at 5,000 to 10,000 visits a year. Visitation is highest during trapping activities from mid-June to early July, and spawning times in late August to early September (Lowell 1999).

Hunting

The Little Salmon River basin is located in the Idaho Department of Fish and Game's Hunting Unit 23. The department estimates that deer hunter effort has doubled between 1994 and 1998. Elk hunter days have grown each year, increasing about 69 percent over the same five-year period. Success rates (total number of elk or deer harvested/total number of hunters) have ranged from 16 percent to 25 percent over this same period. Nonresident hunters made up about 13 percent of deer hunters and 18 percent of elk hunters in Hunting Unit 23 in 1995 (Kuck 1995).

Recreational Dredge Mining

Recreational dredges are those with nozzle diameters of five inches or less, and equipment rated at 15 horsepower or less (*Idaho Code § 42-3803(a)*).

The entire Little Salmon River basin is closed to recreational dredging under the one-stop permit. Individuals can apply for a Stream Channel Alteration Permit from the IDWR for stream reaches not designated as state protected rivers within the basin. However, the IDWR has indicated that applications will not be reviewed until the applicant has received an incidental take permit or other approval from the National Marine Fisheries Service or the U.S. Fish and Wildlife Service (IDWR 2000b).

Camping

The majority of campgrounds in the Little Salmon River basin are adjacent or in close proximity to waterways (Figure 24). The majority of campsites are operated by the U.S. Forest Service, with one site managed by Adams County. Dispersed camping (areas lacking facilities or services) occurs throughout the basin on public lands.

Winter Sports

The Little Salmon River basin offers a number of winter activity opportunities from snowshoeing to snowmobiling. There are two developed ski areas, both of which offer a variety of types of snow skiing. The larger of the two, Brundage Mountain, reported approximately 100,778 skier visits during the 1997-1998 ski season (Naylor 1999), up from 97,328 estimated visitors during the 1994-1995 season. The U.S. Forest Service has constructed a new parking lot for snowmobiles in the Goose Creek drainage in the southeastern portion of the basin, on the side of Brundage Mountain. This parking lot eases access to Snowmobile Area 43A (Goose, Hard, and Hazard Creek drainages).

4.4.3 Timber

As of the writing of this plan, only one saw mill still existed in the region, but it lies just outside of the Little Salmon River basin near its southwest boundary, at Tamarack. A mill owned by the Boise Cascade Corporation in Cascade, just to the south of the basin, closed in May 2001. Because logging and manufacturing of wood products have provided one of the primary economic

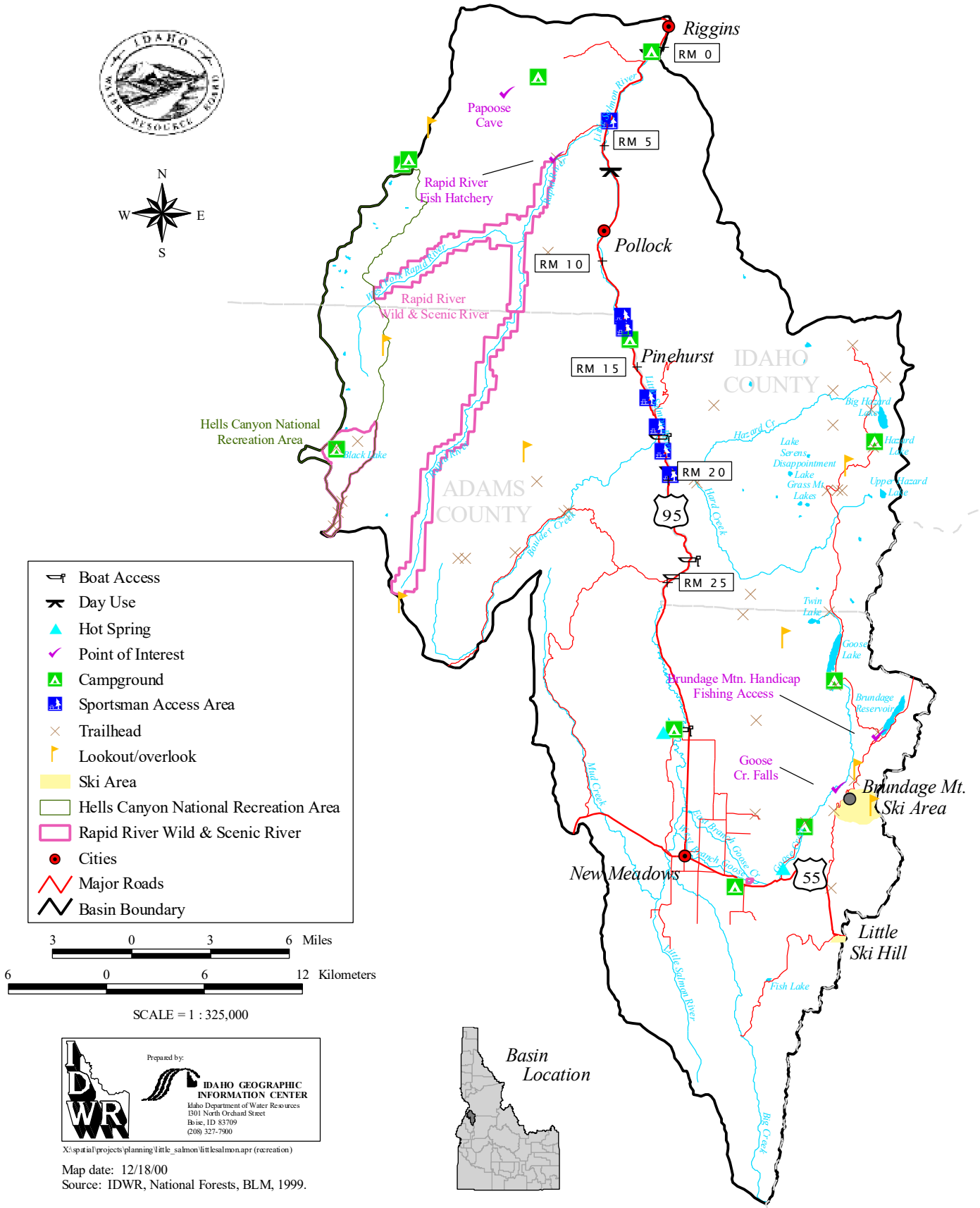


Figure 24. Map of recreation-related facilities or special features in the Little Salmon River basin.

foundations to the Little Salmon River basin, mill closures will force logging-job reductions and related satellite industry lay-offs. Disagreements between local residents and federal officials over forest fire suppression policies and logging access has further worried the residents in the Little Salmon River basin.

Commercial logging has occurred in the basin since the railroad lines were built in the early part of the 20th century. The heaviest logging occurred from the 1920s through the 1940s. Nearly all the marketable timber was logged during that period (Kwader 1999).

Several small mills existed in the basin, and Boise Payette Lumber Company (subsequently Boise Cascade) moved to New Meadows in 1940 (New Meadows 1995). The logs or lumber were shipped by rail mainly to Emmett, via Council and Payette, with a smaller volume going to Cascade. In the 1930s, cat skidding and truck hauling became common for moving to the railroad, but most tracks in the basin had been removed by 1946. With most of the easily accessible merchantable timber removed, lumbering was done by individual contractors, who preferred to haul by truck, eliminating the industry's reliance on rail. Harvesting on federal lands today relies increasingly on methods such as cable, skyline, and helicopter. This is not necessarily true on private lands.

The Lower Little Salmon River Biological Assessment analysis area, which included the drainages of the lower Little Salmon River, Rapid River, and Squaw Creek, covers 43,653 acres of Nez Perce National Forest land (Russell and King 1995). Timber harvests were conducted on 2,569 of these acres between 1971-1994. Since 1994, there has been very little logging activity in the Nez Perce National Forest (Paradiso 1999). Between 1994 and 1998, the Payette National Forest conducted sales and logged eight tracts on public lands in the basin, which sold for about $1.5 million. They are anticipating more sales as noted in Table 8.

The Idaho Department of Lands is responsible for approximately 13,410 acres of mixed timber and rangeland in the basin. About 7,500 of those acres are commercial forests; best described as mixed coniferous forest (Keafer 2001). See Table 9 and Appendix G for more details.

Of Boise Cascade's 48,000 acres in the basin, 45,000 acres are suitable for harvest, and have been logged up to three times (Appendix G). The company still conducts commercial thinning activities in the basin (Kwader 1999). For more information on timber, refer to Appendix G.

4.4.4 Mining

The majority of past mining activity in the Little Salmon River basin was in the Seven Devils Mountains and Hells Canyon National Recreation Area. Historically, surface mines were found sprinkled throughout the Little Salmon River basin (Nichols 2000). There are some talc deposits in the New Meadows area, located on private property, and one known inactive talc mine near the Rapid River. There are copper deposits in the Seven Devils Mountains, and gold was taken out of Rapid River. Rocky Flat, now a housing subdivision near Little Ski Hill in the southeast portion of the basin, was the sight of a placer mining operation. That activity came to a halt by the 1930s (Gillerman 2000).

There is very little current mining activity in the Little Salmon River basin. However, there are several sand and gravel operations near Pollock (Nichols 2000), and there is an active gemstone placer operation on a tributary to Little Goose Creek, located in the southeast portion of the basin (Gillerman 2000).

Mineral potential in the basin is primarily in the Rapid River drainage, but that potential is low relative to the rest of the state. There are a number of patented claims in the Rapid River-Hells Canyon complex. The Seven Devils area's mining potential is limited by the protection associated with its inclusion

Table 8. Payette National Forest timber sales (Source: Alexander 1999 and Demetriades 2001).

Year	Sale Name	Total Volume (mbf)[1]	Total Value ($)
1994	Brundage Parking Lot Extension	111	50,427
1994	Brundage ROW	116	47,600
1995	Big Doug Salvage	54	4,002
1996	Thorne 21 Salvage	1,543	508,004
1996	The Haz Salvage	4,109	39,659
1996	Twin Duck Salvage	2,125	90,473
1996	Cooked Goose Salvage	547	38,974
1998	Four Mile	4,409	770,000
1999	Brown's Creek	2,400	130,544
2001	Bare Rock (Goose Creek)	7,500	1,125,000
2000	Second Chance (Goose II)	4,600	541,453
2002	Lockwood	10,000	[2]
2003	Partridge-Kelly LA	5,000	[2]
2004	Boulder Helicopter	10,000	[2]
Totals		57,014	3,346,136

[1]Million board feet
[2]Not yet determined

Table 9. Idaho Department of Lands timber sales (Source: McManus 1999).

Year	Acres	Sale Name	Volume (MBF)[1]	Condition
1988	980	Little Mud Creek	3,165	Completed
1994	690	Big Creek	3,125	Competed
1997	274	Hailey Shorts	2,980	Completed
1998	380	Bally Mountain	5,000	Active
1998	520	Pinehurting	2,925	Proposed
2000	240	Indian Mountain	3,235	Completed
2002	640	Tepee Springs	2,500	Proposed
2003	1,150	Rattlesnake Creek	4,000	Proposed
Totals	4,874		26,930	

[1]Million board feet

in the Hells Canyon National Recreation Area. There has been some limited diamond and other gemstone exploration in the southeast portion of the basin, near Brundage Mountain (Gillerman 2000).

The entire Little Salmon River basin was closed to recreational dredge mining. All proposals for dredge mining must submit a joint application for permit to the IDWR and the U.S. Army Corps of Engineers. Applications will not be reviewed unless the applicant has received an Incidental Take permit or other approval from the National Marine Fisheries Service or the U.S. Fish and Wildlife Service (Idaho Department of Water Resources 2000b).

5 OUTSTANDING RESOURCE EVALUATIONS

In the development of comprehensive state water plans, the water-related resources of a basin are evaluated for outstanding values. The evaluation processes and results for the Little Salmon River basin are described in this section. Evaluations are used to examine streams or stream segments for protection by the Idaho Water Resource Board. These processes and results were reviewed by the citizens advisory group during formation of the plan's first draft.

5.1 Biological Resources

The River Biological Screening Procedure is a process to identify outstanding fish and wildlife values of a waterway. The procedure uses a number of different stream assessment methodologies, including the EPA's Rapid Bioassessment Protocols, the DEQ's Beneficial Use Reconnaissance Procedure, and the Idaho Department of Fish and Game's StreamNet.

The process involves two steps: 1) Aquatic and Riparian Assessment, which is an initial evaluation of twenty biological attributes; and 2) Crucial Species and Habitat Inventory, a final evaluation of the basin's unique species and habitats.

5.1.1 Aquatic and Riparian Assessment

Biological data were collected from various sources, including the Idaho Department of Fish and Game, the Payette and Nez Perce National Forests, the Bureau of Land Management, and several specific research studies described in the *Fish and Wildlife* section of Chapter 4. The data were compiled for twenty biological attributes on each waterway evaluated. These attributes were divided into four components for ease of collecting and organizing the data:

- **Habitat – aquatic**: physical conditions and water quality associated with the waterway
- **Habitat – riparian**: physical conditions and vegetation community characteristics
- **Species – aquatic**: plant and animal species associated with the waterway
- **Species – riparian**: plant and animal species in the riparian corridor

Based on available data, each waterway was evaluated for "positive" attributes. An attribute was considered positive if the data were available, and the data indicated that the characteristic contributed positively to the quality of the aquatic or riparian habitat.

5.1.2 Crucial Species and Habitats Inventory

Any biological feature considered by biologists to be regionally, nationally, or globally unique, such as bull trout focal habitat, is considered biologically outstanding. In the Little Salmon River basin, these species and habitats include:

- **Bull trout spawning/early rearing:** According to the most recent, bull trout (*Salvelinus confluentus*) persist only in the lower reaches of the Little Salmon River basin below the Falls at river mile 24.7 (U.S. Bureau of Land Management 2000). Bull trout are listed as a federally threatened species. The Rapid River and Boulder Creek are documented tributary streams that are considered of high importance for bull trout spawning and early rearing (Clearwater Basin Bull Trout Technical Advisory Team 1998). The Little Salmon River is used for subadult and adult rearing and as a migration corridor. The Hard/Hazard Creek complex is considered of medium importance for bull trout because of important production of forage fish.
- **Snake River spring/summer chinook salmon (*Oncorhynchus tshawytsch)*:** Listed as a threatened species under the federal Endangered Species Act in 1992; the Little Salmon River and some tributaries provide travelways and spawning and rearing habitat for the

chinook. The majority of quality habitat is associated with the larger tributaries, such as the Rapid River and Boulder, Hazard, and Hard Creeks. The Little Salmon River provides limited spawning habitat because of the large size substrate, but the river does provide summer and winter rearing habitat (U.S. Bureau of Land Management 1993).

- **Steelhead trout (*Onchorhynchus mykiss)*:** Listed as threatened under the Endangered Species Act in 1997; the Rapid River has the only truly wild population in the basin, but populations are declining. In addition to the sites on the Rapid River, the Idaho Department of Fish and Game monitoring sites are located on the Little Salmon River, Boulder Creek, and Hazard Creek. Local historic accounts recall steelhead being "thick" in Shingle Creek (Vogelsong 2001).
- **Pony Creek Research Natural Area:** Pony Creek Research Natural Area is located on the eastern edge of the Seven Devils Mountains and incorporates a small tributary to Boulder Creek (U.S. Forest Service 1992). The Research Natural Area is biologically unique for several reasons: 1) it is a transition zone between the vegetation of northern Idaho with its coastal affinities and the drier interior vegetation of southern Idaho; 2) it encompasses a diversity of habitat types (4,408 feet elevational gradient within the Research Natural Area); 3) it contains populations of a rare terrestrial plant species, puzzling halimolobos (*Halimolobos perplexa* var. *perplexa*); and 4) a rare aquatic insect, the caddis fly (*Farula* sp.), previously unrecorded in Idaho, was collected in Pony Creek and is also likely found in the adjacent Squirrel Creek.

5.1.3 Results

Both components of the evaluation were considered to determine if a waterway possessed outstanding biological values. Waterways with outstanding biological values fulfill the following criteria: at least 50 percent (and at least five data points) of the available aquatic and riparian data were positive, *and/or* crucial species and habitats were present. Table 10 summarizes the assessment for the waterways evaluated in the Little Salmon River basin. All waterways evaluated, except the Little Salmon River from its headwaters to Round Valley Creek, were found to be biologically outstanding.

Table 10. Outstanding biological waterways.

