RECLAMATION

Managing Water in the West

Finding of No Significant Impact
Final Environmental Assessment
Ririe Winter Storage Study
Ririe Dam and Reservoir
Bonneville County, Idaho

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region
Snake River Area Office
Boise, Idaho

January 2015

U.S. DEPARTMENT OF THE INTERIOR

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FINDING OF NO SIGNIFICANT IMPACT

Ririe Winter Storage Study
Minidoka County, Idaho

U.S. Department of the Interior
Bureau of Reclamation
Pacific Northwest Region

PN FONSI 15-02

Introduction

The Bureau of Reclamation (Reclamation) has prepared this Finding of No Significant Impact (FONSI) to comply with the Council on Environmental Quality's (CEQ) regulations for implementing procedural provisions of the National Environmental Policy Act (NEPA). This document briefly describes the proposed action, other alternatives considered, the scoping process, Reclamation's consultation and coordination activities, and Reclamation's finding. The Final Environmental Assessment (EA) fully documents the analyses of the potential environmental impacts of implementing the operational changes proposed in the Ririe Winter Storage Study.

Ririe Dam and Reservoir is a multi-purpose facility located 15 miles northeast of Idaho Falls, Idaho, and about 4 miles southeast of Ririe, Idaho. Reclamation proposes to modify current Ririe Dam and Reservoir winter flood control operations to retain additional water storage without increasing downstream flood risk for a 10-year interim period. This would be accomplished by decreasing Ririe Reservoir winter drawdown in the fall of each year, resulting in more water held in the Reservoir between November 1 and March 1. No physical alterations, construction, or other related activities would occur as a result of this action. This proposed action would be an adjustment in non-irrigation season reservoir management only.

The purpose of the proposed action is to improve Ririe Reservoir refill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk. This action would help meet Reclamation's need to reliably continue meeting its contractual obligations for water delivery, power generation, and commitments to provide salmon flow augmentation water under the Snake River Water Rights Act of 2004 (S. 2605 2004) and the Endangered Species Act (ESA).

Alternatives Considered and Recommended Action

Proposed alternatives were developed to meet the purpose and need of the project. The results of hydrologic modeling using a range of storages and discharges were used to develop the alternatives. Under the purview of the Ririe Winter Storage Study, eight total alternatives were proposed and publicly scoped for winter flood control operations at Ririe Dam and Reservoir. Also, an additional alternative was identified during the public scoping process and was considered for detailed analysis.

The 2011 proposed Alternatives B and C and 2013 proposed Alternatives 2, 3, 4, and 5, were analyzed in detail to where it was evident that they did not meet the purpose and need requirement of no increase in flood risk from the original Ririe Reservoir project authorizations (Flood Control Act of October 23, 1962, 76 Stat 1193 of Public law 87-874, Section 7 of the Flood Control Act of 1944, Ririe Dam and Reservoir Willow Creek, Idaho, Design Memorandum No.1, page 7-1, Ririe Dam Operating Procedures, Chart 5). Specifically, the amount of additional winter water storage that would not increase flood risk is defined as the quantity of winter flood space (8,000 acre-feet) that can encroach upon the fixed 50,000 acre-feet flood control space, and be mitigated with the amount of water that can be evacuated over a 5-day period from the time of a forecasted major flood event. The 2011 and 2013 proposed alternatives were eliminated because they allowed inflows to potentially exceed the volume of water (8,000 acre-feet) that could be evacuated over a 5-day period from the time of a forecast major flood event, and therefore, would increase flood risk.

Two alternatives, the No Action and Alternative 1, were considered and analyzed in detail in this EA. The No Action alternative consists of drafting 5,000 acre-feet of water at the beginning of winter so natural inflows would not encroach on the winter flood control space and winter releases would typically not be required. Alternative 1 would allow winter inflows of up to 8,000 acre-feet to be stored in the winter flood control space through the end of February. Mitigation, Inc. would have the option of signing an agreement with Reclamation prior to the beginning of winter that would activate Alternative 1, committing to clean the channel of snow and ice in advance of any required releases.

The Draft EA was made available on September 5, 2014 to more than 150 federal, state, and local agencies, elected officials, Tribal governments, irrigation districts, interest groups, and individuals for a 30-day comment period. Comments were received from the U.S. Army Corps of Engineers (Corps), Mitigation, Inc., Bonneville County Commissioners, Idaho Ground Water Appropriators, Inc., National Weather Service (NWS), and Natural Resources Conservation Service (NRCS).

Consultation, Coordination, and Public Involvement

Reclamation announced a proposal to potentially improve Ririe Reservoir fill reliability and increase water availability for irrigation and other water demands in southern Idaho without

increasing downstream flood risk through a Tribal/public letter on December 10, 2010. The announcement stated that the study would involve analyzing flood control storage and winter water release scenarios under various conditions. It further stated that there would be opportunity for public involvement in the upcoming NEPA process. Reclamation mailed scoping letters to: 5 Tribes, 164 individuals; congressional delegates; organizations; irrigation districts; and federal, state, and local agencies (Final EA, Appendix A). The letters discussed the project and served as notification of the future Tribal/public scoping meetings. Tribal and public scoping meetings were held on January 11 and 12, 2011 at Fort Hall and Idaho Falls, Idaho. The Tribal and public scoping meetings provided information and requested input on the proposed alternatives.

The EA was postponed until the "Ririe Reservoir Winter Release Test Plan" was completed and successfully tested in February 2013. The plan tested the capacity of Willow Creek and the Ririe Outlet Channel to evacuate flood control space during winter conditions. Based on the results of the test, Reclamation revised the proposed alternatives and sent out scoping letters to: 5 Tribes, 157 individuals; congressional delegates; organizations; irrigation districts and Federal, state, and local agencies (Final EA, Appendix A). Tribal and public scoping meetings were held on December 17 and 18, 2013, at Idaho Falls and Fort Hall, Idaho. The Draft EA was made available on September 5, 2014 to more than 150 federal, state, and local agencies, elected officials, Tribal governments, irrigation districts, interest groups, and individuals for a 30-day comment period .

Reclamation met with and had written correspondence with the Corps on several occasions from the start of the Ririe Winter Storage project in 2008 through March, 2014 to discuss improving reservoir fill reliability and increase water availability for irrigation and other water demands. Reclamation also met with Idaho Department of Fish and Game (IDFG) in 2011and 2014 during the annual Tex Creek Coordination meeting, and on December 18, 2013, and discussed the proposed alternatives and potential effects to fish and wildlife. Reclamation received written scoping comments from IDFG dated February 8, 2011 and January 16, 2014. The Draft EA was mailed on September 5, 2014 to both the Corps and IDFG for their comment.

Summary of Environmental Effects

Hydrology

The decision to store additional water would occur before the storage season in accordance with a Memorandum of Agreement (MOA) between Reclamation and Mitigation, Inc., and could possibly negate the need for winter releases. No significant impacts to flood potential would occur because the reduction in winter flood control space reservation would be mitigated by releasing water to achieve the 50,000 acre-feet winter flood control space requirement if needed.

Under Alternative 1, Floodway Outlet Channel cleaning could be required in 9 of 19 analyzed years. Additionally, there would be two releases of water required during the same winter season in 2 of the 19 years that also could require channel cleaning. Channel cleaning may not be necessary for all 9 years (i.e., snow/debris amounts may not warrant cleaning). To accomplish channel cleaning, Reclamation and Mitigation, Inc. would enter into a MOA to specify duties and roles for channel cleaning. Mitigation, Inc. would execute contracts to clear the channel and stage excavators at strategic locations along the channel during the subsequent water release. Reclamation would coordinate with the Corps on channel cleaning specifics. The Floodway Outlet Channel would be inspected by Reclamation and Mitigation, Inc. before and after a winter discharge.

Impacts to storage water gain under Alternative 1 winter operations are minimal (1.4 percent increase over 19 years) and the reservoir fills in one additional year over 19 years compared to the No Action alternative. While storage benefits in Ririe Reservoir are small compared with the upper Snake River system storage capacity, additional water storage in Ririe Reservoir would result in a small increase in the reliability of augmentation flows under the Nez Perce Agreement.

The reservoir water levels are within the range of current water levels and would be well below the high water mark of the reservoir and therefore would result in no adverse effect. Erosion problems are not expected because winter flows would be below the combined 1,200 cfs channel limit.

Groundwater

Groundwater levels near the reservoir would likely not exceed the minimum or maximum elevations that occurred during the No Action period. The proposed operation would cause the minimum elevation of the reservoir to be approximately 7 feet higher in normal and wet years. This higher elevation in the reservoir would likely result in higher minimum groundwater elevations. The proposed operation would not likely cause the reservoir to exceed previous maximum elevations.

Water Quality

The summertime reservoir temperature and oxygen regimes in wet years when the reservoir remains at higher elevations would develop elevated epilimnetic temperatures and depressed oxygen levels in the hypolimnion. Alternative 1 should not change these processes in the reservoir. The epilimnion should heat and develop similar temperature levels as seen in years past. The hypolimnion would undergo similar levels of oxygen depletion and the subsequent nutrient releases from the anoxic sediments would continue to occur. Erosion problems are not expected because winter flows would be below the combined 1,200 cfs channel limit.

Floodplain / Wetlands

Direct and indirect effects to the floodplain and wetland areas are negligible in the short and long terms and there would be no adverse impacts from the proposed winter operations. Increased winter flows could cause streambank and/or reservoir banks to freeze and expand, thereby increasing the soil volume. This increase in moisture content and decrease in density due to freeze-thaw cycling makes soils more susceptible to fluvial erosion. The freezing effects of the winter flows would not affect the riparian vegetation because: 1) the changes in the reservoir surface level are minor and the wetted bank is not increased much from what it was before; 2) plants are dormant during the releases (December through February); and 3) the duration of the releases would be relatively short, decreasing the likelihood of any vegetation and soil pore water from freezing. Additionally, the forested/shrub wetland vegetation complex would have root systems capable of withstanding 900 cfs flows below the dam on Willow Creek, and riparian vegetation. The forested/shrub wetland vegetation complex below Ririe dam and the small pockets of riparian vegetation along the reservoir would continue as they would in the No Action alternative.

Aquatic and Terrestrial Biota

Overall effects (direct and indirect) to aquatic and terrestrial biota in the short and long term would be negligible to minor, with no adverse impacts associated with the proposed Alternative 1. There could be slight effects on amphibians, primarily northern leopard frogs, from freezing in winter. Leopard frogs are occasionally found around the shoreline but not in great numbers. The greatest danger to the frog is freezing during drawdowns. The higher winter water levels would likely mean the frogs would simply select similar water depths for hibernation. The other amphibian and reptile species using the reservoir would not be affected by the increase of winter water storage because they are mostly terrestrial species and generally would not use the drawdown zone along the edge of the reservoir during winter months.

Threatened and Endangered Species

The greater sage-grouse would continue to exist in their current state within Tex Creek Wildlife Management Area (WMA). The winter varial zone under this alternative does not possess characteristics associated with greater sage-grouse habitat requirements in any way.

Recreation

The existing recreation facilities would continue to provide the same recreation opportunities that are now present. Effects on recreation below Ririe Reservoir would be the same as those described in the No Action alternative.

Cultural Resources

Cultural sites that are already underwater year-round would continue to be inundated, and sites above the high water line would remain above the high water line. Inundation of archeological sites that contain surface artifacts and/or features could potentially diminish or eliminate data important for a better understanding of the nature of the site. Any buried information that may still exist below the waters of the reservoir could be available to future researchers if and when the sites once again become available for study. The change in operations afforded by Alternative 1 would not change that potential outcome.

Indian Sacred Sites and Traditional Cultural Properties (TCPs)

Potential effects to Indian sacred sites and TCPs can only be dealt with in a generalized fashion due to the fact that the specific location and nature of sacred sites within the study area are unknown. If Indian sacred sites are located within the study area, it is unlikely their integrity would be compromised by physical disturbances or audio and/or visual intrusions because Alternative 1 is a winter operational change with no ground disturbance. Impacts associated with the proposed Alternative 1 would not affect Indian sacred sites or their eligibility for listing in the National Register of Historic Places (NRHP).

Indian Trust Assets (ITAs)

Alternative 1 would not affect any known ITAs of lands, minerals, water rights, monetary holdings, and gathering rights in the direct vicinity of Ririe Dam and Reservoir. The storing of additional water in Ririe Reservoir can benefit Tribal water rights above Milner Dam. Implementation of Alternative 1 would not affect tribal hunting and fishing rights outside of the study area.

Socioeconomics

Mitigation, Inc. would receive some additional rental pool revenue ($10,000 average annual) associated with the estimated additional storage water; however, the net change between the additional rental pool revenue and the additional O&M costs for channel cleaning is negative (-$9,430 annual, -$81,167 discounted total). The effects in the upper Snake study area would also be adverse. The net change between Mitigation, Inc. and Water District 1 revenues and the total estimated additional O&M costs are negative (-$7,030 annual, -$60,597 discounted total). O&M costs could be less than anticipated if channel cleaning was not necessary (i.e., snow/debris amounts do not warrant cleaning).

Environmental Justice

The proposed action is not expected to result in any disproportionately high and adverse effects on minority and low-income populations. Adverse socioeconomic impacts are identified in Section 3.12 Socioeconomics of the Final EA. These adverse socioeconomic impacts would be shared equally by all affected water users within the Mitigation, Inc. and upper Snake study areas. The proposed action would be in compliance with all applicable NEPA regulations related to environmental justice protections.

Climate Change

Indirect effects from agriculture on climate change due to winter operational changes would be the same as those described in the No Action alternative and would have no adverse impacts on climate change. Short and long-term effects of climate change on Ririe operations under Alternative 1 would be minor, and have no adverse impacts on the proposed operations. The climate models predict earlier and higher reservoir inflows during December through May. This suggests that the proposed winter operations could capitalize on the predicted earlier and higher inflows in the early spring by storing more water in the reservoir, and partially offset or mitigate changes in surface water deliveries.