Waterway Reach	Aquatic and Riparian Assessment[1]	Crucial Species and Habitats
Boulder Creek (headwaters to forest boundary)	13/16	Bull trout spawning/rearing Chinook salmon spawning/rearing
Bull Horn Creek (headwaters to Boulder Creek)	9/13	Bull trout spawning/rearing
Cold Springs Creek (headwaters to Boulder Creek)	10/13	Bull trout spawning/rearing
Pony Creek (headwaters to Boulder Creek)	7/9	Bull trout spawning/rearing; Pony Creek RNA[2]
Squirrel Creek (headwaters to Boulder Creek)	5/9	Bull trout spawning/rearing
Star Creek (headwaters to Boulder Creek)	8/12	Bull trout spawning/rearing
Hard Creek (headwaters to forest boundary)	10/13	Bull trout spawning/rearing
Hazard Creek (headwaters to forest boundary)	9/11	Bull trout spawning/rearing Chinook salmon spawning/rearing

Table 10. Outstanding biological waterways – continued from previous page.

Waterway Reach	Aquatic and Riparian Assessment[1]	Crucial Species and Habitats
Little Salmon River (Round Valley Creek to Salmon River)[3]	8/15	Bull trout rearing Chinook salmon spawning/rearing Steelhead spawning/rearing
Rapid River (headwaters to hatchery)	14/15	Bull trout spawning/rearing Chinook salmon spawning/rearing Steelhead trout spawning/rearing
Rapid River (Hatchery to Little Salmon River)	7/12	Chinook salmon spawning/rearing Steelhead trout spawning/rearing
Fry Pan Creek (headwaters to Rapid River)	8/11	Bull trout spawning/rearing
Paradise Creek (headwaters to Rapid River)	8/11	Bull trout spawning/rearing
Trail Creek (headwaters to Rapid River)	9/11	Bull trout spawning/rearing Snake
West Fork Rapid River (Barrier Falls to Rapid River)	9/11	Bull trout spawning/rearing

[1]Total positive attributes/total attributes (data) available
[2]RNA= Research Natural Area
[3]Largely used as thoroughfare with little suitable spawning habitat (partly due to recent flood damage)

5.2 Recreation Resources

The recreation evaluation focused on recreational opportunities occurring within river or stream corridors and lakes. The evaluation entailed an analysis of recreational diversity and the importance of recreational opportunities in individual waterways. Specific recreational features are summarized in evaluation forms.

The final recreation evaluation class for each waterway was based on a combined assessment of diversity and importance.

Recreational diversity is a measure of the variety of opportunities available in a waterway corridor. Three criteria were assessed to arrive at a diversity value:

- land-based and water-based recreation opportunities
- natural features, and
- level of access

Land-based activities include camping, hiking, or hunting. Water-based recreation includes fishing, swimming, and boating. Land-based and water-based recreation activities occurring within the river corridor were identified through review of agency documents and maps describing recreation facilities, and communications with various agencies and user groups.

Natural features were identified which enhance recreation opportunities or experiences. These include description of water characteristics influencing the type of boating activity possible, a summary of the aesthetic values of the waterway, and identification of special wildlife habitat characteristics that provide increased opportunities for wildlife observation or other wildlife-related recreation.

Level of access was described to provide information regarding the types of recreational activities possible, potential use volume, and opportunities for primitive or isolated versus a more developed recreation experience.

Recreational importance **was determined through review of four criteria:**

- features or recreation opportunities unique or rare regionally or in the state
- public concern for the recreational

values of the waterway (determined by public comment and geographic draw of visitors)

- use volume based on recreational survey data and agency consultation, and
- special designations and/or agency recreation management objectives

Waterways with *outstanding* recreational values:

- provide significant recreation opportunities encompassing a great diversity of activities (greater than 12)
- provide a unique or rare experience within the region or basin, and/or
- receive significant or the highest use

Waterways with *high* recreational values:

- receive high use
- provide a high diversity of recreation opportunities (10 to 12 activities), and/or
- provide an important recreation experience, but typical for the region

Waterways with *moderate to low* designations:

- provide recreational opportunities typical in the region
- receive moderate to low use, and/or
- have moderate to low recreation diversity (less than 10 activities)

Table 11 summarizes the results of the recreation evaluation for waterways in the Little Salmon River basin. The evaluation focused on the Little Salmon River corridor and major tributaries. Not described in this list is a waterway that includes a cave unique to the northwest. Because this cave is so unique and presents a dangerous hazard to untrained explorers, by agreement the exact location of this cave is not described in any public documents.

5.3 Scenic Resources

The identification of waterways possessing outstanding aesthetic and other values was accomplished by reviewing the visual resource inventories completed for national forest lands. Inventories were conducted during the development of land and resource management plans, with the Payette National Forest visual inventory completed about 1982 (Arp 1998), and the Nez Perce National Forest inventory completed in 1986 (Snodgrass 1999). Forest Service data were not available for many of the private lands in the basin. To address this data gap, the IDWR conducted an independent

Table 11. Outstanding recreation waterways.

Reach	Evaluation Results
Little Salmon River (Round Valley Creek to mouth)	Unique chinook salmon and steelhead angling opportunities
Goose Creek (headwaters to Little Goose Creek)	**Significant diversity of recreation opportunities**
Brundage Reservoir	One of 16 lakes in Idaho managed for a quality or trophy trout angling experience
Hazard Creek (headwaters to mouth)	**Significant diversity of recreation opportunities**
Lake Serene	One of 16 lakes in Idaho managed for a quality or trophy trout angling experience
Rapid River (headwater to National Recreation Area boundary)	**Unroaded recreational setting contained in a National Recreation Area.**
West Fork Rapid River (headwaters to mouth)	**Unroaded recreational setting contained in a National Recreation Area.**

assessment of scenic values for the Little Salmon River corridor, using criteria similar to the Forest Service surveys.

Landscape characteristics typical for the region or the physiographic province establish the framework for assessing scenic values. Landscape elements in the Little Salmon River basin were evaluated relative to features typical for the Northern Rocky Mountain and Columbia Intermontane physiographic provinces. These landscape character types have common visual features for landform, rock formations, water forms and vegetation patterns. Character types are further categorized into subtypes to distinguish landscape settings at a more appropriate scale for assessing scenic values.

The U.S. Forest Service Visual Management System outlines criteria for deriving a variety class category for each landscape subtype (U.S. Forest Service 1974). Variety classes rate scenic quality, determined by evaluating the degree of variety, contrast, harmony or distinctiveness of various landscape components. In determining variety class categories, all landscapes are considered to have some scenic value, but landscapes with greater diversity of features and harmonious composition have a higher potential scenic value. Three variety class ratings are used to identify the degree of scenic value:

- ***Class A / Distinctive***: Landscapes where features of landforms, vegetation patterns, water forms, and rock formations are distinctive, unusual or outstanding in quality; or landscapes typical for the character type, but are outstanding in quality, and/or are known nationally for scenic importance.
- ***Class B / Common***: Landscapes where features contain variety in form, line, color, and texture; or combinations that tend to be typical or common to the character type.
- ***Class C / Minimal***: Landscapes where features have little or minimal variety in form, line, color, or texture.

Waterways with *outstanding* scenic values are those within landscape settings rated as Variety Class A. These waterways are listed in Appendix E.

The results of the three evaluations (biological, recreation, and scenic) are shown in Figure 25. The Idaho Water Resource Board used these evaluations to determine stream reaches for consideration for state protection designations. The Board's protection designations are listed and described in Section 2.2 of this plan.

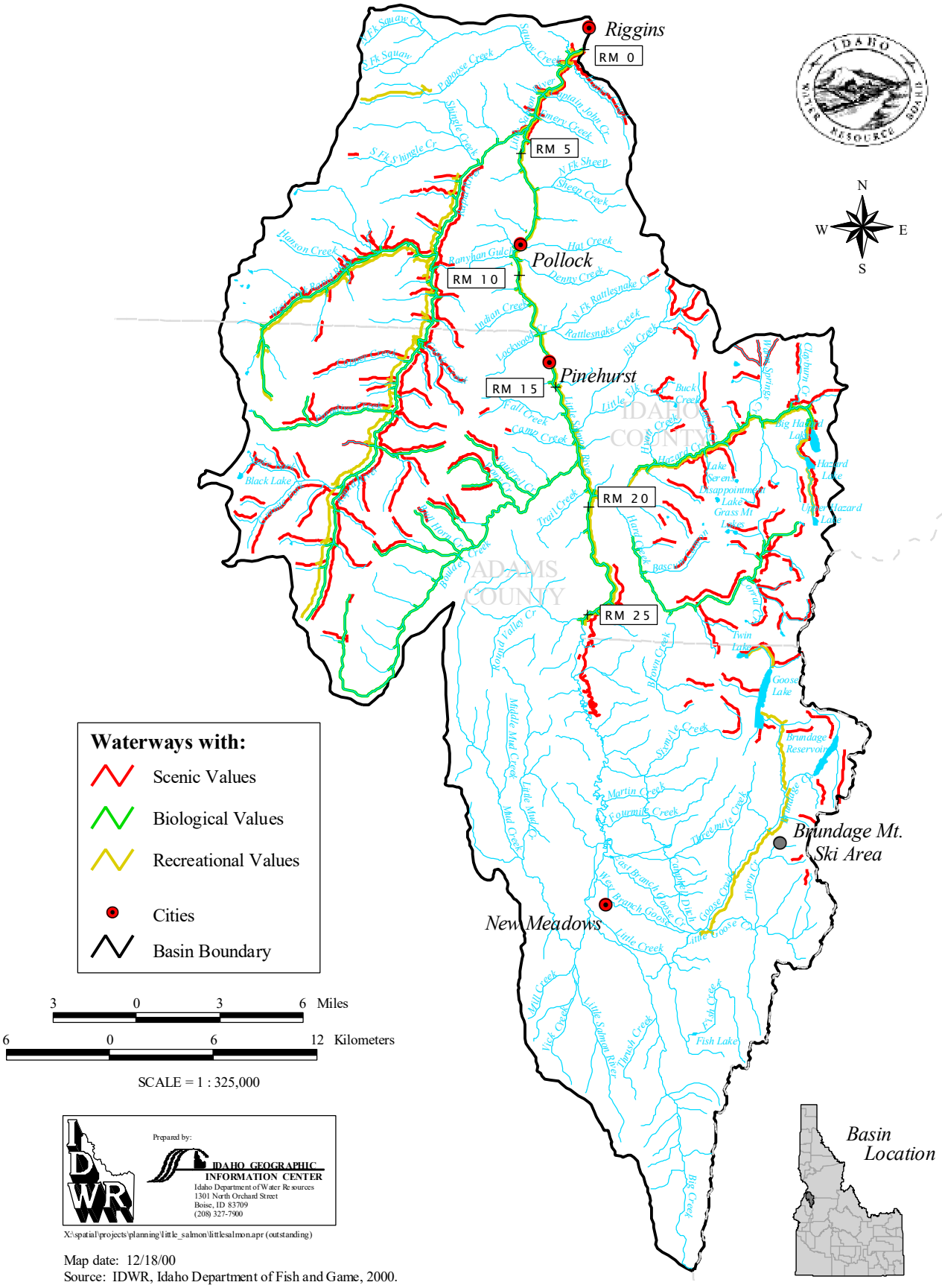


Figure 25. Map depicting waterways in the Little Salmon River basin with outstanding values (Sources: various - refer to text for explanation).

Implementing the Board's recommendations requires the cooperation of the public and other government agencies. Agencies administer specific programs within their statutory authority. This chapter of the *Plan* describes the different government agency programs and authorities pertinent to the Little Salmon River basin. It also describes the plans that these organizations use to guide their decisions.

These programs and authorities represent both opportunities and constraints. Opportunities because they allow agency personnel to contribute their expertise and agency dollars to the community, constraints because of the statutory, financial, and fiscal limitations of each program. The descriptions that follow are meant to provide additional information and clarification, as well as to highlight their impact on the recommendations made in this *Plan*.

6.1 Agencies and Programs

6.1.1 State Agencies

State agencies carry out the state's policies, as directed by the governor. They are guided by Idaho Code, as written by the legislature. The legislature also provides funding to the state agencies and their programs. Agencies develop plans to guide their decisions, and develop Rules and Regulations to control decision-making processes.

Idaho Bureau of Disaster Services

The Bureau of Disaster Services is in the military division of the executive office of the governor. After the flood events of the winter of 1996-1997, The Bureau of Disaster Services assisted local officials in recovery efforts, coordinating state/Federal Emergency Management Agency outreach workers who provided information on assistance programs, and advising victims on how to apply for and secure assistance. The Bureau of Disaster Services also facilitated the creation of a citizens group, the Little Salmon Watershed Alliance, Inc. The impetus for the development of this plan was a petition to the Idaho Water Resource Board from the Alliance.

After every federally-declared disaster, an interagency team is convened to evaluate the disaster and make recommendations for avoiding or reducing loss in the future. In response to the floods in the winter of 1996-1997, an Interagency Hazard Mitigation Team compiled twenty-eight recommendations for consideration by the governor. The recommendations describe actions to be taken by different agencies, and identify appropriate agencies, funding sources, and propose schedules for completion.

Hazard Mitigation Grant Program

An important program associated with federal disasters is the Hazard Mitigation Grant Program, which can fund projects to reduce future losses from natural events. Eligible recipients are local governments, Indian Tribes, special districts, and certain non-profit organizations. Using this grant, Adams County has acquired a flood-damaged property near Pinehurst, and plans to convert the property to a public park or a stream rehabilitation demonstration project (Horton 1999).

Two conditions for eligibility in the Hazard Mitigation Grant Program are participation in the National Flood Insurance program and implementing the Uniform Building Code. Idaho County has not adopted the Uniform Building Code, and organizations and individuals in the county remain ineligible to participate in the Hazard Mitigation Grant Program (Gehrig 1999, Ruppe 1999).

Governor's Landslide Task Force

In response to the landslide events of the winter of 1996-1997, Governor Philip E. Batt convened a task force to develop recommendations on actions to help develop effective mitigation and response efforts. The group was called the Governor's Landslide Task Force.

Four committees (Science, Mitigation, Policy, and Funding) developed sets of recommendations. The task force drew from the recommendations of each committee to write a recommendation report. The resultant report focused on ten recommendations that the task force felt to be critical to coping with landslide hazards in the state. The prioritized recommendations of the task force are included in the *Little Salmon River Basin CSWP Supplement: Flood and Landslide Management Information*. Each of the recommendations requires the dedication of significant resources by the state of Idaho. Potential funding sources are identified in the report.

The Idaho Bureau of Disaster Services is coordinating the implementation of the recommendations. As of August 1999, progress had been made in several areas. A landslide database has been completed by the Idaho Geological Society. The data is on a paper map and a GIS-based database is under development. In addition, the Idaho Bureau of Disaster Services has developed procedures for activating geotechnically-oriented rapid response teams.

Other recommendations of the task force have been pursued, although implementation has altered them somewhat. Ten sites have been identified for new or upgraded hydrological reporting instruments. Installation will depend on securing long-term maintenance commitments from local agencies or private organizations. In addition, *Idaho Code Chapter 10, section 46* (*§ 46-1023*) was passed in 1998. This legislation denies state matching funds for federal disasters if the local jurisdiction has allowed further development in the floodplain (*Idaho Code § 46-1023*)(Weiser 1999). The appendices of the task force report identify mitigation methods and sources of assistance, categorized by long- and short-term actions and by agency.

Idaho Department of Agriculture

The Department of Agriculture is in the executive branch of Idaho state government. The department provides technical, financial, and worker protection programs to the Idaho agricultural community (Idaho Dept. of Agriculture 1999).

The department has authority to provide funds to Soil and Water Conservation Districts through a new cost-sharing program administered by the Soil Conservation Commission. A pre-existing program, the State Agriculture Water Quality Program, previously funded through the DEQ, is being replaced through the Department of Agriculture's Water Quality Program (Burleigh 1999). The Soil Conservation Commission and Soil Conservation Districts are discussed below.

Idaho Department of Commerce

The Idaho Department of Commerce is an executive agency of Idaho state government. The department administers the Gem Community Program. This program "provides training and focused technical assistance to help Idaho communities organize for economic development, create long- and short-term development plans, and select targeted community development strategies" (Idaho Dept. of Commerce 1999). The Salmon River Economic Development Association in Riggins and the Adams County Development Corporation have met the requirements to become certified as Gem Communities.

Idaho Department of Environmental Quality

The DEQ was granted department status effective July 1, 2000. The department was previously a division within the Idaho Department of Health and Welfare. As one of its many responsibilities, DEQ maintains and enforces water quality standards.

Water Quality Management Plans

The 1972 federal Clean Water Act recognized that water quality has chemical, physical, and biological components that require monitoring and assessment. One of the national goals listed in the 1977 amendment to the Clean Water Act is the protection and management of waters to insure "fishable and swimmable" conditions

(Idaho Division of Environmental Quality 1997).

In 1995, the Idaho legislature adopted water quality statutes to meet the requirements of section 303(d) of the Clean Water Act. The DEQ identified stream reaches that are "water quality limited," that is, not all designated beneficial uses are being met. The list is known as the 303(d) list. The designation requires development of TMDL standards to control pollution sources. Stream reaches have been prioritized for the development of TMDL standards, based on the risk to human health and aquatic life, or recreational, economic, and aesthetic values. Stream reaches in the Little Salmon River basin are all designated as low priority.

The 1995 legislation also started a process to develop water quality action plans through community-based advisory committees. The approach is two-tiered, with basin advisory groups developing recommendations regarding water quality standards and monitoring, pollution budgets, and prioritization of impaired waters. Watershed advisory groups, which work with smaller watersheds, develop and implement watershed action plans to meet the TMDL requirements. The Little Salmon River basin is a part of the Clearwater Basin Advisory Group, but a watershed advisory group has not yet been formed (Stewart 1999).

Beneficial Use Reconnaissance Project

In 1993, the DEQ initiated a pilot program dedicated to assessing the three major components of water quality as defined in the Clean Water Act: chemical, physical habitat, and biological (Idaho Division of Environmental Quality 1996). This program is called the Beneficial Use Reconnaissance Project. State Senate Bill 1284 designated DEQ to monitor those streams on the 303(d) list (see discussion above); the ambient monitoring is done by Beneficial Use Reconnaissance Project teams, who collect and assess the data. Beneficial Use Reconnaissance Project data has been collected on the Little Salmon River but has not yet been assessed or interpreted. The data is available at DEQ's main office in Boise.

Clearwater Basin Bull Trout Technical Advisory Team (TAT)

Basin Advisory Groups and Watershed Advisory Groups rely on Technical Advisory Teams. These teams are made of resource experts from federal, state, tribal, and private entities compile and evaluate relevant information and then forward a problem assessment and management recommendations to the DEQ.

A Clearwater Basin Bull Trout Technical Advisory Team was appointed and given jurisdiction over an area that includes the Little Salmon River basin. The goals of the Bull Trout Technical Advisory Team were to report on including bull trout ecology, threats, distribution and abundance in the Clearwater basin. In Key Watersheds, the Technical Advisory Team focused on habitat conditions, and watershed characteristics. The Clearwater Bull Trout Technical Advisory Team published their assessment and recommendations in November 1998.

Idaho Department of Fish and Game

The Idaho Department of Fish and Game was organized in 1938 by Idaho's first successful citizens' initiative. The department's mandate is to preserve, protect, perpetuate, and manage all wildlife in the state (*Idaho Code § 36-103*).

Seven regional offices throughout the state provide services locally. The Little Salmon River basin is located in Region 3, under the jurisdiction of the McCall satellite office of the Nampa regional office.

The department has a number of fish and wildlife management plans, organized by individual species or by departmental regions. The plans described below are most relevant to the Little Salmon River basin.

A Vision for the Future: Policy Plan 1990-2005

A Vision for the Future sets guiding principles for the agency in nine areas: management, public involvement, regulations, access, introductions and stocking, land acquisition, cooperation, habitat protection, and mitigation. The document also describes the organization of the department and projects issues and concerns over the planning period.

Fisheries Management Plan (1996-2000)

The department's *Fisheries Management Plan (1996-2000)* describes the state of Idaho's policies to pursue improvement of fish populations and angling opportunities. The plan describes the department's emphasis on improving the Snake and Columbia rivers' migrant anadromous fish survival rates. In the Little Salmon River basin, the department is focusing on water and riparian quality above "The Falls" fish barrier on the mainstem Little Salmon River. The department has no immediate plans to propose modifications of The Falls or the natural fish-passage barriers in Hard Creek (Apperson 1999).

Governor Philip E. Batt's State of Idaho Bull Trout Conservation Plan

In response to potential action by the federal government to list the bull trout as an endangered species, Governor Philip E. Batt initiated the development of a state plan to restore bull trout populations. The resulting report, *State of Idaho Bull Trout Conservation Plan* (Batt 1996), outlines a strategy for the protection and recovery of bull trout based on an ecosystem, rather than individual species, approach. Land and water uses that threaten bull trout are identified and explained.

The plan designates "Key Watersheds" as those watersheds critical to the long-term persistence of bull trout. Key Watersheds were selected on the basis of habitat, size, historical range of the fish, and best opportunity to restore high quality habitat (Batt 1996). The plan set a target date of January 1, 1999, for the establishment of Watershed Advisory Groups. In coordination with the DEQ, Watershed Advisory Groups will develop recovery plans that focus on removing identified threats to bull trout habitat. Although the Little Salmon River basin is listed as a Key Watershed in the plan, no Watershed Advisory Groups has been established in the basin as of July 1999 (Stewart 1999).

The plan also calls for the development and implementation of six conservation plans a year, beginning in 1999, with at least one of those in the Salmon River basin each year. These conservation plans will be implemented by the DEQ and monitored by the Idaho Department of Fish and Game.

Authority to implement the governor's bull trout plan rests with several different agencies. Multiple state agencies have existing authorities to implement recovery strategies. Federal agencies have their own regulations that address native inland and anadromous fishes. Implementation of the governor's plan may lead to increased enforcement of existing laws and regulations for agriculture, municipalities, housing developments, recreation, forestry, livestock grazing, and fishing.

Idaho Department of Lands

The Idaho Department of Lands is an executive agency in state government. Its mission is to manage endowment lands for beneficiaries and protect natural resources for the people of Idaho. The department administers the Idaho Forest Practice Act; and applies Best Management Practices for logging, grazing activities, and mining; and oversees navigable waterways.

The Idaho Department of Lands has eight regional offices; the entire Little Salmon River basin is served through the office in McCall. The department administers about 12,200 acres of land in the Little Salmon River basin.

Idaho Department of Parks and Recreation

The Idaho Department of Parks and Recreation, created by the legislature in 1965, is an agency in the executive branch of state government. The department guides the development and implementation of the Statewide Comprehensive Outdoor Recreation Plan. The current plan, *1996 Idaho Statewide Comprehensive Outdoor Recreation and Tourism Planning: Assessment and Policy Plan,* was updated in July of 1998.

Land and Water Conservation Fund

The purpose of the 1965 Land and Water Conservation Fund Act was to serve as a permanent source of federal funding to federal, state and local agencies for creating public park resources and recreation areas. The revenue source is off-shore oil and gas leases.

Through 1998, a total of $32 million dollars has funded 374 projects in all areas of the state. The "stateside" portion of the program has been administered by the Idaho Department of Parks and Recreation. The state of Idaho has not received any money funds since 1995 and future funding remains uncertain (Poulsen 2000).

Idaho Department of Water Resources

The IDWR is in the executive branch of Idaho state government. The IDWR is responsible for administering programs to conserve, protect, develop, and use Idaho's water and energy resources. The agency is divided into three divisions: Water Management, Planning and Technical Services, and Energy.

The Water Management Division

The Water Management Division is responsible for programs that manage and protect the ground and surface water resources of the state. This responsibility includes water rights administration and the supervision of the state's watermasters. Resource protection responsibilities include the licensing of well drillers, regulation of well construction, oversight of underground injection wells, and the Stream Channel Protection Program. The division is also responsible for dam safety and state coordination of the National Flood Insurance Program.

The SRBA is administered through the Water Management Division. The SRBA is an ongoing judicial proceeding that seeks to clarify all existing water rights in Idaho for the Snake River basin and all tributary waters, including ground water. Recommendations for domestic and stock water rights in the Little Salmon River basin were submitted to the SRBA Court in March of 1999. Recommendations for all other water rights in the basin are scheduled to be completed by 2005 (Warntjes 1998, Kelly 2000).

Amended Moratorium Order for Salmon and Clearwater River Basins

On April 30, 1993, the director of the IDWR, under the authority granted under *Idaho Code, Section 42-1805(7)*, issued an Amended Moratorium Order in the Salmon and Clearwater River basins. As a tributary of the Salmon River, the Little Salmon River basin is included in the Moratorium. The moratorium does not apply to domestic use of surface water, ground water, non-consumptive uses, and insignificant consumptive uses are reviewed on a case by case basis. A copy of the Amended Moratorium Order is attached as Appendix F.

Planning and Technical Services Division

The Planning and Technical Services Division provides technical data and information in support of the IDWR's water administration, management, and regulatory responsibilities. Other division responsibilities include the review and evaluation of water resource issues, concerns, and opportunities raised by federal, sate, and private entities. This division provides technical assistance to the Idaho Water Resource Board, including preparing the *Comprehensive State Water Plan*, processing minimum stream flows, evaluating applications for Board funding projects, and overseeing special projects

such as the recent hydropower installation at Dworshak Dam.

Energy Division

The Energy Division is responsible for implementing energy conservation programs and providing technical assistance in high-efficiency technologies and renewable resource generation systems. The division provides these services to energy consumers, producers, and policy makers.

Idaho Water Resource Board

The Idaho Water Resource Board consists of eight members. Board members are appointed by the governor with the advice and consent of the senate. One member is appointed from each of four geographic districts, and there are four "at large" members. No more than four members may be of the same political party (*Idaho Code § 42-1732*). The Board has many responsibilities, including developing the Comprehensive State Water Plan, holding water rights for minimum stream flows and lake levels, and financing water development and conservation projects.

Comprehensive State Water Plan

The Board has the responsibility of formulating, adopting, and implementing water plans for conservation, development, management, and optimal use for the unappropriated water resources and waterways of Idaho in the public interest (*Idaho Code § 42–1734A*). The state water plan is a two-part document. "Part A," entitled *Idaho State Water Plan*, sets out statewide policies, goals, and objectives for water resources in the public interest. The latest version was adopted in December 1996. The second part of the plan, "Part B," sets out policies, goals, and objectives that are for a specific river basin, river reach, individual waterway, drainage area, ground water aquifer, or geographic area. *The Little Salmon River Basin Comprehensive State Water Plan* is a Part B component of the *Idaho State Water Plan*. Once a state water plan (Part A or B) is adopted by the Board, it is submitted to the Idaho legislature for ratification.

Minimum Stream Flows and Minimum Lake Levels

The Idaho legislature adopted Chapter 15, Title 42 of the Idaho Code in 1978. This law provides the authority for the Idaho Water Resource Board to appropriate unallocated waters for minimum stream flows or minimum lake levels. The law also describes the procedures the Board must follow to acquire these water rights.

Minimum stream flows are held by the Board in the public interest. As with all water rights, minimum stream flows have priority dates and defined places of use. However, water for these rights is not physically diverted. Instead, the water remains in the stream or lake to protect aquatic life, fish and wildlife habitat, water quality, navigation, transportation, recreation, or aesthetic beauty (*Idaho Code § 42-1502(f)*).

The Board files the water right application with the IDWR. The application describes the stream, amount of water sought, purpose, location, and other information needed to satisfy the requirements of the statute and IDWR. It then typically holds public meetings to gather information and to seek public input.

After receiving the application, IDWR conducts a public hearing, notifying the public, property owners, and water right holders in the area. Following the public hearing, the director of IDWR issues an order denying or approving the application. All minimum stream flows or minimum lake level water rights approved by the Director must be submitted to the Idaho legislature. The application is considered approved by the legislature unless it acts to deny it by the end of its regular session (*Idaho Code § 42-1503*).

Water Resource Funding Programs

The Board's Water Resource Funding Programs provide funds to plan, design, construct, improve, and rehabilitate water projects that promote the efficient and effective use of Idaho's water resources. Funding is in the form of grants, low interest

loans, and revenue bonds administered through one of two programs: the Revolving Development Fund and the Water Management Account.

Funding is available for projects or studies associated with community/municipal water supply and delivery, wastewater collection and treatment, irrigation water supply and delivery, aquifer recharge, energy production and energy conservation involving water, aquaculture water supply and delivery, flood control, drainage, water-related recreation, fish and wildlife enhancement, and water quality improvement. Projects must be in the public interest, compatible with the state water plan, economically and technically feasible, and environmentally acceptable.

More than 400 water development, conservation, and management projects and studies in Idaho have received financial assistance from the Board; nine are in the Little Salmon basin. Six involve municipal/community water supplies and the others are associated with Brundage Reservoir. Figure 26 summarizes the projects and studies in the basin that have received financial assistance from the Board.

Water Supply Bank

Idaho Code § 42-1761 provides for the creation of a water supply bank. The statute allows the Board to purchase, lease, accept as a gift, or otherwise obtain rights to natural flow or stored water, and to credit them to a water supply bank. These water rights may then be rented from the bank for other uses. There must be no injury to other water rights, the new use cannot result in an enlargement of the water right, and the new use must be in the public interest. Requirements to file an application for the transfer of a water right may be suspended for rights rented from the Bank. Forfeiture issues are also suspended for the time a water right is in the Water Supply Bank.

Idaho Soil Conservation Commission

The Idaho Soil Conservation Commission was created in 1939 by the Idaho legislature. The Commission consists of five members appointed by the governor to staggered five-year terms. It provides support and service to Idaho's 51 Soil Conservation Districts for the use and enhancement of soil, water and related resources, and administers general funds appropriated by the Idaho legislature to Soil Conservation Districts to implement resource conservation practices (Idaho Soil Conservation Commission 1999).

Soil and Water Conservation Districts (Soil Conservation Districts)

Soil Conservation Districts (SCDs) are a sub-unit of state government managed by a local board of supervisors, who, in turn, are elected by local voters. The districts are dedicated to conserving renewable resources and using sound management practices. They promote clean water and productive soils. Districts strive to ensure that decisions on conservation problems are made at the local level.

There are two Soil and Water Conservation Districts in the Little Salmon River basin. The Idaho SCD and the Adams SCD. The districts work with landowners on a voluntary basis to address natural resource management in a site-specific manner. Their activities help landowners and operators control soil erosion on irrigated cropland, range and riparian areas, and improve water quality and wildlife habitat. These objectives are accomplished with the aid of several collaborative efforts involving the NRCS, the Idaho Association of Conservation Districts, the Idaho Soil Conservation Commission, and the DEQ (Idaho Soil Conservation Commission 1999).