Cumulative Impacts

Three resources (Hydrology, Water Quality, and Climate Change) were identified as potentially having cumulative impacts and were discussed in detail within the Draft EA. The incremental impacts from Alternative 1, when added to the past, present and reasonably foreseeable future actions would be negligible. For the Hydrologic resource, Ririe winter storage water gained could, if available, potentially contribute water for the A&B Pumping Plant # 2 project. However, the water needed from that proposed project is much greater than the potential storage water gained in Ririe, and when combined with past and present effects, the incremental effects would be minimal in the short and long terms.

Changes to the Final EA

Reclamation received four letters and two emails commenting on the Draft EA, of which only one required revisions to the document. Reclamation made six changes to the Draft EA based on comments from the Corps. These changes added clarification and included minor editorial revisions and did not substantially change the environmental impacts discussed in the Draft EA. The revisions are reflected in the Final EA.

Of the comments Reclamation received, two comments were supportive of the Draft EA. One comment from the NRCS was informative, and identified current science and technology that could aid in improving streamflow forecasts and understanding of soil, snow, and streamflow

in the basin. Reclamation also received two comments that were not supportive of the proposed alternative. Reclamation's responses to these comments, along with the Corps comments, are presented in Appendix E of the Final EA.

The Corps also commented that operational changes identified in Alternative 1 would consist of coordination with Reclamation on these changes, and would not require Corps District approval. Reclamation agrees with the Corps' statement that this is an operational change under Reclamation's discretion and Reclamation plans to continue coordination with the Corps.

Finding

Based on the analysis of the environmental impacts presented in the Draft EA and consultation with potentially affected agencies, tribes, organizations, and the general public, Reclamation concludes that implementation of the proposed action will not have a significant effect on the quality of the human environment or natural and cultural resources. The effects of the proposed action will be minor and localized. Therefore, preparation of an Environmental Impact Statement (EIS) is not required.

Recommended:

1-16-2015

Richard Jackson
Natural Resource Specialist
Snake River Area Office, Boise, Idaho

Date

Approved:

Jan. 16, 2015

Jerrold Gregg
Snake River Area Manager
Pacific Northwest Region, Boise, Idaho

Date

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Acronyms and Abbreviations

ACHP	Advisory Council on Historic Preservation
BMP	Best Management Practice
BPA	Bonneville Power Administration
CAMP	Comprehensive Aquifer Management Plan
CDL	Crop Data Layer
CFR	Code of Federal Regulations
cfs	cubic feet per second
Corps	U.S. Army Corps of Engineers
CWA	Clean Water Act
EA	Environmental Assessment
EIS	Environmental Impact Statement
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
ESPA	Eastern Snake Plain Aquifer
FONSI	Finding of No Significant Impact
FWCA	Fish and Wildlife Coordination Act
GIS	geographic information system
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
ITAs	Indian Trust Assets
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding

NAGPRA	Native American Graves Protection and Repatriation Act
NASS	National Agricultural Statistic Service
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NRHP	National Register of Historic Places
O&M	operation and maintenance
Reclamation	U.S. Bureau of Reclamation
RM	river mile
SHPO	State Historic Preservation Office
SOP	Standing Operating Procedures
SPF	Standard Project Flood
TES	threatened and endangered species
TMDL	total maximum daily load
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Area

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Chapter 1 PURPOSE AND NEED

1.1 Introduction

The U.S. Bureau of Reclamation (Reclamation) has prepared this Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. The EA analyzes the effects of alternatives to improve Ririe Reservoir refill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk. Ririe Reservoir is a multi-purpose facility located 15 miles northeast of Idaho Falls, Idaho, and about 4 miles southeast of Ririe, Idaho.

The EA also serves as a tool to aid the authorized officer to make an informed decision that is in conformance with applicable federal laws and regulations. The impacts (direct, indirect, and cumulative environmental effects) of each alternative are evaluated for the following affected resource areas: hydrology, groundwater, water quality, floodplain/wetlands, aquatic and terrestrial biota, threatened and endangered species, recreation, cultural resources, sacred sites and traditional cultural properties, Indian trust assets, socio-economics, environmental justice, and climate change. Aesthetics, soils and geology, noise, climate, transportation and access, visual resources, and air quality were also evaluated, but are not included in this document because no impacts to these resources were identified.

1.2 Background

1.2.1 History

The Ririe Project consists of Ririe Dam, Reservoir, and the Floodway Outlet Channel. Construction of Ririe Dam and Reservoir was authorized by the Flood Control Act of October 23, 1962 (76 Stat. 1193, P. L. 87-874). House Document No. 562 served as the basis for that authorization. The Ririe Project was constructed by the U.S. Army Corps of Engineers (Corps) to impound and control the waters of Willow Creek, a Snake River tributary in eastern Idaho, for the purpose of irrigation, flood control, habitat for fish and wildlife, and recreation (Corps 1966).

Since 1911, at least eight spring floods and nine winter floods have caused considerable damage in the Willow Creek and Sand Creek floodplains. The largest known floods were

those of 1917 and 1962 (USGS 1962). The 1917 flood was a spring snowmelt flood exacerbated by rainfall peaking at 4,200 cubic feet per second (cfs) in Willow Creek near Ririe. Around 3,000 acres of land were inundated for several weeks. The 1962 flood was a winter rain flood augmented by frozen ground and snowmelt, peaking at 5,080 cfs in Willow Creek above its confluence with Sand Creek. About 54,000 acres were inundated for 2 to 3 days.

The review report on "Columbia River and Tributaries," dated June 1948, prepared by the Corps and printed as House Document 531, 81st Congress, 2nd session, (H. Doc. 531 1948) summarized field studies for storage and channel works on Willow Creek and indicated that flood control works were not economically feasible at that time. The Upper Snake River Basin report of 1961, prepared jointly by the Corps and Reclamation, indicated that Ririe Dam and Reservoir warranted early construction. Interim Report No.3, dated March 1962 and prepared by the Corps, and printed as House Document 562, 87st Congress, 2nd Session, presented additional information on structures and costs, economic analysis, and operating procedures (H. Doc. 562 1962). This report included a brief summary of the February 1962 flood, with comments on the ability to control such a flood by storage at the Ririe site.

1.2.2 Ririe Project

Ririe Project construction began in January 1970 by the Corps. On October 14, 1976, a Memorandum of Agreement (MOA) transferred the Project to Reclamation (Corps 1976). Construction was completed a year later in November 1977, and the reservoir was filled to capacity for the first time in 1978 (Reclamation 2001). The 12-mile long reservoir has a total storage of 100,484 acre-feet of space. The project also includes a Floodway Outlet Channel used to evacuate water during flood control operations.

Four recreation areas have been developed at Ririe Reservoir to meet public demands (Reclamation 2001). Juniper Park, adjacent to the project headquarters visitor center, is the major recreation site. Both overnight camping and day-use facilities are available, including a floating fishing dock, boat ramp, a marina, and boat trailer storage area. Blacktail Park, approximately 5.5 miles south-southwest of Juniper on the reservoir, includes a boat ramp, marina, and a turf day-use area with shelters and a swimming area. Between Blacktail and Juniper are Benchland and Willow Point Parks, which are boat-in only sites for day use or camping. Benchland has several shelters on turf with a dock. Willow Point is similar, but with only one shelter. Blacktail Park, on the reservoir, includes a swimming area and other day-use facilities. Benchland Park is also on the reservoir, but is accessible only by boat and has limited day-use facilities.

Ririe Reservoir is stocked annually with rainbow trout and the minimum reservoir pool provides winter habitat for fish survival and growth. Deer and elk use the area as winter

range, so a large area around the south half of Ririe Reservoir is developed as rangeland for support of these animals during the critical winter months.

The loss of wildlife habitat associated with the construction of Ririe Dam and Teton Dam led to the establishment of the Tex Creek Wildlife Management Area (WMA) (Corps 1976). In 1976 and 1977, the Corps and Reclamation purchased 11,000 acres of critical big game winter range in the Tex Creek area just east of Idaho Falls, Idaho. The Idaho Department of Fish and Game (IDFG) eventually assumed additional critical acres. Also, a cooperative agreement between IDFG and the Bureau of Land Management (BLM) resulted in the inclusion of 9,600 acres of land, and today, the Tex Creek WMA encompasses more than 28,700 acres. The entire area is managed for wildlife, with emphasis on big game winter range management (Reclamation 2012a).

1.2.3 Water Allocations

From 1976, when the Corps transferred the Ririe Project to Reclamation, until 1994, when the irrigation storage was contracted to Mitigation Inc., water accrued to Ririe's storage rights was usually submitted to the Water District 1 rental pool. The rental pool is a water exchange market operated by the Idaho Water Resources Board (IWRB) to facilitate the use of rights to natural flow water or water stored in Idaho reservoirs. Water right holders can offer unused water rights to the rental pool. From there, the water can be rented to entities that do not have adequate water rights to meet their needs. This water was especially useful during restricted operation and reconstruction of Jackson Lake Dam. Special rules allowed Jackson Lake space holders to secure water from Reclamation's uncontracted space at a reduced cost to replace the water that was not available because of limited capacity in Jackson Lake.

The Shoshone-Bannock reserved 1867 water rights for on-Reservation uses were determined, quantified, and settled in the "1990 Fort Hall Indian Water Rights Agreement," which was approved, ratified, and confirmed by Congress in Section 4 of the Fort Hall Indian Water Rights Act of 1990, P. L. 101-602. On August 2, 1995, the Snake River Basin Adjudication Court of Idaho decreed that the provisions of the 1990 Agreement were ratified, confirmed and approved in the *Partial Final Consent Decree Determining the Rights of the Shoshone-Bannock Tribes of the use of Water in the Upper Snake River Basin*, District Court for the Fifth Judicial District of the State of Idaho, Case No. 39576. Among other things, the 1990 Fort Hall Indian Water Rights Agreement defined rights for surface and ground waters, protected existing water users, and provided for contributions by federal and state governments.

In 1994, the United States entered into a contract with Mitigation Inc. which provided that entity with previously non-contracted irrigation storage space in Palisades (18,980 acre-feet) and Ririe (80,500 acre-feet) reservoirs in order to mitigate existing non-Tribal water users

from adverse effects that might result from implementation of the 1990 Fort Hall Indian Water Rights Agreement and Fort Hall Indian Water Rights Act of 1990. Mitigation Inc. is composed of 81 individuals and companies that irrigate over 512,000 acres in eastern Idaho.

1.2.4 Winter Flood Control Operations

The flood control objective of Ririe Dam is "to provide adequate storage space in the reservoir to regulate streamflow downstream insofar as possible to a non-damaging level, and yet still provide a near full reservoir at the end of the flood season for irrigation and other project purposes" (Corps 1985). To this end, operating curves for flood control were developed in 1976 to identify the amount of reservoir space necessary to meet this objective. These flood control rule curves provide the primary operating instrument for flood regulation of Ririe Dam. The Corps has responsibility for the flood control plan at Ririe Dam under its authority established in Section 7 of the Flood Control Act of 1944 (Corps 1985).

The current winter flood control space requirement at Ririe Reservoir calls for 50,000 acre-feet of available space between November 1 and March 1, including 10,000 acre-feet of exclusive flood control space above elevation 5112.8 feet, regardless of snowpack or weather conditions (Corps 1985). In order to have this space available by November 1, it is sometimes necessary to release water from Ririe Reservoir after the completion of the irrigation season.

Instead of releasing water to meet the winter flood control space requirement, there may be an opportunity to hold additional water over winter without increasing winter flood risk to downstream residents and property. This issue is addressed in this EA.

1.2.5 Phase I Study

In 2008, the State of Idaho Water District 1 contacted the Corps, requesting a reevaluation of the winter flood control space requirements at Ririe Reservoir (Appendix A). Water District 1 asserted that too much reservoir space is reserved for flood control during the winter months and the space could be better used for additional water storage to serve the residents of southern Idaho. Water District 1 requested the Corps reevaluate the magnitude of late season reservoir drawdown conducted to "alleviate winter-time flood conditions that rarely or have never materialized." Upon receipt of the request, the Corps and Reclamation assessed the flood control operation. Reclamation conducted a hydrologic analysis titled *Phase I Study of Proposed Modifications of Flood Control Operations, Ririe Dam and Reservoir, Ririe Project, Bonneville County, Idaho* (Reclamation 2010) to examine the risks and storage benefits associated with reducing the winter flood control space requirement.

The Phase I Study analyzed three alternatives that assessed the impacts of different winter space requirements on downstream flows and reservoir refill using historic daily data:

- The No Action alternative is the winter flood control plan described in the current Ririe Dam Water Control Manual (Corps 1985);
- Alternative A requires 50,000 acre-feet of space on November 1, then decreases the required flood control space to 24,000 acre-feet of space at the end of February. The flood control space requirement decreases linearly from 50,000 acre-feet to 24,000 acre-feet from November 1 through the end of February;
- Alternative B requires 30,000 acre-feet of flood control space on November 1. The flood control curve decreases linearly from November 1 through the end of February when 15,000 acre-feet of space is required.

Discharges are required during the winter months when the inflows caused the reservoir to fill above the required flood control space. After March 1, the existing variable rule curve is followed.

1.2.6 NEPA Actions

Reclamation conducted an initial scoping meeting in Idaho Falls, Idaho on January 11, 2011, to identify issues and concerns associated with reservoir refill reliability and increase water availability in Ririe Reservoir by modifying winter flood control operations (Appendix B). Following this meeting, the project was postponed while Reclamation and the Corps developed a joint approach for moving forward with the proposed project.

On January 4, 2011 Reclamation was directed by the Corps to release water from Ririe Dam down Ririe Floodway Outlet Channel to evacuate flood control space (Corps 2011a). Prior to any releases being made, Reclamation examined the entire manmade channel and noted the amount of snow that was on the channel. The amount of channel snow was very similar to past years when water was released successfully prior to the low snow runoff. There were no icing issues at the end of daylight on the first day. In the early morning hours of February 9, the ambient air temperatures dropped far below what was initially anticipated, and ice and slush were building up in the channel and backing up the channel from road crossings, causing localized flooding. Dam flows were then stopped. The subsequent cleanup and clearing of the channel took 371 hours of excavator time.