The Model Watershed Project

Idaho's Model Watershed Project was established as part of the Northwest Power Planning Council's plan for salmon recovery in the Columbia River Basin. The council gave responsibility for developing the project to the Idaho Soil Conservation Commission. The Soil Conservation Commission receives annual funding from Bonneville Power Administration to operate

SUMMARY

1 City of Riggins
- 1984: $23,959 Grant; Irrigation canal repair
- 1994: $5,000 Grant; Water system upgrade study

2 Rapid River Water and Sewer District
- 1992: $2,500 Grant and $2,500 Loan; Water system compliance study
- 1998: $5,000 Grant and $5,000 Loan; Water system upgrade study

3 Brundage Water Users Association
- 1983: $50,000 Loan; Brundage Dam enlargement
- 1986: $250,000 Loan; Brundage Dam enlargement
- 1987: $67,000 Loan; Brundage Dam enlargement

4 City of New Meadows
- 1995: $5,000 Grant; Water system improvement study
- 1997: $5,000 Grant; Cost over-run on water system improvement project

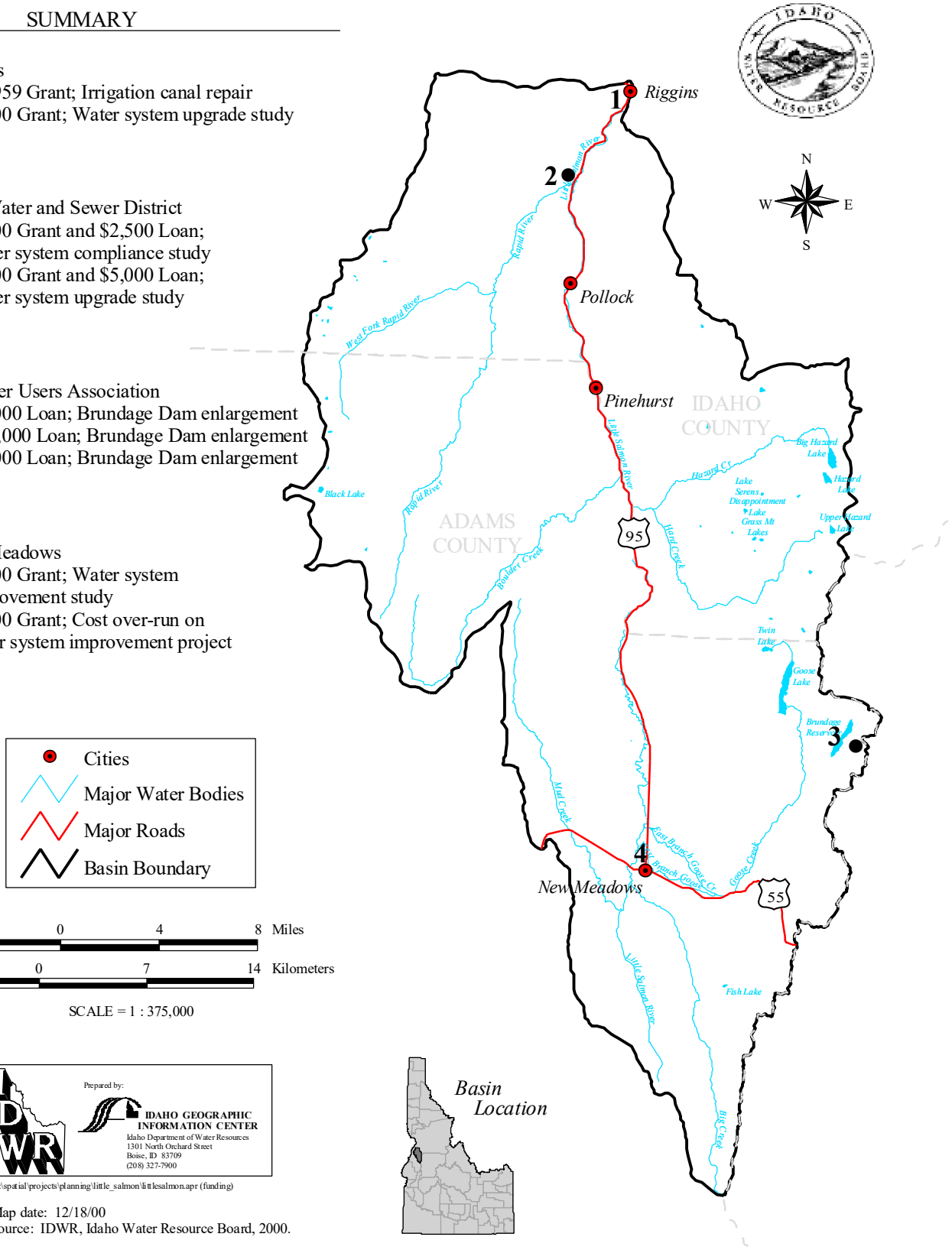


Figure 26. Map depicting locations and funding assistance received by various entities in the Little Salmon River basin.

the project. The Commission's mission is to:

- identify actions within a watershed that are planned or needed for salmon habitat, and
- establish a procedure for implementing habitat improving measures (Swift 1991).

Idaho Transportation Department

The Idaho Transportation Department is an executive agency in state government. The department's mission is "to provide cost-effective transportation systems that are safe, reliable and responsive for the economical and efficient movement of people and products" (Idaho Transportation Department 1999b).

Transportation Projects in the Little Salmon Basin

The Idaho Transportation Board has identified and approved the right-of-way for the McCall Alternate Route (Clogel 1999). This road will create a bypass for State Highway 55 to the south and west of the city of McCall. When this road is completed, access to New Meadows Valley will be easier for travelers headed north on Highway 55. It will also provide another access route to the recreation area at and around Brundage Mountain. No date has been set for completion of this project.

The department is completing the Hazard Creek to Pinehurst project. The project is a realignment of Highway 95 in the Little Salmon River canyon, from section 2 to section 22, Township 21 North, Range 1 East. The project includes six turnouts along the highway.

Three additional projects in the basin are within ITD's planning horizon. Two of the projects are on U.S. Highway 95: Smokey Boulder Road to Hazard Creek (mile post 170-174) and Cox's Ranch to Riggins (mile post 190-196). The third project is the repair/replacement of the Rapid River bridge (Clark 1999).

Projects are constrained by the resources available to the agency. For instance, the Smokey Bolder Road to Hazard Creek project is estimated to cost $14 million. Cost and a lack of suitable alternatives constrict the department's ability to relocate Highway 95 completely out of the drainage (Clark 1999).

In the course of designing projects, Idaho Transportation Department analyzes soil and geologic stability for the project area. While usually not available as a stand-alone document, the information and data can be obtained by contacting the Idaho Transportation Department in Boise.

6.1.2 Tribal Planning and Management Programs

In 1996, the four Columbia Basin treaty tribes (Nez Perce, Umatilla, Warm Springs, and Yakama) along with the Columbia River Inter-Tribal Fish Commission, developed a fish restoration plan, the *Wy-Kan-Ush-Mi Wa-Kish-Wit*, Spirit of the Salmon. It is a two-volume plan; the first volume describes the existing cultural, biological, legal, and institutional environments and lists broad recommendations. In the second volume, specific recommendations for subbasins within the Columbia River watershed are listed and discussed.

The tribes seek to restore all anadromous fish stocks above Bonneville Dam. There are 11 institutional recommendations, 13 technical recommendations, and watershed or subbasin-specific recommendations in their plan. Eight recommendations are specific to the Salmon River basin, of which the Little Salmon is tributary. The recommendations regard diversions of water, protection of the physical integrity of stream and riparian systems, the development of water quality standards, and new broodstock programs, including the restoration of lamprey populations. The *Plan* goes on to describe specific actions that are recommended to assist in the implementation of the recommendations (Columbia River Inter-Tribal Fish Commission 1995).

The Nez Perce Tribe is an active partner in fisheries restoration efforts. The tribe provides technical and financial assistance for projects, usually working on watershed-scale projects in coordination with government agencies and private landowners (McGowan 1999).

6.1.3 Local Government Planning and Management Programs

The direction and character of future community development is strongly influenced through county and municipal planning and zoning decisions. Comprehensive plans contain goals and policies directing the desired land uses and activities in the cities and counties, which are then implemented through ordinances. Planning studies are also commissioned to inventory and provide recommendations for updating municipal services, including water and sewage systems.

Idaho Code, Title 67, Chapter 65, the "Local Land Use Planning Act," requires all local governments and special purpose districts to develop land use plans that further the goals stated in the law. The purpose of the law is to promote the health, safety, and general welfare of the people of the state of Idaho. Specific goals include the protection of important environmental features of the state and localities (*§65-6502(d)*), development on land is commensurate with the physical characteristics of the land (*§65-6502(h)*), and protection of life and property in areas subject to natural hazards and disasters (*§65-6502(i)*).

Adams County

Adams County Comprehensive Plan

The Adams County Comprehensive Plan was completed in June 2000. The plan identifies the county's goals, objectives, and policies for its water resources. The goals include participation in planning for future water usage, protection of water quality, identification of potential storage reservoir sites, and the protection of water rights for traditional uses (Adams County 2000).

The plan also discusses the effects of land use planning and federal regulatory intervention on the county's water quality, the SRBA, and the current effort by the Payette National Forest to issue Ditch Bill Easements to water users. The county supports these efforts, recognizing that domestic well supplies must be protected from contamination, that the SRBA will help owners to protect their water rights, and that Ditch Bill Easements will record and protect diversions and conveyance structures located on federally-managed land. In addition, the plan supports land use regulations that "…ensure the long-term health, safety, and welfare of the public" (Adams County 2000).

Land Use and Development Regulations for Adams County

Section G of the Adams County floodplain ordinance states that "No structure constructed, reconstructed or altered shall be located within an area designated as floodplain as provided in the Comprehensive Plan …unless the requirements of this section can be met." Section G also includes discussions of floor elevation, mobile homes, sewage and water systems, and setbacks.

Idaho County

Idaho County does not have a comprehensive plan, but does have a subdivision ordinance covering new septic systems. The county participates in the federal Flood Insurance Program.

Idaho County Model Flood Damage Prevention Ordinance

Idaho County's flood ordinance complies with standards for participation in the National Flood Insurance Program. The model includes standards and provisions that encourage sound floodplain management and, if implemented, will allow property owners to obtain flood insurance at a more affordable rate. The model makes recommendations about residential construction, floor elevation, elevation to base flood elevation, and foundation construction.

City of New Meadows

Comprehensive Plan

New Meadows' Comprehensive Plan was published in November 1995. The plan addresses current and future surface water, ground water, and wastewater concerns of the city. For instance, a section of Little Goose Creek flows through the city and is considered as prime wildlife habitat and a valuable surface water resource to the community of New Meadows (New Meadows 1995).
Water resource goals for the city, identified in the plan, include:

- developing programs for local conservation and utilization of water resources
- considering establishing a wellhead protection policy
- continuing to improve the wastewater infrastructure, and
- considering adopting a storm-water management policy (New Meadows 1995)

City of Riggins

Comprehensive Plan

Riggins' Comprehensive Plan was passed and approved by the city council on September 12, 1994. The plan describes the history of the city and surrounding area and inventories its resources. Goals and objectives are listed for a number of topic areas. Goals and objectives related to the *Little Salmon River Basin Comprehensive State Water Plan* include encouraging energy efficient buildings, actively participating in a program to promote stream bank conservation and beautification, building cooperative relationships with other government agencies, and maintaining a perennial vegetation cover on bare soils.

6.1.4 Federal Agencies

Federal agencies have a number of responsibilities related to the implementation of national goals on the local level. The presence of federal agencies in the Little Salmon River basin is evidenced by their financial and technical assistance to individuals and local government entities, the public land that they manage, the employment opportunities at agency offices located in or near the basin, and their influence on natural resource management through federal laws.

All actions on federal lands must be consistent with the Pacific Anadromous Fish Strategy (PACFISH), Interior Anadromous Fish Strategy (INFISH), and Biological Opinions. PACFISH is an interagency management program for federal lands managed by the U.S. Forest Service or the U.S. Bureau of Land Management within the range of Pacific Ocean anadromous fish. INFISH is similar, but focuses on interior watersheds without anadromous fish. Biological Opinions are issued by the National Marine Fisheries Service (NMFS) or the U.S. Fish and Wildlife Service as a result of a formal consultation process mandated in the Endangered Species Act (ESA). The formal process occurs when a proposed action is likely to jeopardize the continued existence of a species listed or proposed to be listed under the ESA. The Biological Opinions are listed in the discussions below according to the issuing agency.

Numerous laws exist that have elements directing federal land managers to cooperate and coordinate with local and state planning efforts. Some of the most important ones, with respect to comprehensive state water plans include: the Endangered Species Act (ESA), the Federal Land Policy and Management Act (FLPMA), the National Environmental Policy Act (NEPA), and the National Forest Management Act (NFMA).

Federal Emergency Management Agency

The Federal Emergency Management Agency (FEMA) is an independent federal agency, reporting directly to the president. Its mission is to "reduce loss of life and property and protect our nation's critical infrastructure from all types of hazards

through a comprehensive, risk-based, emergency management program of mitigation, preparedness, response and recovery" (Federal Emergency Management Agency 1999).

The National Flood Insurance Program

The Federal Emergency Management Agency administers the National Flood Insurance Program, established in 1968 by the Flood Insurance Act. The National Flood Insurance Program provides flood insurance to property owners residing in communities and counties that participate in the program. Participation requires adoption of floodplain ordinances that contain minimum standards established by FEMA. Both Adams and Idaho counties participate in the National Flood Insurance Program.

Floodplain ordinances regulate structures located in the 100-year floodplain. The 100-year floodplain is an area found to have a one percent or greater chance of flooding in any given year. Requirements include elevating the lowest floor of a structure in the floodplain at or above the base elevation of the floodplain. Sanitary systems and water supply systems must be designed to minimize or eliminate infiltration of floodwaters. Development must not encroach onto the floodway (an area immediately adjacent to a river or stream channel that becomes part of the enlarged stream or river channel during flooding). A participating county or community is responsible for enforcing the floodplain ordinance and for determining that other required permits (federal, state, and local) have been obtained before issuing a development permit.

Flood insurance is required for households in the floodplain applying for federal funds. Any household applying for a mortgage, loan, grant, or other funding insured or regulated by a federal agency must, by law, purchase flood insurance.

FEMA also conducts studies and prepares maps depicting flood hazard information. These maps identify boundaries of the 100-year floodplain and the floodways.

Floodplain mapping was completed for Idaho County in 1991. Adams County received preliminary maps in March 1999, and the county has commented to FEMA regarding changes to improve the maps' accuracy (Horton 1999).

Additional flood management opportunities are available through FEMA. The Community Rating System program recognizes community efforts that go beyond the minimum floodplain ordinance standards. Credit points are assigned for each additional activity. Based on the total number of points earned, a community is assigned to one of ten classes. Flood insurance premium discounts, ranging from 5 to 45 percent, are based on the rate class the community achieves.

National Marine Fisheries Service

The NMFS is part of the National Oceanic and Atmospheric Administration that in turn is within the U.S. Department of Commerce. The NMFS administers National Oceanic and Atmospheric Administration's programs that support domestic and international conservation and management of biological marine resources. The following are Biological Opinions issued by NMFS that may impact actions of federal lands the Little Salmon River basin.

The NMFS issued a Biological Opinion on March 1, 1995, entitled "Land and Resource Management Plans for the Boise, Challis, Nez Perce, Payette, Salmon, Sawtooth, Umatilla, and Walla-Whitman National Forests." The document was the result of a Section 7 consultation on the effects of the implementation of Land and Resource Management Plans in the Snake River basin. Another Biological Opinion was issued on June 19, 1998, entitled "Land and Resource Management Plans for National Forest and Bureau of Land Management Resource Areas in the Upper Columbia River Basin and Snake River Basin Evolutionarily Significant Units." These two Biological Opinions should be used in conjunction with each other for proposed actions on federally managed lands (Pisano 2000).

The NMFS issued another Biological Opinion on March 2, 1995, with supplements issued May 14, 1998, December 9, 1999; and February 4, 2000. This Biological Opinion is often referred to as the FCRPS Opinion. It addresses operations of the federal power plants on the Columbia River system, including flow rates, and the effects on anadromous fish species.

Habitat Conservation Plans

In the 1982, the Endangered Species Act was amended by the U.S. Congress to establish a mechanism under section 10(a)(1)(B) that authorizes the NMFS and U.S. Fish and Wildlife Service to issue to non-federal entities a permit for the "incidental take" of endangered and threatened wildlife species. This permit allows a non-Federal landowner to proceed with an activity that is legal in all other respects, but results in the "incidental" taking of a listed species. The Endangered Species Act defines incidental take as take that is "incidental to, and not the purpose of, the carrying out of an otherwise lawful activity."

A habitat conservation plan must accompany an application for an incidental take permit. A habitat conservation plan is an agreement between the federal agency and the private landowner that permits development while protecting listed species at the same time. The purpose of the HCP is to ensure that the effects of the permitted action on listed species are adequately minimized and mitigated. The permit authorizes the incidental take, not the activity that results in take. The activity itself must comply with all other laws and regulations.

Natural Resources Conservation Service

The Natural Resources Conservation Service (previously the Soil Conservation Service) is an agency within the United States Department of Agriculture. Its mission is to "provide leadership in a partnership effort to help people to conserve, improve, and sustain our natural resources and environment." The NRCS works closely with conservation districts and Resource Conservation and Development Councils (RC&Ds) to provide technical and financial support to farmers (U.S. Dept. of Agriculture-Natural Resources Conservation Service 1999). As part of the technical services they provide, the NRCS operates SNOTEL sites, and provides climatic data. This data is available for the public and others to assist in their water management decisions and analysis.

Examples of NRCS programs include the *Public Law-566* and Wetland Reserve Programs. The former program supplies technical and financial assistance to water users to improve water storage and improve irrigation efficiencies. Brundage Reservoir was renovated using funds from this program. The dam project was completed in 1988, and 16 long-term cost share contracts were established with ranchers, covering 6,350 acres of land (Yankey 1999). The Wetland Reserve Program provides similar technical and financial assistance to landowners seeking to improve conditions in wetland areas. The NRCS provided cost share dollars from this program for a riparian restoration project in Meadows Valley. Cooperators included the landowner, the Idaho Department of Fish and Game, and the U. S. Fish and Wildlife Service.

U.S. Army Corps of Engineers

The U.S. Army Corps of Engineers (USACE) is administered under the direction and supervision of the Secretary of the United States Army. Its mission is to "manage and execute engineering, construction, and real estate programs for U.S. Army and Air Force and for other federal agencies as assigned" (U.S. Army Corp of Engineers 1999). The USACE has responsibility for investigating, developing, and maintaining the nation's water and related environmental resources. Two important programs impacting the Little Salmon River basin are Section 404 of the Clean Water Act, and Section 206 of the 1960 Flood Control Act.

Section 404 of the Clean Water Act

Under this Act, the Walla Walla District of the USACE is responsible for regulating the discharge of dredged and fill material into waters of the United States. This includes most construction activities in rivers, streams, and creeks (both perennial and intermittent); lakes and ponds (including many man-made impoundments); and most wetland areas located in the little Salmon River basin. Permits must be obtained for such activities prior to the start of construction. Permit applications are reviewed to ensure that impacts to such waterways are avoided, minimized and mitigated to the maximum extent practicable. Small, minor projects with minor adverse impacts, both individually and cumulatively, may qualify for authorization under nationwide permits. Over 95% of activities regulated by the Walla Walla District under this program are authorized by nationwide permits. Projects that are determined to have more then minimal adverse impacts must be processed as an individual permit. This involves a more thorough review including the opportunity for comment by the public

Section 206 of the 1960 Flood Control Act

The objective of the Flood Plain Management Services program is to "foster public understanding of the options for dealing with flood hazards and to promote prudent use and management of the nation's flood plains." It provides a range of technical services to develop and interpret data on obstructions to flood flows, flood formation and timing and planning guidance all subjects of flood plain management (U.S. Army Corp of Engineers 1999).

Section 22, Planning Assistance to States

The objective of the Planning Assistance to States program is to provide planning assistance to locals to address water resource related problems. The cost shared program can encompass many types of studies including water supply, water quality, water conservation, flood control, floodplain management, and wetlands evaluation.

U.S. Bureau of Land Management

The Bureau of Land Management is an agency within the U.S. Department of the Interior. The Bureau of Land Management manages about 16,000 acres in the Little Salmon River basin. The agency is responsible for managing federal public lands within a framework of numerous laws, the most comprehensive of which is the Federal Land Policy and Management Act of 1976. The agency must also comply with PACFISH, INFISH, and Biological Opinions

U.S. Bureau of Reclamation

The U.S. Bureau of Reclamation, an agency of the U.S. Department of the Interior, seeks to protect local economies and preserve natural resources and ecosystems through the effective use of water. The bureau has no direct presence in the Little Salmon River basin. However, the bureau analyzed the impacts of flow augmentation of the Snake and Columbia River systems of an additional one million acre-feet of Idaho water. To assist in this process, the bureau used the resources and data developed by its Snake River Resources Review. The analysis assessed the impacts of using additional water from Idaho rivers, including the Little Salmon River. The analysis was completed in February 1999 (U.S. Bureau of Reclamation 1999).

U.S. Fish & Wildlife Service

The U.S. Fish and Wildlife Service is an agency in the U.S. Department of the Interior. The mission of the service is to conserve, protect, and enhance fish and wildlife and their habitats. Major responsibilities of the service are protection of migratory birds, endangered species, and certain marine mammals and freshwater and anadromous fish.

The U.S. Fish and Wildlife Service issued a Biological Opinion on August 14, 1998 that addresses bull trout in areas covered by INFISH and PACFISH (the Klamath and Columbia Rivers). A Draft Biological Opinion, "Effects to Listed Species of the Operations of the Federal Columbia River

Power System" was released July 27, 2000, and was developed in close conjunction with the NMFS' "FCRPS" Biological Opinion (see above). These opinions are intended to result in actions and/or restoration measures to protect listed fish, such as delineating priority watersheds, developing new monitoring protocols for grazing, developing road inventories, and managing unroaded areas (Johnson 1999).

Partners in Wildlife Program

Through the Partners in Wildlife Program, begun in 1987, the U.S. Fish and Wildlife Service provides technical and financial assistance to private landowners that wish to restore wildlife habitat on their land. Under this program, the U.S. Fish and Wildlife Service entered a cooperative agreement in 1996 with a local rancher to fence 20 acres of riparian land in the Little Salmon River basin (Guillory 1999; Dudley 1999). The Idaho Department of Fish and Game is providing cost share funds and volunteers to do plantings along the riparian corridor.

U.S. Forest Service

The U.S. Forest Service is an agency within the U.S. Department of Agriculture that manages the public lands under its jurisdiction. The lands are divided geographically into national forests. Three national forests manage public land in the Little Salmon River basin: the Payette National Forest, the Nez Perce National Forest, and the Wallowa-Whitman National Forest. Cumulatively, the national forests account for over 50 percent of the land in the basin: the Payette National Forest manages 177,286 acres while the Nez Perce National Forest manages 36,521 acres. Hells Canyon National Recreation Area, a portion of which is in the northwest corner of the basin, is administered by the Wallowa-Whitman National Forest.

National Forests must comply with PACFISH, INFISH, and Biological Opinions, as described on pages 76-77. These documents are considered as each forest develops a management plan, as described below. The Forest Service and the Idaho Department of Water Resources also have a cooperative relationship for forest and comprehensive state water planning, formalized as a Memorandum of Understanding (MOU).

MOU – National Forest Planning and Comprehensive State Water Planning

The Idaho Water Resource Board has an official Memorandum of Understanding with the USDA, Forest Service, regarding cooperative efforts for river basin planning. It affirms a commitment to work to ensure that National Forest Planning and Comprehensive State Water Planning are carried out in a cooperative and coordinated manner, and a commitment to carry out a collaborative watershed evaluation project. This MOU is signed by Paul Brouha, Associate Deputy Chief, National Forest System, and Clarence Parr, past IWRB Chair, August 1, 2000.

Forest Service Management Plans

The National Forest Management Act, as amended in 1976, directs that forest plans "…be revised from time to time when the Secretary finds conditions in a unit have significantly changed, but at least every 15 years." The forest management plans for the Payette and Nez Perce National Forests are currently undergoing revisions. The revisions will guide all natural resource management activities, and establish management standards, guidelines, and prescriptions for the next ten to fifteen years.

The National Forests in the Little Salmon River basin are in various stages of the planning process. The Payette National Forest is combining its planning efforts with the Boise and Sawtooth National Forests. The combined management group is called the Southwest Idaho Ecogroup. The Ecogroup anticipates release of its final plan by December 31, 2000. The Nez Perce National Forest has started efforts to completely revise its forest plan by October 2002 (U.S. Forest Service 1999). The Hells Canyon National Recreation Area and the Rapid River Wild and Scenic River are administered by the Wallowa-Whitman National Forest.

Hells Canyon National Recreational Area

National Recreation Areas are created the U.S. Congress to ensure that the "Natural beauty, and historical and archeological values are preserved for this and future generations." The Hells Canyon National Recreation Area was established on December 31, 1975, and is administered as part of the Wallowa-Whitman National Forest (*Public Law § 94-199*). The National Recreation Area includes the Hells Canyon Wilderness Area, the Rapid River Wild and Scenic River, and the Wilderness Study Area.

Public Law § 94-199 requires that a comprehensive management plan be developed for the Hells Canyon National Recreation Area. A comprehensive management plan was approved in 1982. In 1990, the plan was incorporated into the forest plan for the Wallowa-Whitman National Forest. In December of 1999, the forest issued a *Revised Draft Environmental Impact Statement for a New Comprehensive Management Plan*. Public comments were accepted until June 2000, and will be considered in the development of the Final Environmental Impact Statement.

Rapid River Wild and Scenic River

Although located in the Nez Perce National Forest, the Rapid River Wild and Scenic River is administered by the Wallowa-Whitman National Forest. The entire length of Rapid River and the portion of the West Fork downstream of the Wilderness Area boundary are classified as a "wild" river under the Wild and Scenic Act of 1964. The purpose of the "wild" designation for the Rapid River and the West Fork is to maintain high water quality and to provide recreational opportunities. The Wild and Scenic corridor extends ¼-mile on both sides of the river, encompassing 4,218 acres. Three tracts of private land are located along the corridor (U.S. Forest Service 1981).

Interior Columbia Basin Ecosystem Management Project (ICBEMP)

In response to "critical and large scale natural resource issues in the northwest," President Clinton directed the U.S. Forest Service and the U.S. Bureau of Land Management to develop a scientifically defensible and ecosystem-based management strategy for the lands administered by those agencies in the Columbia River basin (Interior Columbia Ecosystem Management Project 1997). The Interior Columbia Basin Ecosystem Management Plan (ICBEMP) will provide resource management direction to the two agencies. Forest goals, desired future conditions, objectives, and standards for management may change for any of the national forest plans because of ICBEMP. The Supplemental Draft Environmental Impact Statement was released in March 2000, with comments accepted until July 6, 2000. Forest plans will be amended when a decision describing the "preferred alternative" is issued. This decision will be made some time after comments have been received and analyzed (Brunelle 1999).

In 1997, the Payette National Forest initiated a review of the Little Salmon River basin, as one of seven "prototype" efforts scattered throughout the Columbia Basin. Due to limited time and procedural uncertainty, the review was not completed. In a 1998 Biological Opinion prepared by National Marine Fisheries Service, the USFS and BLM agreed to conduct subbasin reviews for anadromous fish subbasins. In 1999, ICBEMP prepared a desk guide that provided direction for the content and process to follow during subbasin review.

The Payette National Forest completed the South Fork Salmon River subbasin review in 2000 and is currently working on the Little Salmon River subbasin review. This effort is scheduled for completion in late 2001. The phases of subbasin review are: (1) characterize historic and current conditions for key resource issues in the subbasin; (2) compare broad-scale ICBEMP findings with local, site-specific data; (3) prioritize planning and treatment needs for watersheds; and (4) present opportunities for treatment or further analysis. The USFS review of the Little Salmon River subbasin will utilize information on water quality,

aquatic conditions, and local concerns that are presented in the Idaho Water Resource Board's Comprehensive State Water Plan, Little Salmon River Basin. The Payette National Forest will present additional information on ICBEMP topics, which include fire regimes, fire risk, threatened and endangered animal and plant species, vegetation trends, wildlife habitat conditions, and cultural resources.

Human Resource Programs

The Forest Service has numerous volunteer trail maintenance programs. The Forest Service supplies materials, supplies, and guidance (Becker 1999). These programs help to maintain recreation access, including access to angling and boating, on lands managed by the National Forests.

6.1.5 Cooperative and Miscellaneous Programs

Flood Control Districts

There are no flood control districts in the Little Salmon River basin. *Idaho Code, Title 42, Chapter 31*, provides for the formation of flood control districts. A flood control district is a taxing entity that seeks to pool revenues to address flood management issues in the district.

The establishment of a district is initiated when one-third or more of the qualified voters residing in the proposed district present a petition to the IDWR. The director of the IDWR then holds a public hearing where the petition and corresponding map of the proposed district are made available to the public. The director then files a report with the district court that either recommends formation of the district or denies the petition. The director also nominates district commissioners. The district court must approve the formation of the district and the commissioners.

The commissioners set the amount of funds that will be collected from the property owners in the district. The commissioners may also exercise the power of eminent domain, and convey rights of way or easements over district property. However, flood control districts are not empowered to make land use decisions other than on district property.

Collected funds are used to manage the effects of floods in the district. Traditionally, districts have used their funds to install bank barbs, berms, or to remove gravel. However, commissioners are given broad latitude in their activities, and other flood management solutions may be sought in the future.

Idaho OnePlan (http://www.oneplan.state.id.us)

The Idaho OnePlan is a cooperative project of state and federal agencies, commodity groups, and associations to streamline farm and ranch planning for Idaho's agricultural producers. Governor Philip E. Batt formally initiated the Idaho OnePlan by signing an interagency agreement at the 1996 Idaho Ag Summit. The participating groups, including the IDWR have gathered agricultural program information and regulations to create the Idaho Farm and Ranch Resource Center.

The Idaho Farm and Ranch Resource Center offers a library of links to other agriculture sites on the World Wide Web. The Center also offers self-help EZGuides to assist in identifying programs or regulations that may apply to farm or ranch operations. These guides are being used to create the OnePlan Process, an interactive, online program for assessing resource concerns and creating a single, voluntary multiprogram plan that satisfies all agencies. Ultimately, the creators of the OnePlan hope to reduce the conflicts, duplications, and inefficiencies among the various agency regulations and services.

Idaho Rural Partnership

The Idaho Rural Partnership is a public organization located in Boise. It was created in 1991 by Executive Orders from both the President of the United States and the Governor of Idaho. Idaho Rural Partnership is a partnership between public, private, and government agencies that identifies, discusses, and takes action on issues of

importance to rural Idaho. Idaho Rural Partnership maintains a referral center to help match rural problems with the appropriate resources, and can undertake projects that meet its mission and goals.

Little Salmon Watershed Alliance, Inc.

The Little Salmon Watershed Alliance, Inc. was an Idaho nonprofit corporation, organized in 1997, and comprised of residents of the Little Salmon River basin. On June 26, 1998, the Alliance formally asked the IDWR to undertake a survey of the water and related resources in the watershed. As a result, the Idaho Water Resource Board decided to complete a Part B *Comprehensive State Water Plan* for the Little Salmon River basin. The Little Salmon Watershed Alliance, Inc. is no longer active according to the Idaho Secretary of State.

Local Government Assistance Network (http://lgean.org)

The Local Government Assistance Network website has been developed and is maintained by The International City/County Management Association, with the assistance of a number of public and private organizations. The site is intended to provide access to current information about environmental management, planning, and regulatory information.

GLOSSARY

Acre-foot: The volume of water required to cover one acre of land (43,560 square feet) to a depth of one foot; equivalent to 325,80 gallons.

Adjudicated water right: A water right for which the defining parameters required by law have been determined and decreed by a court of law.

Alluvium: Soil material, such as sand, silt, or clay that has been deposited on land surface by water.

Alteration: A term usually used in reference to *Idaho Code Title 42, Chapter 38*, the Stream Protection Act. An alteration is any activity that obstructs, diminishes, destroys, alters, modifies, relocates, or changes the natural existing shape of the stream channel within or below the mean high water mark. It includes removal of material from the stream channel and emplacement of material or structures in or across the stream channel where the material or structure has the potential to affect flow in the channel as determined by the director of the Idaho Department of Water Resources.

Anadromous: Fish species, such as salmon, that are born in fresh water, spend most of their adult life in the ocean, and return to fresh water to reproduce.

Appropriate or appropriation: To obtain the right to divert and use the public waters of the state of Idaho.

Beneficial use: The uses of water that can legally be protected by water rights.

Best management practices: State-of-the-art land and water use practices that are efficient, effective, practical, economical, and environmentally sound. The goal of best management practices is to minimize soil erosion.

Board: Idaho Water Resource Board.

Bull trout: The common name for *Salvelinus confluentus*, a char native to the Pacific Northwest and Canada.

Colluvium: Soil material, rock fragments, or both, moved by creep, slide, or local wash and deposited the base of steep slopes.

Commercial business: Non-manufacturing business.

Comprehensive State Water Plan: A plan adopted by the Idaho Water Resource Board and approved by the legislature pursuant to Section 42-1734A of the Idaho Code.

Confluence: The point at which one or more bodies of water flows into another.

Conservation: Actions taken to increase the efficiency of energy or water use, production, or distribution.

Consumptive use: The portion of the volume of water diverted under a water right that is transpired by vegetation, evaporated from soils, converted to non-recoverable water vapor, incorporated into products, or otherwise does not return to the waters of the state. Consumptive use does not include any water that falls as precipitation directly on the place of use unless it is captured, controlled, and used under an appurtenant water right (*Idaho Code § 42-202B(1)*).

Cubic feet per second: A unit of measure for the rate of discharge of water. One cubic foot per second is the rate of flow of one square foot of water that is flowing at mean velocity of one foot per second. It is equal to 448.8 gallons per minute, or 1.98 acre-foot per day.

Decree: A written decision by a court of law. Water right disputes are sometimes taken to court for resolution – the resultant description of the water rights in question are known as "decreed" water rights.