Reclamation and the Corps developed the draft *Ririe Reservoir Winter Release Test Plan* in December, 2011. The purpose of the proposed *Ririe Reservoir Winter Release Test Plan* was to determine if winter releases could be made without an increase in flood risk and to determine the maximum volume of storage that could be evacuated under a range of winter weather conditions and water supply conditions. At Reclamation's request, the Corps'

Development Center Cold Regions Research and Engineering Laboratory reviewed the *Ririe Reservoir Winter Release Test Plan* (Corps 2012). The review recommended data collection and monitoring locations during the release test. In September 2012, Reclamation and the Corps completed the *Ririe Reservoir Winter Release Test Plan* (Reclamation 2012b) and conducted the test in February 2013. On February 10, 2013 water was evacuated down the Ririe Floodway Outlet Channel successfully and with no incident. Based on the information gained from the Winter Test Study, Reclamation developed new alternatives to be evaluated in the EA and presented them to the tribes and the public for comment in December 2013.

1.3 Proposed Action

Reclamation proposes to modify current Ririe Dam and Reservoir winter flood control operations to retain additional water storage without increasing downstream flood risk for a 10-year interim period. This would be accomplished by decreasing Ririe Reservoir winter drawdown in the fall of each year, resulting in more water held in the Reservoir between November 1 and March 1. No physical alterations, construction, or other related activities would occur as a result of this action. This proposed action would be an adjustment in non-irrigation season reservoir management only.

1.4 Purpose and Need for Action

The purpose of the proposed action is to improve Ririe Reservoir refill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk. This action would help meet Reclamation's need to reliably continue meeting its contractual obligations for water delivery, power generation, and commitments to provide salmon flow augmentation water under the Snake River Water Rights Act of 2004 (S. 2605 2004) and the Endangered Species Act (ESA).

1.5 Decisions to be Made

The Snake River Area Manager is the authorized officer responsible for decisions regarding Ririe Reservoir operations and management. Based on the analysis results, the authorized officer will issue a determination of the significance of the environmental effects and whether an Environmental Impact Statement (EIS) would be required. If the authorized officer determines that it is not necessary to prepare an EIS, the EA will provide information to make an informed decision.

The Snake River Area manager will decide whether to:

1. Maintain the fixed 50,000 acre-feet of winter flood control space requirement; or

2. Modify the fixed 50,000 acre-feet of winter flood control space requirement for a 10-year interim period. The resulting additional storage water from a modification of the fixed 50,000 acre-feet, combined with operational changes, must retain the same level of flood protection as provided by the current winter operations.

Final approval of any modification must be approved by Reclamation's Pacific Northwest (PN) Regional Director and the Corps commander, Walla Walla, Washington, according to provisions in Contract No. DACW68-75-C-0124/14-06-100-9201, Memorandum of Agreement (MOA), dated October 14, 1976.

1.6 Project Location and Facilities Description

1.6.1 Ririe Dam and Reservoir

Ririe Dam and Reservoir is a multi-purpose facility located 15 miles northeast of Idaho Falls, Idaho, and about 4 miles southeast of Ririe, Idaho (Figure 1-1). Ririe Dam is located at river mile (RM) 20.5 on Willow Creek, a minor tributary in Bonneville County of eastern Idaho, which enters the Snake River at RM 796.5. Constructed by the Corps, Ririe Dam is an earth and rockfill structure, 253 feet high and 1,070 feet long. The 12-mil-long reservoir impounded by the dam has a total storage capacity of 100,484 acre-feet with an active capacity of 90,484 acre-feet (Table 1-1). The reservoir covers approximately 1,560 acre of surface area when it is at full pool capacity (elevation 5112.8 feet).

Table 1-1. Ririe Dam and Reservoir storage information.

Item	Water Surface Elevation (*feet*)[1]	Volume (*acre-feet*)	Surface Area (*acres*)
Flood surcharge	--	0	--
Exclusive Flood	5119.0	10,000	
Active	5112.8	80,484[2]	1,472
Inactive	5023.0	6,000	364
Dead pool	4997.0	4,000	--
Total Storage		**100,484**	

[1] At top of capacity allocation
[2] Joint use = 80,484 acre-feet

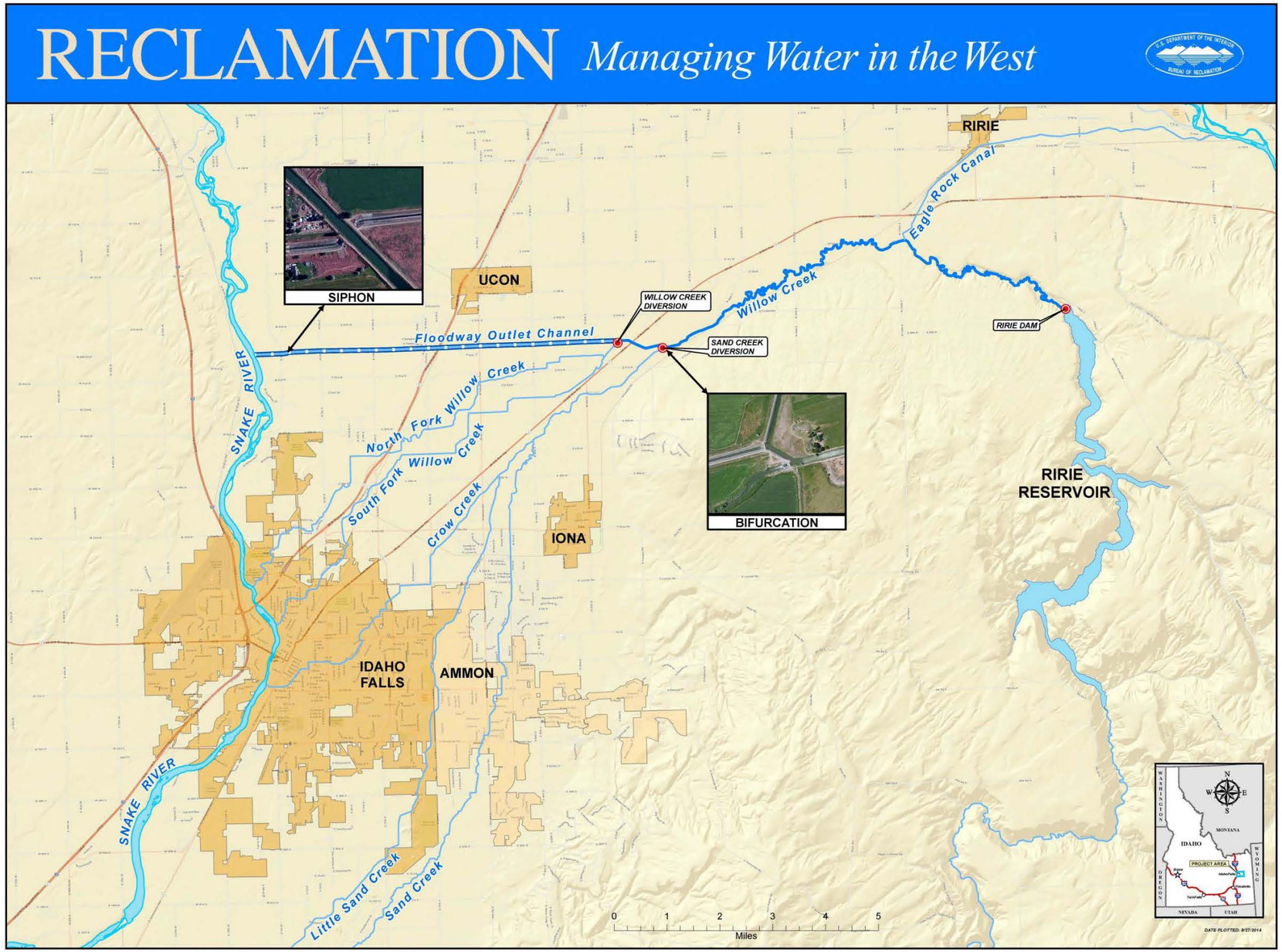

Figure 1-1. Ririe Reservoir project area

1.6.2 Floodway Outlet Channel

The Floodway Outlet Channel is a structure that reduces water flow to Willow and Sand Creeks below their diversions and conveys water directly to the Snake River. The Floodway Outlet Channel begins on Willow Creek just downstream from the point where Sand Creek branches from Willow Creek. The combined Willow Creek and Floodway Outlet Channel flow 0.9 miles, to where Willow Creek is diverted, then the Floodway Outlet Channel extends directly west 6.9 miles to enter the Snake River. The Floodway Outlet Channel enters the Snake River 4.5 miles north of Idaho Falls (Figure 1-1). The north bank of the Floodway Outlet Channel was constructed at ground level to permit surface inflow of flood waters along its course. A major flood in spring or summer may require releases of up to 1,900 cfs from Ririe Reservoir. Sand Creek's bank full capacity is 1,000 cfs. The Floodway Outlet Channel can convey a maximum 900 cfs. Combined their capacity is adequate to convey flood flows.

1.6.3 Operations

In 1962, the Ririe Project was authorized for the specific purposes of flood control, irrigation, recreation, and habitat for fish and wildlife. The Corps transferred operation and maintenance (O&M) to Reclamation under a MOA (dated October 14, 1976) in accordance with the Flood Control Act of 1962 (Section 205). Under this MOA, Reclamation operates the dam according to the *Standing Operating Procedures (SOP), Reservoir Regulation, Ririe Dam, Willow Creek, Idaho, Ririe Project, Idaho* (Corps 2011b). The SOP describes the structures and mechanical equipment and instructs operating personnel to operate the facility to achieve flows requested by the Upper Snake Field Office. The SOP also outlines the procedures to implement flood operations if communications are lost. Irrigation deliveries are coordinated among Reclamation, Idaho Water District 1, and irrigation contractors. Reclamation operates the dam according to formal flood control rule curves (Corps 2011b). This document directs flood control operations.

Ririe Dam and Reservoir operates within the guidelines of Reclamation's and the Corps SOPs as described below.

Spring

Space reservations for spring floods are based upon inflow forecasts. Spring inflow forecasts are coordinated each month from January through June by Reclamation's PN Regional Office, River and Reservoir Operations Group, and the Corps Walla Walla District Hydrology staff. From March 1 through March 15, the minimum winter space reservation is reduced uniformly from 50,000 acre-feet to 0 acre-feet. A series of curves showing required space for subsequent spring flood control begins at the end of winter flood control space requirements and directs the reservation of flood control space through June. Space reservation is dependent upon remaining forecast inflow volume from a given date through June 30.

Irrigation Season

Once spring runoff passes, water originating above Ririe Dam must be delivered to fulfill downstream water rights. During a typical irrigation season, after storable water is no longer available according to water right accounting, Ririe Dam discharges inflow plus an allowance for reservoir evaporation. The discharge amount is either the combination of inflow plus reservoir evaporation, or 60 cfs, whichever is less. The Eagle Rock Canal diverts Snake River water near Heise and transfers up to 800 cfs to Willow Creek at a point between Ririe Dam and the Sand Creek diversion for water delivery to Progressive Irrigation District. During the active part of most irrigation seasons, water delivered from Ririe Reservoir storage is delivered by reducing flows through the Eagle Rock Canal. This allows Progressive Irrigation District to utilize the water from Ririe Dam, thus leaving water in the Snake River to be accounted as stored water deliveries from Ririe Reservoir. The Floodway Outlet Cannel is rarely used to deliver irrigation water.

At the end of the irrigation season, Ririe Reservoir storage may be discharged through the Floodway Outlet Channel to prepare for winter. To meet irrigation demands from storage and natural flow rights and to prepare for winter, releases have ranged from 30 to 700 cfs. However, releases are held to 400 cfs or less, whenever possible, to prevent erosion of the stream channel and damage to farm pump stations. Timing and rate of release of water to meet irrigation demands and minimum winter flood control space of 50,000 acre-feet vary depending upon water supply and demand. In dry years, releases for irrigation may be sufficient to achieve the winter space reservation.

In some dry years, when Palisades Reservoir approaches low reservoir contents, water from Ririe Reservoir may be required to meet irrigation or other demands in lieu of increasing releases from Palisades Dam. Also, when Palisades approaches low reservoir contents, water

delivered from Ririe Reservoir may be needed to help avoid water quality problems in American Falls Reservoir that can occur when its level drops below 100,000 acre-feet of stored water. In wetter years, releases of stored water from Ririe Reservoir can be delayed to maintain storage sufficient for recreation into September.

Winter

Winter floods may occur from December through February in the lower elevation of the watershed and are primarily caused by rain or melting snow on frozen ground. These two events often occur simultaneously. The runoff duration from these floods is usually 2 to 5 days, and the volume is considerably less than spring floods. However, downstream channel capacities are normally greatly reduced by ice or snow accumulation and lack of irrigation diversions. Considerable runoff may also be generated below Ririe Dam during winter floods.

The regulation objectives for winter floods, included in the winter standard project flood, is to store all flood runoff occurring above the reservoir, thereby utilizing all conveyance systems below the project for removal of local runoff. When streamflow below the dam has subsided and channel conditions allow, excess water is evacuated from the reservoir at a rate not to exceed 1,200 cfs (900 cfs through in channel and 300 cfs in Sand Creek) until the required flood control space is again available.

It is planned to use the Floodway Outlet Channel to maximum capacity (900 cfs) during evacuation periods. In addition, 300 cfs may be evacuated through the Sand Creek system provided the flow does not cause flooding. The operating plan is to draft the reservoir during the irrigation season or early fall to elevation 5082.0 feet, where 50,000 acre-feet of space is available by November 1. This space is held in reserve until the winter flood season has passed (March 1). At this time, refill or additional draft begins according to spring flood control adjustments, based on March through June volume forecast and the rule curves.

In 1977, a cooperative agreement between Reclamation, the Corps, and IDFG identified a general management plan concerning the use of lands and waters for fish and wildlife conservation and management (Corps 1977). The cooperative agreement states “Releases for stream resource maintenance will be the flow rates hereinafter stated, or the reservoir inflow, whichever is less except during periods of extreme icing conditions in the downstream channel when the flows will be gradually reduced to zero as necessary to prevent flood damage.” This flow was planned to be implemented at least once in 4 years provided there is

80 percent assurance of spring reservoir refills. Maximum planned water release was 30 cfs from October 1 to April 15.

Starting in 1978, Reclamation released water from Ririe Reservoir in the winter in an attempt to implement winter flows anticipated in the operating plans and the cooperative agreement. Winter flows were suspended once ice problems developed, and releases were restored as soon as possible during the 1979 and 1980 winters. Since 1981, winter flows have been suspended to avoid ice problems in Willow Creek below Ririe Dam. Once winter flows were suspended, an additional 5,000 acre-feet of fall drawdown has been provided each year to reduce encroachment into the required winter flood control space.

1.7 Regulatory Compliance

The Ririe Project was authorized by the Flood Control Act of 1962 (P. L. 87-874), on October 23, 1962. The Act authorized construction of Ririe Dam and Reservoir by the Corps, and assigned O&M of the dam to Reclamation under Section 205. Various laws, Executive Orders, and Secretarial Orders apply to Alternative 1 and are summarized below. The legal and regulatory environment within the federal activity would be conducted depends on which alternative is implemented.

1.7.1 Federal Laws

National Environmental Policy Act

The National Environmental Policy Act of 1969 (NEPA) requires that the action agency determine whether or not there are any environmental impacts associated with proposed federal actions. This evaluation is documented and presented to the public as put forth in this EA. If significant impacts are identified following completion of the EA, an EIS will be prepared before the proposed action goes into effect. If no significant impacts are identified through the EA, a Finding of No Significant Impact (FONSI) will be prepared and signed. A FONSI documents the decision of which alternative Reclamation will implement and reasons for its selection. This step will complete the NEPA process for this project.

Endangered Species Act

The ESA requires all federal agencies to ensure that their actions do not jeopardize the continued existence of ESA-listed species, destroy, or adversely modify their critical habitat. As part of the ESA's Section 7 process, an agency must request a list of species from the

USFWS and the National Marine Fisheries Service (NOAA Fisheries) that identifies threatened and endangered species within or near the action area. The agency then must evaluate impacts to those species. If the action may impact any ESA-listed species, the agency must consult with USFWS and/or NOAA Fisheries. Details about this consultation are located in Chapter 3, Section 3.6.

Fish and Wildlife Coordination Act

The Fish and Wildlife Coordination Act (FWCA) provides for equal consideration of wildlife conservation in coordination with other features of water resource development programs. The FWCA requires that any plans to impound, divert, control, or modify any stream or other body of water must be coordinated with the USFWS and State wildlife agency through consultation directed toward prevention of fish and wildlife losses and development or enhancement of these resources. Details regarding this coordination effort are found in Chapter 3, Section 3.6.

National Historic Preservation Act

The National Historic Preservation Act (NHPA) of 1966, as amended, requires that federal agencies consider the effects that their projects have on properties eligible for or on the National Register of Historic Places. The 36 CFR 800 regulations provide procedures that federal agencies must follow to comply with the NHPA. For any undertaking, federal agencies must determine if there are properties of National Register quality in the project area, the effects of the project on those properties, and the appropriate mitigation for adverse effects. In making these determinations, federal agencies are required to consult with the State Historic Preservation Office (SHPO), Native American tribes with a traditional or culturally-significant religious interest in the study area, the interested public, and the Advisory Council on Historic Preservation (in certain cases). Details about this consultation are located in Chapter 3, Section 3.9.

Native American Graves Protection and Repatriation Act

The Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 regulates tribal consultation procedures in the event of discoveries of Native American graves and other NAGPRA “cultural items.” NAGPRA requires consultation with tribes during federal project planning if graves and other NAGPRA cultural items are discovered. NAGPRA

details procedures for repatriation of human skeletal remains and other cultural items with appropriate tribes.

Clean Water Act (33 U.S.C. 1251 et seq.)

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredge and fills material into waters of the United States, including wetlands. The Corps evaluates applications for Section 404 permits. Permit review and issuance follows a sequential process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment. This sequence is described in the guidelines at Section 404(b)(1) of the CWA. Details on potential impacts to water quality and wetlands are described in Chapter 3, Section 3.4.

1.7.2 Executive and Secretarial Orders

Executive Order 11990: Wetlands

Executive Order (EO) 11990 dated May 24, 1977, directs federal agencies to take action to minimize the destruction, loss, or degradation of wetlands and to preserve and enhance the natural and beneficial value of wetlands in carrying out programs affecting land use. Wetlands provide great natural productivity, hydrological utility, environmental diversity, natural flood control, improved water quality, recharge of aquifers, flow stabilization of streams and rivers, and habitat for fish and wildlife resources. Details on potential impacts to wetlands are described in Chapter 3, Section 3.5.

Executive Order 13007: Indian Sacred Sites

EO 13007, dated May 24, 1996, instructs federal agencies to promote accommodation of access to and protect the physical integrity of American Indian sacred sites. A “sacred site” is a specific, discrete, and narrowly delineated location on federal land. An Indian tribe or an Indian individual determined to be an appropriately authoritative representative of an Indian religion must identify a site as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion. However, this is provided that the tribe or authoritative representative has informed the agency of the existence of such a site. Details on potential impacts to Indian sacred sites are described in Chapter 3, Section 3.10.

Executive Order 12898: Environmental Justice

EO 12898, dated February 11, 1994, instructs federal agencies, to the greatest extent practicable and permitted by law, make achieving environmental justice part of its mission by addressing, as appropriate, disproportionately high and adverse human health or environmental effects on minority populations and low income populations. Environmental justice means the fair treatment of people of all races, income, and cultures with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment implies that no person or group of people should shoulder a disproportionate share of negative environmental impacts resulting from the execution of environmental programs. Details on potential impacts that affect environmental justice are described in Chapter 3, Section 3.13.

Executive Order 11988: Floodplain Development

EO 11988, dated May 24, 1977, instructs federal agencies prior to taking an action to the greatest extent practicable, to determine whether the proposed action will occur in a floodplain and if so, consider alternatives to avoid adverse effects. If the only feasible alternatives occur within a floodplain, the agency shall take action to design or modify its action in order to minimize potential harm to or within the floodplain consistent with regulations accompanying this EO. Details on potential impacts are described in Chapter 3, Section 3.5.

Executive Order 13175: Consultation and Coordination with Tribal Governments

EO 13175 instructs federal agencies to consult, to the greatest extent practicable and to the extent permitted by law, with tribal governments prior to taking actions that affect federally-recognized tribes. Each agency shall assess the impact of Federal Government plans, projects, programs, and activities on tribal trust resources and assure that government rights and concerns are considered during the development of such plans, projects, programs, and activities.

Secretarial Order 3175: Department Responsibilities for Indian Trust Assets

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States (with the Secretary of the Interior acting as trustee) for Indian tribes or Indian individuals. Examples of ITAs are lands, minerals, hunting and fishing rights, and water rights. In many cases, ITAs are on-reservation; however, they may also be found off-reservation. The United States has an Indian trust responsibility to protect and maintain rights reserved by or granted to Indian tribes or Indian individuals by treaties, statutes, and EOs. These rights are sometimes further interpreted through court decisions and regulations. This trust responsibility requires that officials from federal agencies, including Reclamation, take all actions reasonably necessary to protect ITAs when administering programs under their control. Details on potential impacts are described in Chapter 3, Section 3.11.

1.8 Scoping and Development of Issues

Scoping is an early and open process used to obtain information that helps identify issues and concerns related to a proposed action, to the affected Tribes and public, geographical area, alternatives, and constraints in the NEPA process. Reclamation's scoping documents and meetings provided information to the public, Tribes and governmental agencies; and request their aid in identifying any issues and concerns related to additional winter water storage at Ririe Reservoir. A full range of potential alternatives were identified that address refill reliability and increase water availability in Ririe Reservoir by modifying winter flood control operations. To identify issues and concerns, Reclamation solicited oral and written comments from the Tribes, federal, state, and local agencies, irrigation districts and the general public, and held two Tribal and two public scoping meetings.

From the January 11, 2011, initial public scoping meeting in Idaho Falls, Idaho, issues were identified with the proposed interim operations (Appendix B). The EA was subsequently postponed while Reclamation and the Corps developed a joint approach for moving forward with the proposed project. In September 2012, Reclamation and the Corps completed a "Ririe Reservoir Winter Release Test Plan." The purpose of the plan was to test the capacity of Willow Creek and the Ririe Floodway Outlet Channel to evacuate flood control space during winter conditions without an increase in flood risk. The test was conducted in February 2013. Based on the information gained from the test, Reclamation revised the alternatives to be evaluated in the EA and presented them to the public for comment in 2013 (Appendix B). Details of the 2011 and 2013 public comments are presented below.

1.8.1 2011 Scoping and Public Involvement

Reclamation mailed scoping letters to: Shoshone-Bannock Tribes; Shoshone-Paiute Tribes, Burns Paiute Tribe, Nez Perce Tribe, and Northwestern Shoshone Tribe (Appendix B). The letters discussed the project and served as notification of the future Tribal public scoping meeting. Reclamation also provided information to the Shoshone-Bannock Tribes through local media and written correspondence; met with the Shoshone-Bannock Tribal Council, and solicited oral and written comments at Tribal public scoping meeting held in Fort Hall, Idaho, on January 12, 2011.

Reclamation also mailed scoping letters to: 164 individuals; congressional delegates; organizations; irrigation districts and federal, state, and local agencies (Appendix B). The letters discussed the project and served as notification of the future public scoping meeting. A public scoping meeting was held on January 11, 2011, at Idaho Falls, Idaho.

Tribal and public scoping meetings provided information and requested input on the proposed alternatives that had the potential to improve Ririe Reservoir fill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk.

Written comments were accepted through February, 2011 are summarized below. Reclamation received seven written/electronic letters of comment as a result of the public scoping meeting and no written comments from meetings with the Tribes. Responses to scoping efforts were varied.

- Support for the No Action alternative. Additionally, flood control is needed for housing developments downstream of Ririe Dam.
- Support for Alternative B: requires 30,000 acre-feet of space in November and linearly decreases the required space to 15,000 acre-feet of space by the March 1.
- General support for winter flood control operations modification to provide greater potential for water supply in future years without increasing flooding risk.
- Identification needed to potential issues to fish and wildlife with respect to the various alternatives.
- Identification by a downstream landowner of erratic flows that caused erosion and crossing issues which have led to livestock management problems.

- Modification of the flood operations on Ririe were implied in the 1990 Fort Hall Indian Water Rights Agreement. This comment is based on the assertion that (a) according to the former watermaster's analysis approximately 100,000 acre-feet of dependable storage would be required to mitigate for the impacts associated with advancing the priority date of the Snake River water right for the Fort Hall Reservation from 1891 to 1867, and (b) modification of the flood operations for Ririe would be required to achieve that level of dependable storage in combination with storage provided from Palisades Reservoir.

1.8.2 2013 Scoping and Public Involvement

Following a process similar to that conducted in 2011, Reclamation mailed scoping letters to: Shoshone-Bannock Tribes, Shoshone-Paiute Tribes, Burns Paiute Tribe, Nez Perce Tribe, and Northwestern Shoshone Tribe. The letters discussed the project and served as notification of the future Tribal public scoping meeting. Reclamation also provided information to the Shoshone-Bannock Tribes through local media and written correspondence; met with the Shoshone-Bannock Tribal Council, and requested oral and written comments at a Tribal public scoping meeting held in Fort Hall, Idaho, on December 18, 2013.

Reclamation mailed scoping letters to: 157 individuals; congressional delegates; organizations; irrigation districts and federal, state, and local agencies (Appendix B). The letters discussed the project and served as notification of the future public scoping meeting. A public scoping meeting was held on December 17, 2013, at Idaho Falls, Idaho.

Tribal and public scoping meetings provided information and requested input on the proposed alternatives that had the potential to improve Ririe Reservoir fill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk. Reclamation also met with the IDFG in Idaho Falls on December 18, 2013.

Written comments were accepted through January 17, 2014. Reclamation received thirteen written/electronic letters of comment as a result of the public scoping meeting and no written comments from the Tribal meetings. The following comments were submitted:

- Favorable to storing more water through the winter months in Ririe Reservoir. The majority of comments identified Alternatives 4 and 5 as their preferred alternatives. These two alternatives proposed 38,000 and 25,000 acre-feet of flood control space in Ririe Reservoir from November 1 through the end of February.

- Recommend increasing efficiency of water use and future land-use planning as solutions to drought;
- Recommend identifying potential issues to fish and wildlife with respect to the various alternatives. Various impacts to fisheries with respect to proposed reservoir levels need to be explored;
- Explore the possibility of winter flow releases to provide a year-long fishery below Ririe Dam.

Reclamation met with the Corps on January 9, 2014, and the Corps submitted comments on January 16 and a revised letter on March 21 (Appendix B). In these letters, the Corps outlined and discussed five pathways available for revising Ririe winter flood control operations:

- Pathway 1 – Revising Winter Standard Project Flood (SPF) developed by the Corps in 1965 could result in a change in the winter operations with no change in flood risk protection.
- Pathway 2 – Operation Changes for Winter Releases would result in a change in the winter operations with no change in flood risk protection. The capacity to release water from Ririe Reservoir during the winter (November 1 to March 1) time period would allow for modification of the 50,000 acre-feet fixed flood space requirement to the extent that water could be evacuated from the time of a forecasted major flood event.
- Pathway 3 – Reallocation Study would result in a change in the winter operations with a change in flood risk protection when a reduction in flood space is less than 15 percent (12,000 acre-feet of active storage allocation).
- Pathway 4 – Reallocation and Reauthorization Study would result in a change in the winter operations with a change in flood risk protection when a reduction in flood space greater than 15 percent (12,000 acre-feet of active storage allocation) is proposed.
- Pathway 5 – Request for Interim Operations/Deviation allows temporary deviations from the water control plan are authorized during emergencies.

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Chapter 2 DESCRIPTIONS OF ALTERNATIVES

This chapter describes the alternatives analyzed in this EA: the No Action alternative and Alternative 1. Other alternatives that were considered but eliminated are also documented.