Domestic water use: The use of water as described in *Idaho Code § 42-111*. Domestic use can be for home, livestock, and for any other purposes in connection with a home, including irrigation of up to one-half acre of land. The total use cannot exceed 13,000 gallons per day. Domestic use can also be for other small uses such as commercial or business establishments, if the total diversion rate does not exceed 0.04 cubic feet per second and a diversion volume of 2,500 gallons per day.

Ecosystem: A complex system composed of a community of flora and fauna, taking into account the chemical and physical environment with which the system is interrelated.

Endangered species: Any species or subspecies that is in danger of extinction throughout all or a significant portion of its range. The term is usually used in relation to the Endangered Species Act (see below).

Endangered Species Act: A federal statute that invokes protection for the species listed under the law (16 U.S.C. §1536). Animals and plants are designated as "endangered" or "threatened" by either the U.S. Fish and Wildlife Service or the U.S. National Marine Fisheries Service. There are other designations for "experimental populations." Listed populations receive the highest protection possible, with penalties for taking, harming, or injuring an individual or its environment. Special procedures apply to government projects in areas where listed species may be present.

Evapotranspiration: The loss of moisture by evaporation from land and water surfaces and transpiration from plants.

Fishery enhancement structure: A structure deliberately placed within the waterway to improve fish habitat.

Floodplain: Land that may be submerged by floodwaters. The floodplain built up by stream deposition. The 100-year floodplain identifies the land in the floodplain subject to a one percent or greater chance of flooding in any given year.

Friable: Easily crumbled or pulverized.

Geothermal: The natural heat energy of the earth. In this plan, the term refers to water that is heated underground, and retains at least some of that heat at land surface or at the bottom of a well.

Ground water: All water under the surface of the ground whatever may be the geological structure in which it is standing or moving (*Idaho Code § 42-230*).

Habitat: The place or type of natural site where a plant or animal normally lives and grows.

Head: The elevation difference between surfaces of water.

High water mark: The line that separates aquatic vegetation from terrestrial vegetation. The line which the water impresses on the soil by covering it for sufficient periods of time to deprive the soil of its terrestrial vegetation and destroy its value for commonly accepted agricultural purposes (*Idaho Code § 42-3802*).

Hydropower project: Any development which uses a flow of water as a source of electrical or mechanical power, or which regulates the flow of water for the purpose of generating electrical or mechanical power. A hydropower project development includes all powerhouses, dams, water conduits, transmission lines, water impoundments, roads, and other appurtenant works and structures (*Idaho Code § 42-1731(5)*).

Idaho Batholith: The body of intrusive igneous (volcanic) rock in central Idaho about 250 miles long and a maximum of 100 miles wide. It is approximately 100 million years old.

Idaho Code: Idaho laws, as written by the state legislature and approved by the governor.

Idaho Water Resource Board: A constitutional water agency within the Idaho Department of Water Resources consisting of eight appointed members pursuant to the provisions of Article 15, Section 7 of the Idaho Constitution (*Idaho Code § 42-1732*).

Industrial business: A business that manufactures products.

Irrigation: The watering of cropland. Residential lawn and garden uses are not considered "irrigation" in the context of water rights issued by the state of Idaho.

Kilowatt: A unit of electric power equal to 1,000 watts, or about 0.746 horsepower.

Listed Species: Used in reference to animals and plants listed under the Endangered Species Act.

Mean high water mark: A water level corresponding to the natural or ordinary high water mark. The line which the water impresses on the soil by covering it for sufficient periods of time to deprive the soil of its terrestrial vegetation and destroy its value for commonly accepted agricultural purposes (*Idaho Code § 42-3802(h)*).

Megawatt: A unit of electrical power equal to 1,000,000 watts, or about 746 horsepower.

Minimum stream flow: A water right that retains water in the stream or river for wildlife habitat, recreation, navigation, and aesthetic beauty. Idaho Code defines this term as the minimum flow of water in cubic feet per second of time, or minimum lake level in feet above mean sea level, required to protect fish and wildlife habitat, aquatic life, recreation, scenic beauty, navigation, transportation, or water quality of a waterway in the public interest (*Idaho Code § 42-1502(f)*).

Municipal water use: Water for residential, commercial, or industrial use: for irrigation of parks and open spaces: or for related purposes. Municipal water use does not include use of water from geothermal sources for heating, which a municipal provider is entitled or obliged to supply to all those users within a service area, including those located outside the boundaries of a municipality served by a municipal provider (*Idaho Code § 42-202B(3)*).

Natural River: A designation made by the Idaho Water Resource Board. It defines a waterway which possesses outstanding fish and wildlife, recreation, geologic, or aesthetic values; which is free of substantial existing human-made impoundments, dams, or other structures; and of which the riparian areas are largely undeveloped although accessible in places by trails and roads (*Idaho Code § 42-1731(7)*).

Public interest (local): In regards to water appropriations, this encompasses the affairs of the people of the area directly affected by the proposed use (*Idaho Code § 42-203A(5)*).

Recreational dredge mining: Operation of vacuum or suction dredges and power sluice equipment in which the nozzle is 5 inches or less, and the equipment rated at 15 horsepower or less, and capable of moving 2 cubic yards per hour or less.

Recreational River: A designation made by the Idaho Water Resource Board. It defines a waterway which possesses outstanding fish and wildlife, recreation, geologic or aesthetic values, and which might include some human-made development within the waterway or within the riparian area of the waterway (*Idaho Code § 42-1731(9)*).

Rental pool: A market for exchange of stored water operated by a local committee. The committee is appointed by the Idaho Water Resource Board.

Riparian area: The area associated with aquatic (stream, river, or lake) habitats. The term is defined in Idaho Code for purposes associated with the Idaho Department of Water Resources and the Idaho Water Resource Board, as the area within one hundred (100) feet of the mean high water mark of a water way (*Idaho Code § 42-1731(10)*).

River basin: The total drainage or catchment area of a stream (i.e., the watershed).

River corridor: The area of varying width along both sides of a river or stream.

River reach: A continuous section of a river from one point to another; a stretch of the river.

Scrub vegetation: Vegetation dominated by shrubs, typically found at elevations below montane (mountain) vegetation.

State agency: Any board, commission, department, or executive agency of the state of Idaho.

Stream bed: A natural water course of perceptible extent with a definite bed and banks, which confines and conducts the water of a waterway which lies below and between the ordinary high water marks on either side of that waterway (*Idaho Code § 42-1731(12)*).

Threatened species: A species of plant or animal that is likely to become endangered within the foreseeable future throughout all or a significant portion of its range, as determined by the U.S. Fish and Wildlife Service or the National Marine Fisheries Service.

Total Maximum Daily Load (TMDL): The sum of all pollutants in a waterway. Pollutant levels established through TMDL standards must be at or below the level that the water body can assimilate without violating the state's water quality standards.

Unappropriated water: Water that is not subject to diversion and use under existing water rights (*Idaho Code § 42-1502(g)*).

Water right: The legal right, however acquired, to the use of water for beneficial purposes (*Idaho Code § 42-230(e)*).

Water right application: An application filed by any person, association, or corporation with the Idaho Department of Water Resources, intending to acquire the right to the beneficial use of the waters of any natural streams, springs, or seepage waters, lakes, or ground water, or other public waters of the state of Idaho (*Idaho Code § 42-202*).

Waterway: A river, stream, creek, lake, or spring, or a portion thereof.

Water table: The highest part of the soil or underlying rock material that is wholly saturated with water. On some places an upper, or perched, water table may be separated from a lower one by a dry zone.

Wetlands: Transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water.

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APPENDIX A

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APPENDIX B

Preparers and Contributors

A special thanks to the citizens advisory group, who attended meetings, reviewed information, offered written and oral comments, and provided the Idaho Water Resource Board and their staff with invaluable information and feedback. Citizens advisory group participants are listed in Appendix A.

Preparation of this document and related materials relied upon the efforts from numerous IDWR personnel, Water Resource Board members, citizens advisory group members, outside agencies and organizations, and numerous individuals.

Idaho Water Resources Board
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Idaho Department of Water Resources
Karl Dreher, Director

Many private, non-profit, and governmental organizations also assisted in the development of this Comprehensive State Water Plan. The Water Resource Board and IDWR staff greatly appreciated the valuable contributions made by numerous individuals from the following organizations:

Adams County

Boise Cascade Corporation

Idaho County

Idaho Bureau of Disaster Services

Idaho Department of Environmental Quality

Idaho Department of Fish and Game

Idaho Farm Bureau Federation

Idaho Rivers United

National Marine Fisheries Service

Nez Perce Tribe

Trout Unlimited

U.S. Army Corps of Engineers

U.S. Bureau of Land Management – Salmon Clearwater District

U.S. Department of Agriculture – Natural Resources Conservation Service

U.S. Forest Service – Nez Perce National Forest

U.S. Forest Service – Payette National Forest

APPENDIX C

List of Agencies and Addresses

Agency/Web Site		Telephone Number
Columbia River Inter-Tribal Fish Commission http://www.critfc.org/	Main Office	(503) 238-0667
Idaho Department of Agriculture http://www.agri.state.id.us/	Main Office	(208) 332-8500
Idaho Soil Conservation Commission http://www.scc.state.id.us/	Main Office	(208) 332-8650
Idaho Department of Commerce http://www.idoc.state.id.us/	Main Office	(208) 334-2470
Idaho Department of Environmental Quality http://www2.state.id.us/deq/index.htm	Main Office Boise Regional (Adams County) Lewiston Regional (Idaho County)	(208) 373-0502 (208) 373-0550 (208) 799-4370
Idaho Department of Fish and Game http://www2.state.id.us/fishgame/fishgame.html	Main Office McCall Regional Office	(208) 334-5159 (208) 634-8137
Idaho Department of Water Resources http://www.idwr.state.id.us/	Main Office Western Region	(208) 327-7900 (208) 334-2190
Idaho Bureau of Disaster Services http://www2.state.id.us/bds/bds.html	Main Office North Central Field Area Officer	(208) 334-3460 (800) 632-8000 (208) 799-5127
Idaho OnePlan http://www.oneplan.state.id.us/Xdefault.htm		

Agency/Web Site		Telephone Number
Idaho Rural Partnership http://www.labor.state.id.us/irp/	Main Office	(208) 334-6113
Idaho Transportation Department http://www2.state.id.us/itd/itdhmpg.htm	Main Office District 2 (Lewiston) District 3 (Boise)	(208) 334-8000 (208) 799-4200 (208) 334-8301
Idaho Water Resource Board http://www.idwr.state.id.us/planpol/watplan/planning/iwrb_home.htm	Main Office	(208) 327-7900
Interior Columbia Basin Ecosystem Management Project http://www.icbemp.gov/	Main Office	(208) 334-1770
Local Government Environmental Assistance Network (LGEAN) http://lgean.org/		
National Marine Fisheries Service http://www.nmfs.noaa.gov/	Boise Office	(208) 378-5696
U.S. Bureau of Land Management http://www.id.blm.gov/	Cottonwood Field Office	(208) 962-3275
U.S. Corps of Engineers http://www.nww.usace.army.mil/	Walla Walla District Office	(509) 527-7700
U.S. Fish and Wildlife Service http://endangered.fws.gov/	Boise Field Office	(208) 378-5243
U.S. Forest Service		
Nez Perce National Forest http://www.fs.fed.us/r1/nezperce/		(208) 983-1950
Payette National Forest, New Meadows Ranger District http://www.fs.fed.us/r4/payette/main.html		(208) 347-0300
Wallowa-Whitman National Forest, Hells Canyon National Recreation Area http://www.fs.fed.us/r6/w-w/hcnra.htm		(541) 426-4978

APPENDIX D

Water Right Decrees in the Little Salmon River Basin

IDWR Decree No.	Source	Parties	Date	IDWR Water Right Nos.	Notes
78A	Big Creek and Tributaries	Schieler vs. Wyman et al.	06/11/1928	78-0125 through -0136	Canal P/D's; 5/8"/acre, total acres, measuring devices
78B	Little Salmon River Spring Creek Lick Creek	Hawthorn vs. Ward and Moyer	01/29/1930	78-0137 through –0141	1"/acre; flow rate and ditch requirements, measuring devices
78B-1	Little Salmon River	Meyer vs. Berry et al.	01/09/1931	78-0142 through -0145	1"/acre < 7/1, 5/8"/acre > 7/1;
78B-2	Little Salmon River and Spring Creek	Dreyer vs. Mitchell et al.	01/25/1937	78-0146 through -0154, 78-0271	7/8"/acre; measuring devices
78C	Goose Creek	Clay et al. vs. Clark et al.	07/13/1921 09/25/1922	78-0155 through -0254; 78-0257 through -0259	8/10"/acre, with exceptions; canal P/Ds; North and South Prong, Supplemental Decree
78D	Tamarack Creek	Dickey vs. Hardin	12/31/1931	78-0255 and 78-0256	Equal right to water when creek flow > .40 cfs
78E	Hat Creek	Aubin vs. Howard et al.	03/22/1929	78-0260 through -0262	Rotation requirements, rights to excess flows
78F	Three Mile Creek	Osborn vs. Smith et al.	11/29/1919	78-0263 through -0266; -0257?	2nd copy of decree in has -0257 – unclear
78G	Martin Creek	Circle C Ranch vs. Anderson	10/11/1933	78-0267 through -0270	Cfs dependent-creek flow, future reservoir discussed

APPENDIX E

Outstanding Scenic Waterways (Class A Waterways)

Little Salmon River:
North of New Meadows valley to upstream of Hazard Creek
Halley Creek
Goose Creek Watershed
- Goose Creek – Twin Lakes to Below Goose Lake
- Unnamed west side tributary to Goose Lake
- Brundage Creek: headwaters to Brundage Reservoir
- Unnamed eastside tributary to Brundage Reservoir-stream traversing Hartley Meadows

Hazard Creek Watershed
- Hazard Creek: headwaters to Clayburn Creek, including Upper Hazard and Hazard lakes
- Big Hazard Lake Creek: headwaters to mouth
- Vance Creek: headwaters
- Clayburn Creek: headwaters
- Lake Serene Creek: Lake Serene to mouth
- Hyatt Creek: headwaters
- Grassy Mountain Lakes
- Hidden Lake
- Bascum Canyon: headwaters
- Unnamed tributary downstream of Jack Creek: headwaters to mouth
- Hard Creek: headwaters to Brown Creek, including Hard Creek Lake
- East Fork Corral Creek: headwaters to confluence with Duck Lake outlet
- Big Dave Creek: headwaters to mouth
- Warm Springs Creek: headwaters
- Black Lake Creek: headwaters to mouth
- Jacks Creek: headwaters to mouth
- Guard Creek: headwaters to mouth
- Frog Lake
- Duck Lake
- Corral Lake

Boulder Creek Watershed
- Star Creek: headwaters
- Cold Springs Creek: headwaters
- Squirrel Creek
- Bull Horn Creek: headwaters
- Pollock Creek: headwaters
- Pony Creek: headwaters and tributary

Elk Creek Watershed
- Elk Creek: headwaters, including Elk Lake and unnamed perennial headwater tributaries
- Little Elk Creek: headwaters to Buck Lake Creek
- Buck Lake Creek: headwaters to mouth

Outstanding Scenic Waterways (Class A Waterways) - Continued

Rapid River Watershed

Rapid River: headwaters (including perennial headwater tributaries) to fish hatchery

Twin Lakes Creek: headwaters to mouth
North Star Creek: headwaters to mouth
Cabin Creek: headwaters to mouth
Lonesome Creek: headwaters to mouth
Trail Creek: headwaters to mouth
Louise Creek: headwaters to mouth
Hull Creek: headwaters to mouth
Cougar Creek: headwaters and lower end
Cora Gulch: headwaters to mouth
Sinking Creek: headwaters to mouth
Cold Springs Creek: headwaters to mouth
Frying Pan Creek: headwaters to mouth
Paradise Creek: headwaters to mouth
Louse Creek: headwaters to mouth
Copper Creek: headwaters to mouth
Wyant Creek: lower end
Rattlesnake Creek: lower end
Dutch Oven Creek: lower end

West Fork Rapid River: Idaho County line to mouth

Castle Creek: headwaters to mouth and perennial tributary

Lake Fork and all perennial tributaries, including

Granite Fork: headwaters to mouth
Rose Creek: headwaters to mouth
Rock Creek: headwaters to mouth
Echols Creek: headwaters to mouth
Pactolian Gulch: headwaters to mouth

APPENDIX F

Amended Moratorium Order (for Salmon and Clearwater River Basins)

BEFORE THE DEPARMENT OF WATER RESOURCES

OF THE

STATE OF IDAHO

IN THE MATTER OF APPLICATIONS FOR PERMITS FOR THE DIVERSION AND USE OF SURFACE WATER WITHIN THE SALMON AND CLEARWATER RIVER BASINS IN IDAHO	AMENDED MORATORIUM ORDER

The Director of the Department of water Resources, having responsibility for the administration of the appropriation of the water of the state of Idaho and the protection of rights to the use of water within the state, the protection of the public interest in the waters of the state, and the conservation of the water resources of the state, enters the following Findings of Fact, Conclusions of Law and Order:

FINDINGS OF FACT

1. On May 15, 1992, the Director of the department issued a moratorium against the approval of certain new applications within the Salmon and Clearwater River basins. Conditions have now changed so that amendments to the moratorium order are now appropriate.