2.1 Alternative Development Process

The proposed alternatives were developed to meet the purpose and need of the project, as described in Chapter 1. The results of hydrologic modeling using a range of storages and discharges were used to develop the alternatives. Under the purview of the *Ririe Winter Storage Study*, eight total alternatives were proposed and publicly scoped for winter flood control operations at Ririe Dam and Reservoir. Also, an additional alternative was identified during the public scoping process and was considered for detailed analysis.

In 2011, Reclamation considered three alternatives: No Action alternative required 50,000 acre-feet of space from November through March 1; Alternative A required 50,000 acre-feet of space in November and linearly decreases the required space to 24,000 acre-feet by March 1; and Alternative B required 30,000 acre-feet of space in November and linearly decreased the required space to 15,000 acre-feet of space by March 1. A 3 to 5-year interim operational period was proposed for Alternatives A and B to gain knowledge and experience in regulation techniques that would aid in determining long-term operational procedures.

In 2013, five alternatives were proposed. Alternative 1 (current operations) required 50,000 acre-feet of flood control space from November 1 through the end of February. The current operation drafts Ririe Reservoir down to 55,000 acre-feet of flood control space in early November and allows the reservoir to fill into the 50,000 acre-feet of flood control space requirement to avoid winter discharges from the dam. Alternative 2 proposed the same water operations as detailed in Alternative 1 except the reservoir is drafted to 50,000 acre-feet of flood control space by November 1. There would be no discharges from Ririe Dam from November 1 through the end of February unless the reservoir is forecast to reach storage levels which encroach into the exclusive flood control space. Alternative 3 proposed similar water operations as detailed in Alternative 2 except the reservoir is drafted to 40,000 acre-feet of flood control space by November 1. Alternative 4 proposed the same water operations as detailed in Alternative 2 except the reservoir is drafted to 38,000 acre-feet of flood control space by November 1; and Alternative 5 proposed the same water operations as detailed in Alternative 2 except the reservoir is drafted to 25,000 acre-feet of flood control

space by November 1. A 10-year interim operational period was proposed for Alternatives 2 through 5 to gain knowledge and experience in regulation techniques that would aid in determining long-term operational procedures.

In response to scoping, Reclamation received a letter of comment from the Corps on January 16, and a revised letter on March 21, 2014 (Appendix B). In this letter, the Corps outlined and discussed operational project authorization and flood baseline requirements and various pathways available for revising winter flood control operations. Pathways 1 and 2 outline changes to winter flood control operations with no change in flood risk; and Pathways 3, 4, and 5 outline changes to winter flood control operations that would change flood risk management space. Reclamation is required to follow the intent of the operational project authorization and flood baseline requirements for any winter flood control revisions. If Reclamation determines to revise the winter flood control operations, one of the pathways would need to be followed. Reclamation then evaluated the pathway process to determine if any of the five pathways met the scope and the purpose and need of the Ririe Winter Storage Study.

- Pathway 1 – Revising Winter SPF developed by the Corps in 1965 could result in a change in the winter operations with no change in flood risk protection. Reanalysis of the winter SPF would provide necessary information that could change the winter draft requirement. However, the historic analysis is still the appropriate methodology for SPF calculations. If the SPF analyses were to be redone, results would probably not change significantly. This winter operational change requires approval from the Corps Walla Walla District, or Corps Division approval is required if the operation change requires an update to the water control manual. Given this information, the decision was made to not pursue a SPF study at this time.
- Pathway 2 – Operation Changes for Winter Releases would result in a change in the winter operations with no change in flood risk protection. The capacity to release water from Ririe Reservoir during the winter (November 1 through March 1) time period would allow for modification of the 50,000 acre-feet fixed flood space requirement to the extent that water could be evacuated from the time of a forecasted major flood event. The amount of 8,000 acre-feet was determined as the volume of water that could be evacuated over a 5-day period from the time of a forecast major flood event, and would result in no increase in flood risk. This winter operational change requires approval from the Corps Walla Walla District, or Corps Division approval is required if the operation change requires an update to the water control manual. Reclamation determined this pathway met the scope and the purpose and need of Ririe Winter Storage Study. Implementation of this pathway is predicated on a MOU between the Corps, Reclamation, and Mitigation, Inc. to preserve channel capacity to pass or evacuate water through the Ririe Floodway Outlet Channel during the winter flood season.

- Pathway 3 – Reallocation Study would result in a change in the winter operations with a change in flood risk protection when a reduction in flood space is less than 15 percent (12,000 acre-feet of active storage allocation). This requires detailed reallocation studies with residual flood risk and economic studies. This winter operational change requires approval from the Corps Headquarters Commander, Washington D.C. Due to the extensive reallocation study requirements that are beyond the scope of the Ririe Winter Storage Study, Pathway 3 will not be pursued at this time.
- Pathway 4 – Reallocation and Reauthorization Study would result in a change in the winter operations with a change in flood risk protection when a reduction in flood space greater than 15 percent (12,000 acre-feet of active storage allocation) is proposed. Requires detailed reallocation studies greater than Pathway 3. This winter operational change requires Congressional approval. Due to the extensive reallocation study requirements that are beyond the scope of the Ririe Winter Storage Study, Pathway 4 will not be pursued at this time.
- Pathway 5 – Request for Interim Operations /Deviation allows temporary deviations from the water control plan are authorized during emergencies. This winter operational change requires approval from the Corps Headquarters Commander. The Reclamation Ririe Study does not meet the criterion as being an emergency.

Reclamation chose Pathway 2 – Operation Changes for Winter Releases, to follow because the pathway is within the scope of the Ririe Winter Storage Study and meets the Study's purpose and need to:

- Improve Ririe Reservoir fill reliability;
- Increase water availability for irrigation and other water demands in southern Idaho; and
- No increase in downstream flood risk.

Pathway 2 was then developed into Alternative 1. This alternative proposes to draft Ririe Reservoir to a fixed 50,000 total acre-feet of flood control space by November 1, and would allow inflows into the reservoir up to a maximum of 8,000 acre-feet to be stored in the November 1 through the end of February time period.

Alternative 1 was developed by using the Corps' determination regarding the quantity of winter flood space (8,000 acre-feet) that can encroach upon the fixed 50,000 acre-feet flood control space, and mitigate with amount of water that can be evacuated over a 5-day period from the time of a forecasted major flood event (Appendix A).

2.2 Alternatives Considered but not Analyzed in Detail

The 2011 proposed Alternatives B and C and 2013 proposed Alternatives 2, 3, 4, and 5, were analyzed in detail to the point where it was evident that they did not meet the purpose and need action requirement of no increase in flood risk from the original Ririe Reservoir project authorizations (Flood Control Act of October 23, 1962, 76 Stat 1193 of Public law 87-874, Section 7 of the Flood Control Act of 1944, Ririe Dam and Reservoir Willow Creek, Idaho, Design Memorandum No.1, page 7-1, Ririe Dam Operating Procedures, Chart 5).

Specifically, the amount of additional winter water storage that would not increase flood risk is defined as the quantity of winter flood space (8,000 acre-feet) that can encroach upon the fixed 50,000 acre-feet flood control space, and be mitigated with the amount of water that can be evacuated over a 5-day period from the time of a forecasted major flood event (Appendix A). The 2011 and 2013 proposed alternatives were eliminated because they allowed inflows to potentially exceed the volume of water (8,000 acre-feet) that could be evacuated over a 5-day period from the time of a forecast major flood event, and therefore, would increase flood risk.

2.3 Descriptions of Alternatives

2.3.1 No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

The No Action alternative proposes to maintain the current water operations at Ririe Reservoir. The reservoir is drafted in November to 5,000 acre-feet below the fixed 50,000 acre-feet of flood control space requirement from the Water Control Manual (Corps 1985) for a total of 55,000 acre-feet of available flood control space (Figure 2-1). This available space includes the 10,000 acre-feet exclusive flood control space. Typically there is no discharge from Ririe Dam from November 1 through the end of February, allowing the reservoir to store any inflows during the winter period. If the storage is forecast to encroach into the exclusive flood control space, discharges would occur in 200 cfs increments to keep the reservoir from filling to the maximum storage of 100,484 acre-feet.

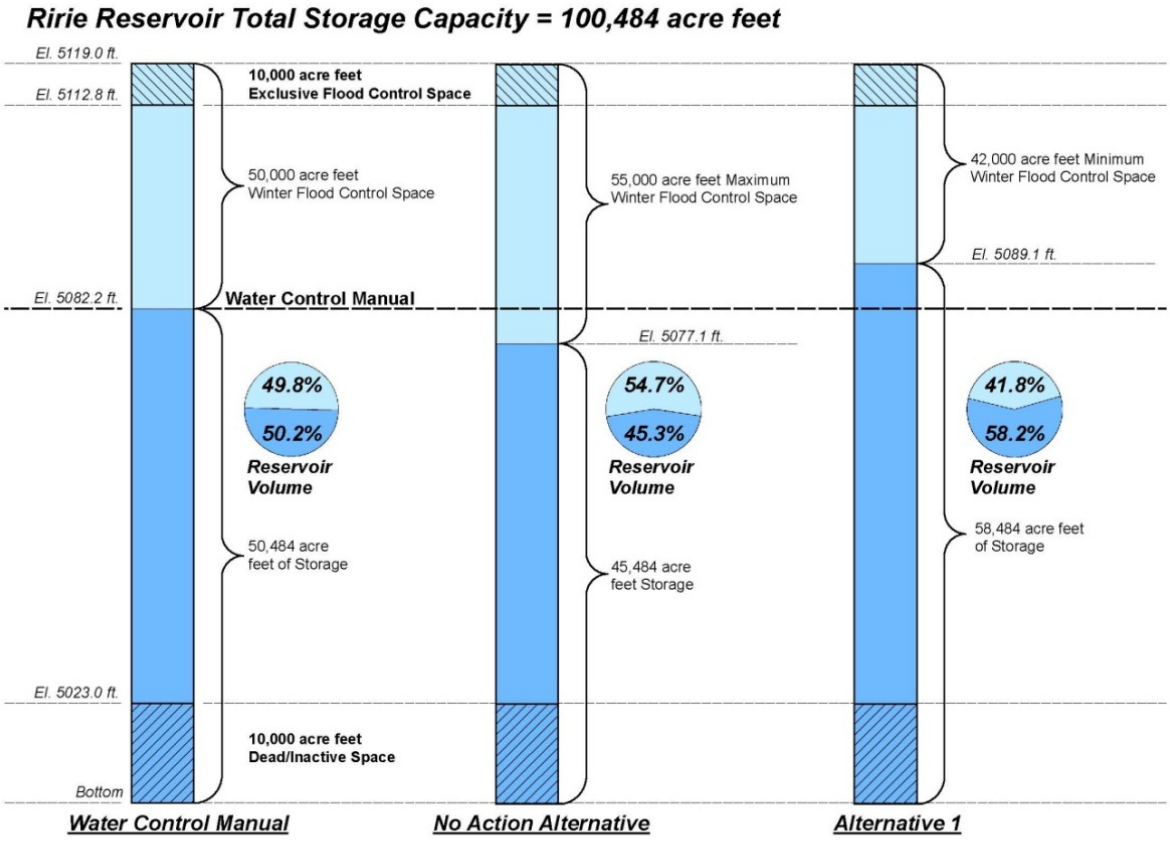

Figure 2-1. Flood control and storage space allocation comparisons between the Water Control Manual, the No Action alternative, and Alternative 1.

Floodway Outlet Channel cleaning associated with the No Action alternative is to facilitate evacuation of water to comply with flood control regulations. The costs associated with flood control are considered non-reimbursable costs and are not paid for by the project beneficiaries, but rather are covered by federal appropriations. Therefore, Mitigation Inc. and Water District 1 are not responsible for the channel cleaning costs under the No Action alternative. Under the No Action alternative it is expected that channel cleaning would continue to be required and federal appropriations would continue to pay for these costs.

2.3.2 Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Alternative 1 proposes to draft Ririe Reservoir by November 1 to a fixed 50,000 total acre-feet (5082.24 feet elevation) of flood control space which includes the 10,000 acre-feet of exclusive flood control space as described in the SOPs for Reservoir Regulation for Ririe

Dam (Corps 2001) for a 10-year interim period. The purpose of the proposed 10-year interim operational period is to gain knowledge and experience in regulation techniques that would aid in determining long-term operational procedures. This alternative would allow the inflows into Ririe Reservoir to be stored up to 8,000 acre-feet in the November 1 through the end of February period. During this time there would be no discharge from Ririe Dam unless the total of flood control space is less than 42,000 acre-feet (initial 50,000 acre-feet of space minus 8,000 acre-feet of inflow) (Figure 2-1). On a yearly basis, prior to November 1, Reclamation, the Corps, and Mitigation, Inc. would make a determination whether to implement this alternative for the upcoming storage season.

Winter discharge operations would occur according to one of the following two scenarios:

1. The storage is forecast to encroach into the 42,000 acre-feet of flood control space.
    - Day 1 – 150 cfs
    - Day 2 – 300 cfs
    - Day 3 until the day preceding the final release day – 400 cfs
    - Final day (based on volume required) – immediate shutoff of flows to avoid icing problems at low flows

Actual release rates would be adjusted adaptively based on conditions at the time of release. During warm periods of the winter, releases could be decreased to maintain flow and capacity in the channel, thereby, maintaining the ability to convey flows resulting from a forecasted major storm event.

2. A major flood event is forecast to encroach into the 42,000 acre-feet of flood control space; discharges would occur until 50,000 acre-feet of flood control space is available. Discharges would occur over a 5-day period as follows:
    - Based on a 3-day forecast: begin releasing water 3 days prior to predicted rain-on-snow event;
    - On days 1 and 2, flows would be approximately 300 to 500 cfs to clear the channel of any remaining debris left from the mechanical channel cleaning (discussion below),
    - On days 3 through 5, flows would be approximately 900 cfs.
    - Winter flows would ramp down over a 1-day period.

The formula used to calculate maximum channel capacity is: (5 days)*(average 750 cfs)*(1.98 acre-feet/cfs per day) = 7,500 acre-feet or approximately 8,000 acre-feet.

Snow often accumulates in the Ririe Floodway Outlet Channel, and would need to be cleared prior to a winter discharge to preserve channel capacity to pass or evacuate water. The criteria to initiate a mechanical channel cleaning are:

- There is more than approximately 1.5 feet of snow on the channel invert; and/or
- There are cornices or other snow buildup in excess of approximately 1.5 feet of snow on the side slopes.

Reclamation is responsible for channel cleaning for flood control. Reclamation and Mitigation Inc. would enter into a MOA to specify duties and roles for channel cleaning. Reclamation would coordinate with the Corps on the channel cleaning specifics. An average of 325 machine hours is required to clear the Ririe Floodway Outlet Channel. The Ririe Floodway Outlet Channel would be inspected by Reclamation and Mitigation Inc. personnel before and after a winter discharge.

2.4 Comparison of Alternatives

The environmental impacts of both alternatives are compared in Table 2-1. Potential short and long-term, direct and indirect impacts of the alternatives are summarized. The environmental consequences of the alternatives arranged by resource are described in detail in Chapter 3.

Table 2-1. Summary of environmental effects for the No Action alternative and Alternative 1.

Resource	No Action Alternative	Alternative 1
Hydrology	Short and long-term effects are negligible or would continue to occur as they did in the past. Mitigation, Inc.'s ability to supply this water would remain unchanged. Channel cleaning associated with the No Action alternative is to facilitate evacuation of water to comply with flood control regulations. Floodway Outlet Channel cleaning would continue to occur when needed to convey water from local snowmelt that is intercepted by the Eagle Rock Canal, Willow Creek, and the Floodway Outlet Channel. The costs associated with flood control are considered non-reimbursable	The decision to store additional water would occur before the storage season in accordance with a MOA between Reclamation, Mitigation Inc., and the Corps and could possibly negate the need for winter releases. No significant impacts to flood potential would occur because the reduction in winter flood control space reservation would be mitigated by releasing water to achieve the 50,000 acre-feet winter flood control space requirement. Under Alternative 1, Floodway Outlet Channel cleaning could be required in 9 of 19 years. Additionally, there would be two releases of water

Resource	No Action Alternative	Alternative 1
	costs and are not paid for by the project beneficiaries but rather are covered by federal appropriations. Therefore, Mitigation Inc. and Water District 1 are not responsible for the channel cleaning costs under the No Action alternative. Under the No Action alternative, it is expected that channel cleaning would continue to be required and federal appropriations would continue to pay for these costs.	required during the same winter season in 2 of the 19 years that also could require channel cleaning. Channel cleaning may not be necessary for all 9 years (i.e., snow/debris amounts would not warrant cleaning). Reclamation is responsible for channel cleaning for flood control. Reclamation and Mitigation Inc. would enter into a MOA to specify duties and roles for channel cleaning. Reclamation would coordinate with the Corps on the channel cleaning specifics. Mitigation Inc. would execute contracts to clear the channel and staged during the subsequent water release. Floodway Outlet Channel would be inspected by Reclamation and Mitigation Inc. before and after a winter discharge. Impacts to storage water gain under Alternative 1 winter operations is minimal (1.4 percent increase over 19 years) and the reservoir fills in one additional year over 19 years compared to the No Action alternative. While storage benefits in Ririe Reservoir are small compared with the upper Snake River system storage capacity, additional water storage in Ririe Reservoir would result in a small increase in the reliability of augmentation flows under the Nez Perce Agreement The reservoir water levels are within the range of current water levels and would be well below the high water mark on the reservoir and therefore no adverse effect. Erosion problems are not expected because winter flows would be below the combined 1,200 cfs channel limit.
Groundwater	Short and long-term effects to the groundwater levels are negligible or would continue to occur as they did in the past.	Groundwater levels near the reservoir would likely not exceed the minimum or maximum elevations that occurred during the No Action period. The proposed operation would cause the

Resource	No Action Alternative	Alternative 1
		minimum elevation of the reservoir to be approximately 7 feet higher in normal and wet years. This higher elevation in the reservoir would likely result in higher minimum groundwater elevations. The proposed operation would not likely cause the reservoir to exceed previous maximum elevations.
Water Quality	Short and long-term effects to water temperature, oxygen concentration, nutrient cycling, and sedimentation are negligible and would continue to occur as they did in the past.	The summer time reservoir temperature and oxygen regimes in wet years when the reservoir remained at higher elevations would develop elevated epilimnetic temperatures and depressed oxygen levels in the hypolimnion. Alternative 1 should not change these processes in the reservoir. The epilimnion should heat and develop a similar temperature levels as seen in years past. The hypolimnion would undergo similar levels of oxygen depletion and the subsequent nutrient releases from the anoxic sediments would continue to occur. Erosion problems are not expected because winter flows would be below the combined 1,200 cfs channel limit.
Floodplain/Wetlands	Due to fluctuating reservoir water levels during the growing season and the steep sides of Willow Creek Canyon, there is low potential for wetland and riparian vegetation along reservoir shoreline. As such, reservoir areas with riparian and wetland vegetation would continue to persist in their current conditions. The robust forested/shrub wetland vegetation complex on Willow Creek below the dam would also continue to persist, having achieved its riparian vegetation potential in the confined channel.	Direct and indirect effects to the floodplain and wetland areas are negligible in the short and long terms and there would be no adverse impacts from the proposed winter operations. Increased winter flows could cause streambank and/or reservoir banks to freeze and expand, thereby increasing the soil volume. This increase in moisture content and decrease in density due to freeze-thaw cycling makes soils more susceptible to fluvial erosion. The freezing effects of the winter flows would not affect the riparian vegetation because: 1) the changes in the reservoir surface level are minor and the wetted bank is not increased much from what it was before; 2) plants are dormant during the releases (December-February); and 3) the duration of the releases would be relatively short, decreasing the

Resource	No Action Alternative	Alternative 1
		likelihood of any vegetation and soil pore water from freezing. Additionally, the forested/shrub wetland vegetation complex would have root systems capable of withstanding 900 cfs flows below the dam on Willow Creek, and riparian vegetation. The forested/shrub wetland vegetation complex below Ririe dam and the small pockets of riparian vegetation along the reservoir would continue to persist as they would in the No Action alternative.
Aquatic and Terrestrial Biota	The present species diversity and fish population levels are expected to continue to remain unchanged with no adverse impacts. The current stands of aquatic macrophytes would remain relatively unchanged providing food directly for fish, as well as substrate for algae. Nutrient levels in the reservoir would remain unchanged, at least as it relates to reservoir operations. The present distribution of minimal riparian vegetation in the narrow zone around the reservoir would remain unchanged and have no adverse impacts on the terrestrial biota. The diversity, distribution, and relative abundance of amphibians and reptiles using the reservoir area are expected to remain the same as current conditions.	Overall effects (direct and indirect) to aquatic and terrestrial biota in the short and long term would be negligible to minor, with no adverse impacts associated with the proposed Alternative 1. The minor change to the reservoir habitat that juvenile fish would encounter is that the reservoir could have slightly more water during the winter period than presently occurs. This would reduce the amount of time that juvenile fish can rely on the cover of aquatic macrophytes or lava rock and boulder habitat for escape from predators and they would be forced into open water habitat. Juvenile smallmouth bass, perch, and walleye would likely benefit by being able to seek cover from predators in lava rock and boulders during winter months. There could be slight effects on amphibians primarily northern leopard frogs from freezing in winter. Leopard frogs are occasionally found around the shoreline but not in great numbers. The greatest danger to the frog is freezing during drawdowns. The higher winter water levels would likely mean the frogs would simply select similar water depths for hibernation. The other amphibian and reptile species using the reservoir would not be affected by the increase of winter water storage because they are mostly terrestrial species and generally would not use the

Resource	No Action Alternative	Alternative 1
		drawdown zone along the edge of the reservoir during winter months. Mammalian, avian, and terrestrial biota communities would remain essentially the same as presently occurs.
Threatened and Endangered Species	Sage grouse would continue to exist in their current state within the Tex Creek WMA. It is not anticipated greater sage-grouse distribution, abundance, or local population viability would change.	Sage grouse would continue to exist in their current state within Tex Creek WMA. The winter varial zone under this alternative does not possess characteristics associated with sage grouse habitat requirements in any way.
Recreation	Minimal adverse impacts would continue to occur to established winter visitation levels, recreation activities, or facilities at Ririe Reservoir or at Tex Creek WMA, and no adverse impacts would occur with Willow Creek, Sand Creek, and the Snake River recreational uses.	The existing recreation facilities would continue to provide the same recreation opportunities that are now present. Effects on recreation below Ririe Reservoir would be the same as those described in the No-Action alternative. When fall water levels are closer to the 42,000 acre-feet minimum flood control space (elevation 5089 feet), the Blacktail Boat Ramp, with a bottom elevation of 5079 feet, would potentially have a longer boating season than under the No Action alternative because the ramp would potentially remain usable later in the season. Alternative 1 would have no effect on Juniper Boat Ramp, which has a bottom elevation of 5030 feet, significantly lower than Blacktail, as well as the No Action alternative maximum winter flood control level.
Cultural Resources	Cultural sites that are already underwater year-round would remain inundated, and sites above the high water line would remain above the high water line.	Cultural sites that are already underwater year-round would continue to be inundated, and sites above the high water line would remain above the high water line. Inundation of archeological sites that contain surface artifacts and/or features could potentially diminish or eliminate data important for a better understanding of the nature of the site. Any buried information that may still exist below the waters of the reservoir could be available to future researchers if and when the sites once again become available for study. The change in operations

Resource	No Action Alternative	Alternative 1
		afforded by Alternative 1 would not change that potential outcome.
Sacred Sites and Traditional Cultural Properties (TCPs)	The existing conditions would remain intact and would not be affected.	Potential effects to Indian sacred sites and TCPs can only be dealt with in a generalized fashion due to the fact that the specific location and nature of sacred sites within the study area are unknown. If Indian sacred sites are located within the study area, it is unlikely their integrity would compromised by physical disturbances or audio and/or visual intrusions because the Alternative 1 is a winter operational change with no ground disturbance. Impacts associated with the proposed Alternative 1 would not affect Indian sacred sites or their eligibility for listing in the NRHP.
Indian Trust Assets	The existing conditions would remain intact and would not be affected.	Alternative 1 would not affect any known ITAs of lands, minerals, water rights, monetary holdings, and gathering rights in the direct vicinity of Ririe Dam and Reservoir. The storing of additional water in Ririe Reservoir can benefit Tribal water rights above Milner Dam. Implementation of Alternative 1 would not affect tribal hunting and fishing rights outside of the study area.
Socioeconomics	Mitigation Inc. and Water District 1 would not receive additional storage water and would not attain additional rental pool revenues. Mitigation Inc. and Water District 1 would not have any additional channel cleaning O&M costs.	Mitigation Inc. would receive some additional rental pool revenue associated with the estimated additional storage water ($10,000 average annual); however, the net change between the additional rental pool revenue and the additional O&M costs for channel cleaning is negative (-$9,430 annual, -$81,167 discounted total). The effects in the upper Snake study area would also be adverse. The net change between Mitigation Inc. and Water District 1 revenues and the total estimated additional O&M costs are negative (-$7,030 annual basis and -$60,597 on a discounted total basis). O&M costs could be less than anticipated if channel cleaning was

Resource	No Action Alternative	Alternative 1
		not necessary (i.e., snow/debris amounts do not warrant cleaning).
Environmental Justice	No adverse natural resource or socioeconomic impacts adversely affecting minority and low-income populations were identified, therefore there are no environmental justice impacts.	The proposed action is not expected to result in any disproportionately high and adverse effects on minority and low-income populations. Adverse socioeconomic impacts are identified in Section 3.12 Socio-economics. These adverse socioeconomic impacts would be shared equally by all affected water users within the Mitigation Inc. and upper Snake study areas. The proposed action would be in compliance with all applicable NEPA regulations related to environmental justice protections.
Climate Change	Short and long-term effects on climate change would be negligible. Any minor effects would be indirectly derived from agriculture. Climate change models indicate generally earlier and higher reservoir inflows during the cooler months of December through May and decreased reservoir inflow during the summer months. Modeling results suggest a potential decrease in end-of-month reservoir storage volume in September. In general, surface water deliveries from contracted space had a higher likelihood of continuing to be met than those from the river channel.	Indirect effects from agriculture on climate change due to winter operational changes would be the same as those described in the No Action alternative and would have no adverse impacts on climate change. Short and long-term effects of climate change on Ririe operations proposed under Alternative 1 would be minor, and have no adverse impacts on the proposed operations. The climate models predict earlier and higher reservoir inflows during December through May. This suggests that the proposed winter operations could capitalize on the predicted earlier and higher inflows in the early spring by storing more water in the reservoir and partially offset or mitigate changes in surface water deliveries.

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Chapter 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 Introduction

The affected environment chapter evaluates the environmental consequences of implementing each of the alternatives described in Chapter 2. The level and depth of the environmental analysis corresponds to the context and intensity of the impacts anticipated for each environmental component. Where the alternatives would have the same impacts on an environmental component, the analysis is presented once and summarized or referenced in subsequent analyses to eliminate redundancy. The No Action alternative describes current conditions most likely to occur during current operations and provides the basis to which all other alternatives (Alternative 1) are compared.

Discussions are arranged by resources in the following order:

- Hydrology
- Groundwater
- Water Quality
- Floodplain/Wetlands
- Aquatic and Terrestrial Biota
- Threatened and Endangered Species
- Recreation
- Cultural Resources
- Sacred Sites and Traditional Cultural Properties
- Indian Trust Assets
- Socioeconomics
- Environmental Justice
- Climate Change

The following resources are not affected by the alternatives, and therefore, are not discussed in this EA:

- Air Quality
- Earth Resources
- Noise
- Aesthetics
- Transportation and Access
- Hazardous and Toxic Waste
- Social Wellbeing
- Visual Resources

3.2 Hydrology

3.2.1 Affected Environment

Ririe Reservoir is an artificial impoundment on Willow Creek created by Ririe Dam. The Dam was completed in 1977 and was intended for irrigation, flood control, habitat for fish and wildlife, and recreation (Corps 1966). Ririe Reservoir is managed primarily for flood control and irrigation. Annual precipitation ranges from 10 to 24 inches on the 627-square-mile drainage area (USGS 2014). Annual precipitation is dominated by winter snow and spring rain. July through October contribute about 10 percent of the annual precipitation.