2. The Salmon and Clearwater River basins are free-flowing streams of the state, generally without obstructions from dams and impoundments and serve as habitat for anadromous salmon and steelhead fish.

3. The National Marine Fisheries Service (NMFS) has listed the Snake River sockeye, spring/summer and fall chinook salmon under provisions of the Endangered Species Act (ESA). That action has resulted in the need to take measures to facilitate the recovery of the salmon. Such measures include protection of the habitat conditions as well as modification of the operation of dams which imperil fish passage thorough the lower Snake and Columbia Rivers.

ORDER - Pg 1

4. Diversions of water from the Salmon and Clearwater Rivers and their tributaries have the potential of impacting the salmon and steelhead on their migration to the ocean and return to spawning areas in the river basins.

5. Actions are necessary in the public interest to control the appropriation of water from the Salmon and Clearwater Rivers and their tributaries to the extent practicable to prevent loss of anadromous fish. Such actions, however, will only be meaningful over the long-term if other interests in the region make meaningful efforts to remove or modify the down-river obstructions to fish passage caused by dams.

CONCLUSIONS OF LAW

1. The Director of the Department of Water Resources is authorized under the provisions of Section 42-1805(7), Idaho Code, as follows:

> After notice, to suspend the issuance or further action on permits or applications as necessary to protect existing vested water rights or to ensure compliance with the provisions of chapter 2, title 42, Idaho Code, or to prevent violation of the minimum flow provisions of the state water plan.

2. The granting of new water right permits within the Salmon and Clearwater River basins could impact salmon and steelhead, which action would be contrary to the local public interest in such fish resources and would be inconsistent with the conservation of water resources within the state of Idaho which the Director is charged to protect under the provisions of Section 42-203A(5), Idaho Code.

ORDER

IT, IS, THEREFORE HEREBY ORDERED that the prior moratorium order of the department issued on May 15, 1992, is superceded by this Amended Moratorium Order.

IT IS FURTHER HEREBY ORDERED that a moratorium is established on the processing of applications for permits to appropriate surface water resources within the Salmon and Clearwater River

basins subject to the following conditions:

1. This moratorium shall be in effect on and after its entry and shall remain in effect until withdrawn or modified by order of the Director. A future decision to continue or rescind the moratorium will consider all efforts being made within the region toward the recovery of salmon.

2. This moratorium applies to all applications, previously filed, or yet to be filed seeking permits to appropriate surface water within the drainage basins of the Salmon and Clearwater Rivers upstream from their mouths.

3. This permit does not affect the authorization to continue development of any existing approved application (permit).

4. This moratorium does not apply to any application for domestic purposes as such term is defined in Section 42-111, Idaho Code, nor to any application to use ground water.

5. The moratorium does not apply to any application proposing a non-consumptive use of water.

6. This moratorium does not apply to applications for uses existing prior to the start of the Snake River Basin Adjudication in November 1987.

7. This moratorium does not prevent the Director from reviewing on a case by case basis an application which otherwise would not be approved under terms of this moratorium, if:

a) Protection and furtherance of the public interest as determined by the Director requires consideration and approval of the application irrespective of the moratorium, or

b) The Director determines that the use of the water pursuant to the application will have no effect on the migration of anadromous fish due to:

i) the location of use

ii) mitigation provided by the applicant to offset reduction in flow for fish migration, or

iii) insignificant consumption of water.

Dated this 30TH day of APRIL, 1993.

R. KEITH HIGGINSON, Director

End

APPENDIX G

Estimated Values of Fishing, Livestock, Crops, Mining, and Timber Industries to the Little Salmon River Basin Economy

During formation of the Little Salmon River Basin Comprehensive State Water Plan, efforts to represent economic conditions in the basin were challenged by a lack of data. Consequently, information on specific activities, and coincidentally, those activities thought of as most important by some basin residents, could not be reported without further investigation and research. On the other hand, one activity that did have basin-specific peer-reviewed data was related to the salmon and steelhead fisheries. One important message to learn from the data is that the basin's economy is diversifying and growing. In the long run, growth of tourism and recreation sector jobs adds stability to the local economy.

Because the basin straddles portions of two rural counties, and is geographically isolated from other portions of Idaho, basin-specific information regarding current economic conditions is not readily available from public sources (state or federal). Most public information is on the county level (state or federal). Except for special cases where research studies have investigated individual sectors of the basin's economy (such as for salmon and steelhead fishing activities), information about traditional industries such as livestock, crops, mining, and timber was not available. Previous basin plans have included measures of economic activity by sector, so an attempt was made to quantify traditional activity for the Little Salmon River basin by using information collected specifically for this purpose.

The methods used for estimating economic values for fishing, livestock, crops, mining, and timber industries for the Little Salmon River basin are presented in this appendix along with their estimated values to the basin. Similar to published state and federal data, the values computed are all market values. A problem with the data available for individual sectors was its lack of uniformity. Hence, sectors were calculated using different methods. In addition, data gaps may have led to underestimates or overestimates of some sectors. For both these reasons, the values are not strictly comparable across sectors. Instead, they may be interpreted as characterizing the sectors in very general terms. Table G-1 summarizes the estimated annual values for each sector.

Table G-1. Summary of annual economic values for fishing, livestock, crops, mining, and timber sectors to the Little Salmon River basin area. Values given are estimates and should be used only for general comparisons.

Economic Activity	Estimated Annual Value (Millions of Dollars)
Timber - potential value	3.6 to 4.8
Timber - actual sales	2.4 to 3.2
Livestock	1.6
Fishing	0.8 - 1.1*
Crops	0.65
Mining	0.6

* Reading 1996, 1999

Fishing

Studies have been conducted that directly or indirectly measure how much value is created by steelhead and salmon fishing in and surrounding the Little Salmon River basin. *All values presented below are given in 2001 dollars for purposes of comparison.* The studies can be organized into two groups, addressing somewhat different questions:

- The first group of studies, called *economic impact studies,* addresses the value of a fishing site to the participator and to the society as a whole. Three different studies were found that address the question of how much impact fishing activities have on the local economy. They measure the gross effect of a change in economic activity in an area, ignoring any compensating changes that may occur outside the region of interest.
- The second group of studies, called *economic valuation studies*, addresses the values not included in economic impact studies. Measuring values to the participator and society requires determining the "net willingness to pay" of a population for a site.[1] Values to participants and to society are not fully measured by market activity. For example, there is no daily fee for the use of streams for fishing or boating on the Little Salmon River. Hence, measuring "net willingness to pay" requires using non-market valuation techniques.[2]

In 1999, Reading conducted an economic impact analysis of a restored salmon fishery in Idaho, focusing on regional communities from Lewiston to Stanley. Based on a survey of 637 anglers, who participated in a limited chinook season in 1997, he estimated a total of 8,693 fishing trips and 17,246 fishing days on the Little Salmon River in a season. A total of 14,714 trips and 29,190 days were estimated to occur in all regional river reaches included in the study. He further estimated an average of $147 per day expended on trips to the Little Salmon River basin, $44.70 of which was actually expended within the basin. This implies that $2.5 million were expended directly on fishing trips to the Little Salmon River, $0.8 million of which was expended within the basin. The full dollar impact of the spending within the Little Salmon River basin was not reported. However, the full impact on all regional river communities was $8.7 million, and resulted in 262 fishing-recreation related jobs. The full impact includes indirect as well as direct effects of the spending. Indirect effects are "ripple" effects on all sectors of the local economies. Because the 1997 chinook season was short, the author felt that his study probably represented a low estimate of what a full season or more restored fishery could bring.

An economic impact analysis of steelhead fishing in Idaho in 1996 by Reading (1996) estimated the effects of the 1992-1993 steelhead season, focusing on the most impacted regional communities. An estimated 4,045 days were spent fishing in the Little Salmon River in a very short season. Direct expenditures by those fishing in the Little Salmon River are estimated at $208 per day, 25 percent of which is assumed to have been expended locally. Overall impacts (including indirect effects) are not available in the river but are

[1] In general, these economic values are defined as the amount in excess of their actual expenditures that an average consumer is willing to pay to recreate at a site. This is usually referred to as their "net willingness to pay". Net willingness to pay is the standard measure of value in Benefit Cost analysis performed by the Army Corp of Engineers, the Bureau of Reclamation and the Soil Conservation Service (U.S. Water Resources Council, 1979, 1983).

[2] Techniques such as travel cost method and contingent valuation were used to measure non-market values. U.S. Resources Council (U.S. Water Resources Council, 1979, 1983) and others recommend the travel cost method and the contingent valuation method as conceptually correct methods for empirically measuring net willingness to pay.

measured on a city basis. The direct impact of fishing on the Little Salmon River and on nearby reaches of the Salmon River to the city of Riggins is estimated at $1.1 million, creating 25 jobs. The full impact of the activity to Riggins is $2.0 million and the total increase in employment is 44 jobs. In comparison, employment in logging is 38 jobs. At first glance, it appears that jobs created from steelhead fishing are roughly comparable to the existing logging employment, and could be a substitute for logging. However, one steelhead job may not equal one logging job on a dollar for dollar basis, as explained on the next page:

- A study of neighboring Valley County by Guaderama et al. (2000) addresses directly the trade off between timber and recreation jobs. It analyzes the economic impact of a decline in timber and addresses the question of how many recreation activity days are required to compensate for the loss of timber jobs. The hypothetical loss of a sawmill results in a loss of 225 timber jobs. To compensate for this in terms of local expenditures, a doubling of recreational activity is required resulting in an increase of 90 percent in direct expenditures and a total of 927 new jobs. Hence, four recreation jobs are worth one sawmill job in terms of economic impact on a community.

While not strictly comparable, the results of the two studies appear to suggest different outcomes. Differences can partly be attributed to differences in the type of recreation experiences found in Valley and Idaho Counties. To compensate for a decrease in logging jobs, a large increase in recreational visitors would be required in Valley County. This is because of low levels of expenditures per visitor, caused partly by the large majority of day-trippers, and partly because some of the activities are low cost. For example, the average trip length for fishing in Valley County is less than a day and costs only $13.60 per day. Contrast this with the Reading study, in which the average trip length is greater than a day, and the expenditures are $147 per day for salmon fishing. Finally, the large increase in direct expenditures required to compensate for the loss of a mill may be explained by the large proportion of *those* expenditures being made outside Valley County. A larger proportion of direct expenditures made for fishing in the Little Salmon Basin is made within the basin.

There are three types of economic valuation studies where values are estimated for participants and society. These values represent the different ways that people find fishing beneficial. Some enjoy the fishing experience. This is a user value. Others, who may never have the experience, may find the very existence of the fishing resource desirable. This benefit is called an existence value. Finally, people may wish to preserve the option to use the resource so that they may use it in the future. These are called option values. These various values are additive, that is, they may be added together to determine the total economic value.

One study estimated the user value of a day of steelhead fishing on the Little Salmon River in 1985 (Donnelly et al. 1985). According to this study, the average steelhead angler was prepared to pay an additional $58.60 per day to continue to have the sites available. Taking Reading's estimate of number of fishing days in a season (4,045 days), and assuming similar fishing conditions today as in 1985, we estimate total user values for a season of steelhead fishing at these sites of $0.2 million.

Similarly, a different study estimated per angler user values of salmon and steelhead fish runs in 1990 in the Pacific Northwest (Olson et al. 1990). According to this study, the average salmon angler was prepared to pay $65.66 per day and the average steelhead angler $61.63 per day. Taking Reading's estimate of the number of fishing days in a season for salmon (17,246 person days), and 4,046 person days for steelhead, and assuming similar fishing conditions

today as in 1990, we estimate a total economic user value for a season at these sites of $1.34 million.

We can contrast the Olson and Donnelly studies with one by Sorg et al. (1985) who estimated per angler user values of $88.85 for current (1985) conditions of all cold-water fishing at designated sites in Idaho, including the Little Salmon River. Total user value of the Little Salmon River fishery, using Reading's combined estimates of fishing days for salmon and steelhead (21,291), is $1.79 million for a season.

Finally the study by Olson et al. estimated existence and option values for a doubling of salmon and steelhead runs in 1990 in the Pacific Northwest. According to Olson, 35 percent of regional households were not participants but expressed existence values of $22.69 per household per year. Also, nine percent of regional households expressed a desire for the option of fishing sometime in the future with an option value of $9.57 per household per year. Calculating values for Idaho households only would yield total annual existence values of $4.29 million and total annual option values of $0.4 million, for a total of $4.69 million.

While user existence and option values are additive in theory, the studies producing these estimates have different goals. Hence, it would not be sensible to add these user and non-user values together. Instead, they shed light on the order of magnitude of the values involved when we include the values of non-users.

APPENDIX G – Continued.

Livestock Values for Little Salmon River Basin

QUESTION: What is the annual value of the livestock industry to the Little Salmon River basin economy?

BACKGROUND and ASSUMPTIONS: Numerous differences in the management and marketing of cattle in the basin required separating benefits generated and credited inside the basin from benefits generated inside but credited outside of the basin.[1] Cattle were separated into four groups for measurement of benefits (i.e., yearlings, cow-calf seasonal upper basin area, cow-calf seasonal lower basin area, and cow-calf year-around). Further description of methodology and assumptions is given below for each livestock group. Calculations are shown in Table G-2 at the end of this section.

Yearlings and most cow-calves are owned by producers residing outside the basin. Hence, the benefits accruing to the basin from yearlings and most cow-calves are primarily revenues accruing to landlords from grazing. Revenues from grazing filters through to the basin economy. [2] Revenues also accrue to the producer residing inside the basin with year-around cow-calf operations. To reflect these different benefits, two methods were used to estimate cattle values; the pasture lease rates for yearlings and seasonal cow-calf grazing (reflecting the costs to the producer associated with producing livestock), and gross output for year-around cow-calf operations (reflecting the revenues to the producer associated with livestock sales).[3]

Because state and federal grazing fees are substantially lower than fees on private lands, use of state and federal grazing fees as indicators of local pasture rental markets may under-represent the overall value of grazing to the basin. In some of the scenarios presented below, private pasture lease rates were used to calculate overall livestock values for the basin (and not state or federal fees).

CATTLE

A. Upper Basin Area (New Meadows)

Yearlings (seasonal)[4] - This portion of the Little Salmon River basin is used as high-quality irrigated pasture and is rented to cattle owners on a daily gain basis. Yearlings are shipped out of basin at end of season.

* Assume about 9,000 head of yearlings feed for 100 days and gain 2.0 lbs. per day.
* Assume that value of gain is $0.26 per lb.

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[1] Benefits generated but credited outside the basin represent a "leakage," and are therefore of no direct monetary value to the local economy.

[2] Profits from operations based inside the basin accrue to the local basin, but are not measured here.

[3] The gross output per cow figure comes from University of Idaho cow-calf enterprise budgets and can be viewed as an average figure across several budgets. Sources: Neil Rimby, Univ. of Idaho Extension Range Economist; Univ. of Idaho, 1998 Idaho Livestock Costs and Returns Estimate EBB-CC2-98 (Cow-Calf--200 Cow), and EBB-CC4-98 (Cow-Calf--500 Cow). IDWR selected a median gross output value (an average of the 200 and 500 cow budgets) for final calculations.

[4] Yearling numbers, average daily gain, and value of gain estimated by local references. Sources: Dean Dryden-New Meadows/Pollock Area Rancher, and Tom Yankey, NRCS-District Conservationist, Weiser. Average-to-high values were used by IDWR.

(Upper Basin Area - continued)

Cow-calf (seasonal)[1] - Many of the cow-calf pairs that spend early to late summers on Boise Cascade land and USFS grazing allotments move onto private pastures late summer and fall, and are eventually shipped out of the basin. A smaller number remain in the basin year-around, but are accounted for in the Lower Basin Area (see B.).