The reservoir is approximately 10.5 miles long, with a surface area of approximately 1,560 acres and a mean depth of 64 feet. The reservoir has a total storage capacity of 100,484 acre-feet. The bottom 10,000 acre-feet (below elevation 5023.0 feet) is dead and inactive space, which is not available for delivery downstream; the next 80 percent of the total storage capacity is used for both flood control management and irrigation; and the top 10,000 acre-feet (between elevation 5112.8 feet and 5119.0 feet) is reserved exclusively for flood control (see Figure 2-1). **All reservoir content or storage values in this document include the total water stored in the reservoir, whereas only the active storage is recorded in Reclamation's Hydromet system and other public data sources**.

The 7.8-mile-long Floodway Outlet Channel extends west from a point about 6 miles downstream of Ririe Dam on Willow Creek to the Snake River upstream of Idaho Falls. The Floodway Outlet Channel was constructed to reduce flooding on lower Willow Creek and Sand Creek in Idaho Falls.

The average annual inflow to Ririe Reservoir from 1978 to 2013 was 89,400 acre-feet (reported from Reclamation Hydromet data). Flow into the reservoir typically peaks in April and May and is at a minimum during the winter.

After spring runoff, releases are made from Ririe Reservoir to meet Willow Creek natural flow rights and to balance storage with other system reservoirs; efforts are also made to hold the reservoir high for recreation purposes. System reservoirs are reservoirs above Milner Dam (American Falls, Palisades, Jackson Lake, Ririe, Island Park, Grassy Lake, and Henrys Lake) that form a "system" where "temporary storage" is allowed. During the winter, the Ririe Dam outlet gates are closed to prevent ice from filling the channel downstream. During irrigation season, reservoir releases are held to 400 cfs or less when possible to prevent damage to landowner pump stations near the dam and erosion of the stream channel downstream of where the Eagle Rock Canal (with flows up to 1,200 cfs) enters Willow Creek (Reclamation 1997).

Methods for Evaluating Impacts

Impacts were evaluated for the following hydrologic indicators:

1. Flood potential.
2. Storage water gained.
3. Change in Ririe Reservoir level.
4. Flows below Ririe Dam.
5. Floodway Outlet Channel cleaning.
6. Willow Creek channel erosion.

Information Used in the Analyses

The data used for hydrology analyses was extracted from Reclamation's Hydromet system and includes the following:

- Ririe and American Falls reservoir elevations and contents from water years 1979 through 2013 (35 years). From water year 1979 to 1993, Ririe Reservoir was drawn to a maximum elevation of 5082.2 feet at the beginning of winter, which required releasing all inflow as it occurred. This caused periodic problems with channel icing downstream. The Ririe Reservoir Water Control Manual (Corps 2011b) states that if minimum winter flows "are not maintained, i.e., equal to at least inflow, additional space will be required to store winter inflow." Additionally, the Fort Hall Settlement was enacted in 1990 and Reclamation's subsequent contract with Mitigation Inc. for storage in Ririe Reservoir was signed on March 31, 1994. This contract covers the entire irrigation capacity of Ririe Reservoir and resulted in a structured demand for Ririe Reservoir water.

As a result of winter ice problems and in order to manage more efficiently with the Mitigation, Inc. contract in place, the initial winter storage was limited to a maximum of 5077.1 acre-feet (5,000 acre-feet below 5082.2 feet) beginning in 1994. This resulted in winter releases being eliminated in most years. This operation was consistent with current operations, so data used in the analyses was limited to the period beginning in water year 1994.

Reclamation and Corps' winter release test was conducted in water year 2013. As part of the test, winter operations at Ririe Reservoir were similar to Alternative 1, rather than the No Action alternative. Therefore, water year 2013 was not included in the analysis comparing the Alternatives. Water years 1994-2012 comprise the period used for analysis in this EA.

- Natural flows at the "Willow Creek near Ririe Idaho" stream gauge from 1975 through 2013 (39 years).
- Combined flow below Milner Dam (Idaho powerplant releases plus "Snake River at Milner Idaho" gauge) from 1979 through 2013 (35 years).
- Area-capacity table for Ririe Lake.

Other information used in the analyses includes:

- Rental pool procedures (Idaho Water District 1, 2007 and 2013).
- 2004 Nez Perce Agreement.
- Records of Reclamation costs for winter cleaning of Willow Creek channel.
- Reclamation's 2010 "Ririe Dam Flood Frequency Study, Bonneville County, Idaho."
- Corps' 2014 "Ririe Flood Operations Study: Pathways for Reducing Ririe Reservoir Flood Risk Management Space."
- Corps' 2013 "Ririe Winter Release Test Report" results.

Analysis Methods

Potential impacts of reservoir operations were evaluated as discussed below.

Analyzing Reservoir Storage

No Action Alternative

Historical data from water years 1994 through 2012 was used to represent the No Action alternative. In wet years, releases from the dam are often continued beyond November 1 and the minimum flood control space requirement is not met until sometime during November.

Alternative 1

For Alternative 1, the procedures described below were used to analyze reservoir storage.

1. The November 1 storage was set based on historical storage and conditions. In dry years, the historical reservoir storage was below 45,000 acre-feet on November 1 and the recorded November 1 storage was used. In wet years, the reservoir was being drawn down on November 1 to reach the minimum flood control space and the storage for November 1 was set at 50,000 acre-feet.
2. During the winter storage season, historical daily inflow was added to the initial storage beginning November 1 to calculate the storage at the end of each day, through the end of February.
3. Water would be released from the reservoir as storage approaches the 58,000 acre-feet maximum winter storage or a storm is forecast to result in flows exceeding that level.

   To calculate required release volumes and periods required due to storage approaching 58,000 acre-feet, the total inflow through the end of February was projected once the calculated storage in step 2 reached 58,000 acre-feet. The average winter inflow to the reservoir up to that point was used as the projected flow for the remainder of the season. (Based on an analysis of historical data, cumulative winter inflows up to a given date are a good predictor of cumulative inflows for the remainder of the winter.) This release volume was subtracted from the end-of-February storage calculated in step 2 to result in the final end-of-February storage value.

   It was assumed that the channel would be cleaned ahead of these releases. However, if releases were calculated to be required after February 20, it was assumed that channel cleaning would not be conducted. Required releases occurring late in the winter would indicate a relatively dry year and the possibility of adjusting the timing of the releases to avoid channel cleaning.

   Some scenarios resulted in end-of-February storage exceeding the 58,000 acre-feet level after the release because actual inflows were greater than projected. It was assumed that a second release would not be conducted in this scenario, since this would occur late in the season and a release could be incorporated into spring operations.

   Calculations were not performed for the forecasted storm scenario, since the type of storm envisioned has not occurred within the Ririe Reservoir watershed during the period of record. However, release volumes for this scenario would be similar to those calculated for some years as described above and the purpose of these releases

is to provide storage space so discharges of water from above the dam can be curtailed during the ensuing runoff event.

4. The difference in end-of-February storage between Alternative 1 and the No Action alternative would only persist through Ririe Reservoir's storage season (November 1 to May/June) to the degree that the reservoir would not fill during the storage season for the No Action alternative. As a result, the increase in end-of-February storage calculated for Alternative 1 was adjusted downward, if necessary, to the unfilled space during the remainder of the storage season for the No Action alternative. If Ririe Reservoir filled during the storage season for the No Action alternative, it was assumed it would also fill for Alternative 1, resulting in no increase in total storage over the No Action alternative that year.
5. To determine whether the benefit of additional storage under Alternative 1 would be assigned to Ririe Reservoir or other reservoirs in the system, the maximum storage in American Falls was evaluated.

   If American Falls operations in that water year left enough space to hold the additional Ririe storage under Alternative 1, the benefit of this additional storage would be assigned to other reservoirs in the system.

   If American Falls filled in that water year and the system spilled below Milner, the benefit of the additional storage would be assigned to Ririe Reservoir.

Reservoir Water Surface Elevation

The Ririe Reservoir area-capacity tables were applied to storage amounts for each alternative to determine corresponding water surface elevations.

Winter Release Patterns

The limits on flow changes between the No Action alternative and Alternative 1 were based on not exceeding the published capacity of the channel below Ririe Dam. The maximum capacity of the Ririe Floodway Outlet Channel is 900 cfs and 300 cfs may be evacuated through the Sand Creek system, providing the flow is non-damaging (Corps 2011).

For winter releases due to (1) forecast Ririe Reservoir storage exceeding 58,000 acre-feet, and, (2) a forecast major storm event requiring evacuation of winter flood control space, the schedule listed below was used.

- Day 1 – 300 cfs
- Day 2 – 500 cfs
- Day 3 until the day preceding the final release day – 900 cfs.

- Final day (based on volume required) – Immediate shut off of flows to avoid icing problems at low flows.

Actual release rates would be adjusted adaptively based on conditions at the time of release. For example, during warm periods of the winter, releases based on projected storage exceeding 58,000 acre-feet could be decreased to maintain flow and capacity in the channel, thereby, maintaining the ability to convey flows resulting from a forecasted major storm event.

Additional storage calculated as of the end of February for Alternative 1 would be used in the summer based on irrigation demands or evacuated in advance of November 1 as needed to reach the minimum winter flood control space requirement. The timing of incremental releases would be dependent on irrigation demand, weather, water rights, and storage in other system reservoirs, so associated flows were not calculated.

If a major storm event is forecast, a release would be required to bring the reservoir contents down to 50,000 acre-feet. Releases would begin to increase 5 days in advance, to reach 900 cfs 3 days in advance of the flood.

Other Hydrologic Factors

One common factor between the No Action alternative and Alternative 1 that were considered but not analyzed because its consistency was evaporation.

- Evaporation is approximately 2 percent of reservoir capacity each year and reduces reservoir content by about 1,600 acre-feet.
- At times when minimum inflows (approximately 17 cfs) are called from Ririe Reservoir based on water rights; the actual release could be four times that amount due to the minimum settings of the outlet gates. The monthly release with a minimum gate opening is approximately 4,000 acre-feet.
- When American Falls Reservoir contents fall to near 100,000 acre-feet, Reclamation stores water in American Falls that may otherwise be held in upstream reservoirs. This is to preserve water quality in American Falls releases, based on the *American Falls Reservoir Action Plan* (October 2010) agreed to by Reclamation and the Idaho Department of Environmental Quality (IDEQ). Some of this water could come from Ririe Reservoir.

3.2.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

For the No Action alternative, short and long-term (5 and 10 years, respectively) effects (both direct and indirect) to the six parameters listed in the Methods for Evaluating Impacts section discussed previously are negligible or would continue to occur as they did in the past.

There would be no changes to flood control space, flood potential, storage water gained, erosion to Willow Creek channel, reservoir level, and the spatial scope of economic impacts. Flows below Ririe Dam would be unchanged, and would continue to depend on inflow and demand. Water would be delivered for irrigation in the summer or evacuated (with an additional 5,000 acre-feet) in the fall to achieve the flood control required by the operating rules for flood control, 1976, just as in past years.

Channel cleaning associated with the No Action alternative is to facilitate evacuation of water to comply with flood control regulations. Floodway Outlet Channel cleaning would continue to occur when needed to convey water from local snowmelt that is intercepted by the Eagle Rock Canal, Willow Creek, and the Floodway Outlet Channel. The costs associated with flood control are considered non-reimbursable costs and are not paid for by the project beneficiaries but rather are covered by federal appropriations. Therefore, Mitigation Inc. and Water District 1 are not responsible for the channel cleaning costs under the No Action alternative. Under the No Action alternative, it is expected that channel cleaning would continue to be required and federal appropriations would continue to pay for these costs.

There would be no change in the adequacy of Mitigation Inc.'s water supply. Diversions from the Snake River by the Shoshone-Bannock Tribes are limited to 115,000 acre-feet per year. In a wet year, 1,891 water rights are fulfilled through the entire irrigation season. Mitigation Inc.'s requirement to supply stored water for the Shoshone-Bannock Tribes has ranged from 0 acre-feet in wet years to as high as 69,000 acre-feet in dry years. Mitigation Inc.'s ability to supply this requirement would remain unchanged.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Throughout this section, short and long-term (5 and 10 years, respectively) impacts are not discussed individually because there is no difference between impacts at the two horizons. Effects, (both direct and indirect) to the six parameters are negligible or would be minor and not adverse, and are discussed in detail below.

1 – Flood Potential

The Corps' 2014 letter containing Ririe Flood Operations Study: Pathways for Reducing Ririe Reservoir Flood Risk Management Space was used to evaluate flood potential for the No Action alternative and Alternative 1. The 2014 Corps letter states that a reduction in flood control space reservation of up to 8,000 acre-feet can be mitigated by an operation plan that includes winter releases of 8,000 acre-feet to reserve 50,000 acre-feet of space in anticipation of/during a winter runoff event. Maintaining the ability to make winter releases mitigates the increase of carryover storage and decrease in flood control space as compared to the No Action alternative, resulting in no impact to flood potential.

In the unlikely event that two releases of water are required during the same winter season, ice formed in the Floodway Outlet Channel during the first release could cause possible channel capacity reduction and an increase in flood risk during a second release. This ice could become mobilized and transported downstream, causing ice blockages and potential flooding downstream during a second release (Corps 2012). To minimize channel ice formation, flows from the first release would be reduced rapidly to drain water in the channel and siphon. The less exposure water has to freezing air temperatures, the less likelihood of ice formation (Corps 2012). Additionally, water would be pumped out of the siphon after cutting flows to prevent ice formation and flow restriction. A second channel cleaning after the first water release may also be necessary to reduce winter flood risk.

A second water release was indicated in 2 years of the analysis period, both occurring in February. By that time, average snow accumulation on the Willow Creek watershed is approaching its peak for the season and the period with winter flood control rules is nearly complete. Absent a forecast for rain, a decision on whether to release water would likely be based on an analysis of whether there was in increase in flood risk given the conditions at the time.

No adverse impacts to flood potential would occur because the reduction in winter flood control space reservation would be mitigated by releasing water to achieve the 50,000 acre-feet winter flood control space requirement.