* Assume about 2,650 pair use summer pasture for three months at $16 per month/pair, and 2,000 pair use fall pasture/crop aftermath for two months at $12 per month/pair.
* Cows and calves are shipped out of the basin. Calf crop revenues do not contribute to the local economy for this group. See Cow-calf (year-around), below.

B. Lower Basin Area (Pollock/Riggins)[1]

Cow-calf (seasonal) - This portion of the basin is rangeland, with lower productivity but longer grazing seasons. Most of the livestock operations are cow-calf.

* Assume about 2,000 pair use summer pasture for three months at $16 per month/pair, and 2,000 pair use fall pasture for four months at $12 per month/pair.

Cow-calf (year-around) - A portion of the cow-calf population remains in the basin after summer grazing season ends. These over wintering livestock are accounted for on an annual, gross revenue per cow basis. Calves sold contribute to the local economy and are factored into the gross revenue per cow.

* Assume about 1,350 cows remain in the basin year-around.[2] These cow numbers have been subtracted from the number of seasonal cow-calf units described above in the upper basin area (to avoid double counting).
* Assume gross revenue per cow (or gross output) per year, is $371. This includes revenue from calves sold.[3]

HORSES

Basin Wide - Cow-calf values for New Meadows seasonal use were the basis used to estimate horse grazing values.[4] About 200 hd. have grazing permits:[1]

* Assume about 200 head use summer pasture for three months at $20 per month, and 200 head use fall pasture/crop aftermath for two months at $16 per month.

[1] Sources: Refer to Table G-2.

[2] Sources: Dean Dryden-New Meadows/Pollock Area Rancher, and Tom Yankey, NRCS-District Conservationist, Weiser.

[3] Source: Neil Rimby, Univ. of Idaho Extension Range Economist.

[4] Source: Ken Crane-Idaho Dept. of Agriculture, Range Livestock Specialist.

SHEEP

Basin Wide - Using sheep numbers provided in Table 4 (Little Salmon River Basin CSWP), values were calculated based on private land grazing lease rates. The only major private sheep grazing occurs on Boise Cascade land, for which values are already accounted for in the cattle pasture estimates reported above.

* There are 8,000 sheep with lambs, pastured 6 months.
* There are 4,000 sheep with lambs, pastured 3.5 months.
* There are 1,070 sheep with lambs, pastured 1 month.
* Private land grazing fee per sheep head-month = $3.20 [1]

RESULTS: The livestock industry contributes about $1.4 million to the Little Salmon River basin economy annually.

[1] Because state and federal grazing fees are substantially lower than fees on private lands, use of state and federal grazing fees as indicators of local pasture rental markets may under-represent the overall value of grazing to the basin. In some of the scenarios presented below, private pasture lease rates were used to calculate overall livestock values for the basin (and not state or federal fees).

Table G-2. Values used for determining annual economic benefit of livestock to the Little Salmon River basin area. Values given are estimates and should be used only for general comparisons. Total Value is product of all figures, by row, and then summed in last column.

		Grazing Season [3.]						
	# Head [3.]	Days	Months	Daily Gain (lbs) [4.]	Value of Gain per Day [4.]	Lease Rate per Month per Head	Gross Revenue per Cow	Total Value
CATTLE								
A. Upper Basin Area								
Yearlings - Seasonal	9,000	100		2.0	$0.26			$468,000
Cow calf - Seasonal	2,650		3			$16 [4]		$127,200
Cow calf - Seasonal	2,000		2			$12 [4.]		$48,000
B. Lower Basin Area								
Cow calf - Seasonal	2,000		3			$16 [4.]		$96,000
Cow calf - Seasonal	2,000		4			$12 [4.]		$96,000
Cow calf - Yr.-around	1,350						$371 [1., 2.]	$500,850
HORSES								
summer pasture	200		3			$20 [5.]		$12,000
fall pasture	200		2			$16 [5.]		$6,400
SHEEP								
July	1,070		1			$3.20 [6.]		$3,424
May-October	8,000		6			$3.20 [6.]		$153,600
July-mid October	4,000		3.5			$3.20 [6.]		$44,800
Total Value	[7.]							**$1,556,274**

Footnotes:

1. Source: Neil Rimby, Univ. of Idaho Extension Range Economist.
2. Source: Univ. of Idaho, 1998 Idaho Livestock Costs and Returns Estimate, EBB-CC2-98 (Cow-Calf--200 Cow) and EBB-CC4-98 (Cow-Calf--500 Cow). A median value was used for gross revenue.
3. Livestock numbers and grazing seasons provided by numerous sources: Dean Dryden-New Meadows/Pollock Area Rancher; J. Kwader-Boise Cascade; L.Daly-BLM; L.Lake-Nez Perce NF; and P.Grindle-Payette NF. Refer to Table 4 for more details on grazing numbers and seasons.
4. Source: Dean Dryden-New Meadows/Pollock Area Rancher, and Tom Yankey, NRCS-District Conservationist, Weiser. Rate of gain and value are considered average to good. Late season and crop aftermath grazing reflected in lower price. Rangeland lease rates on state and federal lands are typically lower, therefore this value is an over-estimate.
5. Source: Ken Crane-Idaho Dept. of Agriculture.
6. Based on private pasture lease rate (see p. 129).
7. Columns are not additive.

Agricultural Crop Values for Little Salmon River Basin

QUESTION: What is the annual value of the agricultural crop industry to the Little Salmon River basin economy?

BACKGROUND and ASSUMPTIONS: Information from University of Idaho regional planning guides combined with local values were used to estimate the economic values of grain and hay crops in the basin. About 11,580 acres of "agricultural" lands (including pasture) were identified using GIS map information. From this total, acreages were calculated using percentages of area on which the major crops are produced in the basin, and are: grass/alfalfa mix hay (feeder alfalfa) (14%), oat hay (5%), and barley (1%). On average, pasture accounts for about 80% of the total "agricultural" acres (and is not included here but is reported in the livestock economic section of this appendix).

RESULTS: Grain crops, including hay, contribute about $650,000 to the Little Salmon River basin economy annually. Revenue derived from pasture is not included here, but was accounted for in the livestock contribution estimates to the basin's economy.

Table G-3. Values used for determining annual economic benefit of crops and hay to the Little Salmon River basin area. Values given are estimates and should be used only for general comparisons. Total Value is product of all figures, by row, and then summed in last column.

Land Use	Total Area (acres) [1.]	Total Area Proportion (%) [2.]	Estimated Area (acres)	Unit Yield per Acre [2.]	Value per Unit ($) [2., 4.]	Total Value
Argicultural Land	11,580	100				
Pasture		80	9,264			
Alfalfa feeder hay		14	1,621	4 tons	80	$518,720
Oat hay		5	579	2 tons	70	$81,060
Barley (feed)		1	116	62 cwt.[3.]	5	$32,364
Total Value			11,580			**$632,144**

Footnotes:

1. Source: 1992-1993 Landsat TM images processed by IDWR, 1998. See Figure 6. Land surface cover map of the Little Salmon River basin.
2. Source: Tom Yankey, NRCS-District Conservationist, Weiser.
3. Onehundred weight (cwt.) per acre (100 lbs/ac).
4. Sources: *Univ. of Idaho Coop. Exten. System reports …*
   - 1999 Southwestern Idaho Crop Costs and Returns Estimate - EBB2-FB-99 - Feed Barley
   - 1999 " " " - EBB2-AH-99 - Alfalfa Hay
   - 1999 " " " - EBB2-AE2-99 - Alfalfa Hay Establishment with Oats
   - 2000-01 Planning Prices for Idaho Crops and Livestock (www.uidaho.edu/ag/agecon/AEES/AEES00_11.pdf, accessed 7-24-01).

Mining Values for Little Salmon River Basin

QUESTION: What is the annual value of the mining industry to the Little Salmon River basin economy?

BACKGROUND and ASSUMPTIONS: According to the Idaho Department of Lands (IDL), the state agency responsible for regulating mining activities in Idaho, the only significant mines in the Little Salmon River basin are basalt rock quarries.[1] Because specific details regarding each mining activity are not available, all values calculated were based on gross basalt volumes extracted on an average yearly basis (over the last three to five years), multiplied by a cost per unit for basalt. Differentiating between pit-run and crushed material was not possible in all cases, therefore all material was considered to be crushed for this analysis. This assumption over-estimates the overall cost of basalt rock because pit-run material does not include the cost of crushing (about 1/3 of the basalt mined is classified as "pit run" by IDL). Transportation or delivery charges for crushed basalt outside of the pit are not included.

RESULTS: The sale of mine products (basalt) contributes about $600,000 annually to the Little Salmon River basin economy.

Table G-4. Values used for determining annual economic benefit of mining to the Little Salmon River basin area. Values given are estimates and should be used only for general comparisons.

Mine Type	Tons mined per year (x 1,000) [1.]	Crushed Unit Cost ($/ton) [2.]	Estimated Overhead plus Profit ($/ton) [3.]	Estimated Revenue ($/ton)	Total Value ($)
Private pits	58.3	$4	$1	$5	$291,500
State mineral leases	26.3	$4	$1	$5	$131,500
Other (state/federal projects)	36.6 [4.]	$4	$1	$5	$183,000
Totals	121.2				$606,000

Footnotes:

1. Source: Nancy Welbaum, Idaho Dept. of Lands (McCall).
2. Cost is 2001 dollars. Source: Pete Parsley (Geologist - Nelson Construction Co., verbal comm., 9/6/01).
3. Source: Joe Jordan (P.E., retired).
4. Includes Hwy. 95 project at 30,000 tons/year for 10 years.

Timber Value for Little Salmon River Basin

QUESTION: What is the annual value of the timber industry to the Little Salmon River basin economy?

BACKGROUND: To answer the above question, two approaches are presented here to:

1) give readers a general idea about the **potential value** of timber in the Little Salmon River basin (in otherwords, a supply-side view only, with no guarentees that timber will be harvested) and;

2) document actual **timber sales** that have occurred in the basin in the last three years and report their sale value (stumpage). This information provides the reader with a general idea of historical logging activity and indicates a trend and possible forecast of economic levels attributable to the timber industry in the Little Salmon River basin.

Abbreviations/Definitions

1 mbf = 1,000 board feet (bd. ft.)
mixed conifer = ponderosa pine, Douglas fir, western larch
whitewoods = subalpine fir, grand fir, Englemann spruce, and lodgepole pine
BLM = Bureau of Land Management
IDL = Idaho Dept. of Lands
NF = National Forest
USFS = US Forest Service

1) Potential Value of Timber

The potential value was estimated using the suitable harvest area multiplied by the annual sustainable harvest per acre and a low to high range of prices for timber sold in the last year (stumpage values). This value does not include the cost of other goods and services necessary to harvest and transport the logs. Recent sawmill closures in nearby Cascade and Emmett have depressed stumpage values by as much as $50/mbf for the New Meadows area (pers. comm., Rod Brevig-Idaho Tax Commission, 8/20/01). Because stumpage prices and other factors may cause a wide range of variability in potential values, a range of values were estimated (see Assumptions).

Assumptions

Stumpage price range (from Boise Cascade and IDL estimates, 6/99 to 6/01).a., b.
mixed conifers stumpage = from $150 to $200/mbf
whitewoods stumpage = from $100 to $150/mbf

RESULTS: The annual value of Little Salmon River basin timber ranges from about $3.6 million to $4.8 million. Refer to Table G-5 for details.

Table G-5. Potential value of Little Salmon River basin timber on annual basis (acres and values rounded). Values were calculated by multiplying the Suitable Harvest Area by the Annual Sustainable Harvest, and then multiplied by each stumpage value (Low or High). Total values are the sums of the last two columns.

Land Ownership	*Total Area (ac.)* [1.]	*Suitable Harvest Area (ac.)* [2.]	*Annual Sustainable Harvest (bd.ft./ac.)* [3.]	*Stumpage Value per mbf* [4.] Low	High	*Low Value*	*High Value*
Boise Cascade	48,000 *a.*						
- mixed conifer		45,000 *a.*	156 *a.*	$150	$200	$1,053,000	$1,404,000
Other Private	66,350 *c.*						
- forested	22,700 *c.*	17,025 [5.]	156 *a.*	$150	$200	$398,000	$531,000
State of Idaho	13,410 *c.*						
- mixed conifer		7,500 *b.*	152 *b.*	$150	$200	$171,000	$228,000
- whitewoods		3,500 *b.*	152 *b.*	$100	$150	$53,000	$80,000
BLM	16,170 *c.*						
- suitable		15,360 [6.]	156 *d.*	$150	$200	$359,000	$479,000
Nez Perce NF	38,116 *e.*						
- suitable		25,924 [7.] *e.*	180 *g.*	$150	$200	$700,000	$933,000
Payette NF	180,400 *c.*						
- mixed conifer		28,875 *f.*	155 *f.*	$150	$200	$671,000	$895,000
- whitewoods		12,375 *f.*	155 *f.*	$100	$150	$192,000	$288,000
Totals		155,559				$3,597,000	$4,838,000

Footnotes:

1. All land in Little Salmon River basin.
2. All harvest suitable timberland (excludes wilderness areas; includes roadless). Approximate acres.
3. Average annual growth production on a sustainable basis.
4. Price of timber before harvest. See Assumptions above.
5. Acreage estimated by IDWR as 75% of total forested area. a., c.
6. Acreage estimated by IDWR as 95% of total area. a.
7. No timber sales are anticipated at this time. g.

Information Sources:

a. Boise Cascade - John Kwader
b. Idaho Dept. of Lands - McCall Region - Sheldon Keafer
c. Idaho Dept. of Water Resources - GIS coverages for Little Salmon CSWP
d. BLM - Cottonwood Field Office - Mark Craig
e. USFS - Nez Perce N.F. - Mike McGee
f. USFS - Payette N.F. - Ted Demetriades

2) Timber Sales

The following table describes Little Salmon River basin timber sales for the last three years. For some land ownerships, only average volumes and estimated stumpage values are available. To account for inflation, dollar values are adjusted to Year 2001 based on the Consumer Price Index (CPI).

RESULTS: The annual value of Little Salmon River basin timber sales ranges from about $2.4 million to $3.2 million. Refer to Table G-6 for details.

Table G-6. Value of timber sales for last three years, in the Little Salmon River basin in YR2001 dollars. Some values es

Land Ownership	Year	Sale Name	Total Volume (mbf)	Actual or Estimated Sale Price per mbf	CPI Adjustment Factor [1.]	Sale Price per mbf in 2001 Dollars	Total Sale Value [2.]	Average Value [2.]	Aver
									1999
Boise Cascade [b.]	1999	Average of all Boise Cascade sales over last 3 yrs.	6,800	$200 *a.*	95.60	$209	$1,422,594	$1,231,803	$1,422,594
	2000		6,800	$180 *a.*	97.70	$184	$1,252,815		
	2001		6,800	$150	100.00	$150	$1,020,000		
Other Private [a.]	1999	*estimated a.*	4,000	$200	95.60	$209	$836,820	$724,590	$836,820
	2000		4,000	$180	97.70	$184	$736,950		
	2001		4,000	$150	100.00	$150	$600,000		
State of Idaho [c.]	2000	Indian Mountain	3,235	$171	97.70	$175	$566,208	$566,208	---
BLM [d.]	1999		0	$0	95.60	$0	$0	$37,271	$0
	2000	Hwy. 95 R/W	63	$225	97.70	$230	$14,509		
	2000	Denny Crk. Salvage	503	$189	97.70	$193	$97,305		
	2001		0	$0	100.00	$0	$0		
Nez Perce NF [e.]		none							---
Payette NF [f.]	1999	Brown's Creek	2,400	$52	95.60	$54	$130,544	$598,999	$130,544
	2000	Second Chance (Goose II)	4,600	$115	97.70	$118	$541,453		
	2001	Bare Rock (Goose Crk.) Sept. sale	7,500	$150	100.00	$150	$1,125,000		
Total							$8,344,198		$2,389,958

Footnotes:

1. Consumer Price Index adjustment.
2. Values in 2001 dollars.

Information Sources:

a. Idaho Dept. of Lands, McCall - John Lillehaug

b. Boise Cascade - John Kwader

c. Idaho Dept. of Lands, McCall - Sheldon Keafer

d. USDI - BLM, Cottonwood - Jerry Haaland

e. USFS - Nez Perce N.F. - Mike McGee

f. USFS - Payette N.F. - Ted Demetriades