2 – Storage Water Gained

Historic operations have achieved minimum required space plus an additional 5,000 acre-feet of space sometime between November 1 and mid-November. Mitigation to assure no increase in flood risk under Alternative 1 includes a more precise adherence to the November 1 initial date. Inflow between November 1 and the historic date of minimum annual reservoir content reduces the 5,000 acre-feet difference in initial carryover storage between the No Action alternative and Alternative 1 in many years.

Storage reservoirs in the upper Snake are operated as a system. Potential changes in Ririe operations are small relative to the precision that can be achieved in modeling the upper Snake River storage system as a whole. A 15 percent change in Ririe Reservoir flood space reservation is equal to 0.5 percent of the capacity of American Falls Reservoir and 0.2 percent of the capacity of the upper Snake system. If space is continuously available in downstream reservoirs, then release of water should not affect the accounting carryover or water allocation to Ririe Reservoir. After considering whether space remains in American Falls and whether water passed Milner Dam because American Falls is full, there are 4 years when Ririe accounts could be allocated more water and 4 years when other system reservoirs would benefit under Alternative 1. Increases in storage for Alternative 1 are shown in Table 3-1 below.

Table 3-1. Potential water storage increase in Ririe Reservoir due to Alternative 1 winter flood control operation and where the additional water would be credited.

Analysis Year	Increase in Ririe Reservoir Storage, in acre-feet	Proportion of Credit to Ririe Reservoir Account, in acre-feet	Proportion of Credit to Other System Reservoirs' Accounts, in acre-feet
1994	0	0	0
1995	0	0	0
1996	0	0	0
1997	0	0	0
1998	0	0	0
1999	0	0	0
2000	754	754	0
2001	4,753	4,753	0
2002	152	0	152
2003	452	0	452
2004	0	0	0
2005	2	0	2
2006	0	0	0
2007	3,556	3,556	0
2008	5,394	0	5,394
2009	0	0	0
2010	436	436	0
2011	0	0	0
2012	0	0	0
average	816	500	316

Ririe Reservoir fills in 9 of 19 years in the No Action alternative and 10 of 19 years in Alternative 1.

Overall, impacts to storage water gain under Alternative 1 winter operations is minimal (1.4 percent increase over 19 years) and the reservoir fills in one additional year over 19 years compared to the No Action alternative. The ability to capture and store water in Ririe Reservoir is consistent with Policy 4B of the Idaho State Water Plan, which promotes the development of additional projects that will enhance the water supply above Milner Dam. The storing of additional water in Ririe Reservoir can benefit both Tribal and non-Tribal water rights above Milner Dam.

Therefore, there are no adverse impacts to storage water gained.

3 – Change in Ririe Reservoir Level

The maximum difference in reservoir level between the two alternatives would be with lower reservoir storage, due to the smaller surface area. The average February 28 increase in elevation from the No Action alternative is calculated to be 1.4 feet, with a maximum of 5.5 feet in 2009. The maximum elevation reached during the storage season increases by an average of 0.6 feet, with a maximum increase of 3.8 feet in 2001. The maximum elevation for both alternatives is 5112.8 feet, the top of the active, joint use capacity. The differences between the two alternatives are the same for both the short and long term; the water levels for any scenario are within the range of current water levels and would be well below the high water mark of the reservoir and therefore not adverse.

4 – Flows below Ririe Dam

The timing and quantity of incremental summer flows between the No Action alternative and Alternative 1 would be highly variable and dependent on many factors, including weather and irrigation demands throughout the system. The additional incremental flows would not cause total flows in the Floodway Outlet Channel to be above 900 cfs, its design capacity. During the irrigation delivery season, flows from the Snake River through the Eagle Rock Canal are regulated, effectively delivering stored water from Ririe Reservoir to the Snake River near Heise. Flows of Willow Creek from the Eagle Rock Canal to the bifurcation would not exceed the flow of the No Action alternative.

On November 1, if Ririe Reservoir irrigation deliveries result in reservoir storage below 45,000 acre-feet, there would be no change in summer and fall discharge between the No Action alternative and Alternative 1. In years when reservoir levels must be reduced after the irrigation season to make winter flood control space available, up to 5,000 acre-feet less would be discharged in September and October for Alternative 1, due to the higher storage allowed on November 1. There were 6 years that Ririe Reservoir irrigation deliveries resulted in reservoir storage below 45,000 acre-feet, and 13 years when reservoir levels would have to be reduced after the irrigation season to make winter flood control space available.

In actual operation of Ririe Dam, winter releases occurred only in 1997 and 2011. In 1997, releases began on February 25, averaged 216 cfs through the end of February and continued throughout the month of March. In 2011, releases were made from February 7 to 9 and averaged 117 cfs, for a total volume of 695 acre-feet. For Alternative 1, winter releases would occur in 11 of 19 years, with a second release occurring in two of those years. With the ramping schedule described previously (maximum flow of 900 cfs), the average duration of winter flows below Ririe Reservoir would be 4.1 days, with a maximum of 9.1 days.

While storage benefits in Ririe Reservoir are small compared with the upper Snake River system storage capacity, additional water storage in Ririe Reservoir would result in a small increase in the reliability of augmentation flows under the Nez Perce Agreement.

Overall impacts to flows below Ririe Dam would be minor, with fall transitional flow releases slightly reduced compared to the No Action alternative. Potential winter releases under Alternative 1 could occur 58 percent of the time (11 out of 19 years) compared to 11 percent of the time (2 out of 19 years) for the No Action alternative. The decision to store additional water would occur before the storage season in accordance with a MOA between Reclamation, Mitigation Inc., and Corps. If it is determined prior to November 1, that Alternative 1 is not implemented in a given year the No Action alternative would be implemented, and could negate the need for possible winter releases. There would be no adverse impacts associated with potential flooding due to the increased winter water releases because: 1) channel cleaning would occur prior to water release, 2) releases would be reduced rapidly to drain water in the channel and siphon, and 3) water would be pumped out of the siphon after cutting flows to prevent ice formation and flow restriction.

5 – Floodway Outlet Channel Cleaning

In 4 of the last 15 years (27 percent of years), channel cleaning for snow removal from the Floodway Outlet Channel was needed. An average of 325 machine hours was required to complete the removal. In 2011, the last time snow was excavated, the average cost was $117 (in 2011 dollars) per machine-hour. It is assumed that when water must be released between December 15 and February 21, channel cleaning will be necessary. (Except for extremely wet years as in 1997 and 2011, snow removal has been done to allow the channel to intercept local runoff, rather than to convey releases of water from Ririe Dam.)

For Alternative 1, channel cleaning could be required in 9 of 19 years. Additionally, there would be two releases of water required during the same winter season in 2 of the 19 years that also could require channel cleaning. Channel cleaning may not be necessary for all 9 years (i.e., snow/debris amounts would not warrant cleaning). These specific environmental conditions are difficult to predict, so the conservative approach of assuming the channel would need cleaning all 9 years (plus the two additional cleanings) was applied. The two potential additional channel cleanings were not considered in the environmental analysis.

The cost of channel cleaning is expected to be about $38,000 (in 2011 dollars) each time for an average annual cost of about $18,000 (also in 2011 dollars), based on the excavation contracts entered in 2011.

Reclamation is responsible for channel cleaning for flood control. Reclamation and Mitigation Inc. would enter into a MOA to specify duties and roles for channel cleaning. Reclamation would coordinate with the Corps on the channel cleaning specifics. Mitigation Inc. would execute contracts with their constituent Irrigation Districts and local contractors for the equipment to be utilized to clear the channel and staged during the subsequent water release. Reclamation would determine whether the channel needs to be mechanically cleared in advance of releasing flows or if the equipment to be mobilized would be adequate to maintain flow.

The Ririe Floodway Outlet Channel would be inspected by Reclamation and Mitigation Inc. personnel before and after a winter discharge. Machinery and personnel would be required to be in place for all potential channel cleanings, therefore, no adverse impacts would occur due to lack of resources.

6 – Willow Creek Channel Erosion

Immediately below Ririe Dam, Willow Creek flows through a canyon with heavy riparian vegetation for the first 4 miles. At that point, approximately where the Eagle Rock Canal outfall enters Willow Creek, the floodplain expands. The remainder of Willow Creek's channel above the bifurcation to Sand Creek has substantial encroachment by farming. Meanders remain, but most of the floodplain is cultivated almost to the water's edge. Most erosion occurs where field leveling or plowing near the Creek results in an abrupt transition from the field to the Creek.

The Corps Operations Manual (2011) includes a release limit of 400 cfs when Reclamation moves water from Ririe Reservoir through the Floodway Outlet Channel directly to the Snake River on top of irrigation deliveries from the Eagle Rock Canal, which can supply up to 1,200 cfs. The reach from the dam to the canal can pass 1,200 cfs without erosion problems. Erosion problems occur in the Eagle Rock to Bifurcation reach only when more than 400 cfs of Ririe Dam releases are added to the irrigation delivery flow of 1,200 cfs. With maximum winter discharges of 900 cfs under Alternative 1, erosion problems are not expected because winter flows would be below the combined 1,200 cfs channel limit, therefore, no adverse impacts would occur.

3.3 Groundwater

3.3.1 Affected Environment

Ririe Dam and Reservoir are located near the transition between the Snake River Plain and the Idaho-Wyoming Thrust Belt. The eastern Snake River Plain is primarily composed of Quaternary and Tertiary age (a few thousand to 65 million years old) volcanic rocks, including basalt, rhyolite, and tuff. The Idaho-Wyoming Thrust Belt consists of folded and thrust-faulted sedimentary rocks from Jurassic to Cretaceous age (between 208 and 66 million years ago). Near the reservoir, the folded sedimentary rocks are overlain by volcanic rocks.

Groundwater is found to varying degrees in the fractured volcanic rocks in the Eastern Snake Plain and the sedimentary rocks in the Idaho-Wyoming Thrust Belt. The occurrence and movement of groundwater can be impacted by both physical characteristics of the aquifer material along with the location and quantity of recharge and discharge. Physical characteristics of the aquifer can include permeability of aquifer material, porosity, stratigraphic layering, and faults. Recharge – the quantity of water entering the aquifer – can result from precipitation, on-farm infiltration, canal losses, stream losses, and reservoir losses. Discharge – the quantity of water leaving the aquifer – can be the result of pumping, or it can be water naturally lost to drains, springs, streams, or other surface water bodies.

Near the reservoir, groundwater occurs in both the fractured volcanic rocks and the deeper sedimentary rocks. Depths of groundwater range from about 30 to 230 feet below ground surface and tend to vary seasonally, largely because of reservoir levels and to a lesser extent recharge and pumping.

Methods for Evaluating Impacts

Impacts were evaluated using the relative change in nearby groundwater elevations.

Information Used in the Analysis

The data used in the analysis included Ririe Reservoir elevations, extracted from Reclamation's Hydromet system, and groundwater elevations from Reclamation-monitored observation wells near Ririe Dam. Ririe Reservoir elevations were the same data used in the hydrology analysis (see Section 3.2).

Groundwater elevations are monitored in 9 observation wells and 42 slotted-pipe piezometers near Ririe Dam as part of Reclamation's Safety of Dams Program. Only 3 of the observation wells and 29 of the piezometers were used for this analysis (wells and piezometers that were not used had incomplete datasets due to discontinued monitoring or because the instruments

were above the water table for most of the monitoring period). The wells and piezometers are monitored at varying frequencies and have varied periods of record. Figure 3-1 shows the location of the wells and piezometers used in this analysis. Table 3-2 shows the name, the surface elevation, and the bottom elevation of the observation wells (OW) and piezometers (SP) used in this analysis.

Note that the slotted-pipe piezometers and observation wells are hand measured and the measurements represent groundwater elevations near the measurement point. The naming convention follows the convention used in "Ririe Dam: Comprehensive Facility Review." The slotted-pipe piezometers will be referred to as wells for the analysis portion of this document.

Figure 3-1. Map of wells used for the groundwater analysis.

Table 3-2. Name of each well, the surface elevation, the bottom elevation of the well, and the depth of the measurement point.

Name	Surface Elevation (feet)	Bottom Elevation (feet)	Depth (feet)
SP-P15X	5032	4955	77
SP-P17X	5202	4942	260
SP-P18X	5204	5003	201
SP-P19X	5152	5005	147
SP-P1X	5175	5022	153
SP-P20X	5197	5014	183
SP-P21X	5212	5015	197
SP-P25A	5127	5041	86
SP-P25X	5127	4957	170
SP-P26A	5124	5037	87
SP-P26X	5124	4956	168
SP-P27A	5122	5037	85
SP-P27B	5122	5079	43
SP-P27X	5122	4979	143
SP-P29X	5184	4944	240
SP-P33A	5016	4941	75
SP-P33X	5016	4913	103
SP-P36X	5118	4936	182
SP-P37X	5129	4935	194
SP-P38X	5178	5036	142
SP-P39X	5181	5069	111
SP-P3X	5129	4986	143
SP-P40X	5170	4954	216
SP-P42X	5195	4954	241
SP-P43X	5189	4938	251
SP-P44X	5193	4941	252
SP-P46A	5117	5015	102
SP-P46X	5117	4933	184
OW-245	5198	4993	204.7
OW-246	5204	4999	204.8
OW-249	5142	4882	259.5
OW-249A	5142	4924	217.7

Other information used in the analysis includes:

- "Ririe Reservoir Resource Management Plan," Bureau of Reclamation, Snake River Area Office, November 2001

- "Ririe Dam: Comprehensive Facility Review," Bureau of Reclamation, Technical Service Center, May 2011

Analysis Methods

Current and potential impacts on groundwater levels near Ririe Reservoir were evaluated by comparing the change in reservoir water level elevation to the change in water levels in the nearby wells.

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

As in the hydrologic analysis, historical data from water years 1994 through 2012 were used to represent the No Action alternative.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

For Alternative 1, historical data from water years 1996 and 2013 were used to infer the impact of the new operation on nearby groundwater levels, since Ririe Reservoir elevation was not drawn below 5082 feet in those years.

3.3.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

For the No Action alternative, short and long-term effects (2 and 10 years, respectively), both direct and indirect to the groundwater levels are negligible or would continue to occur as they did in the past.

Groundwater levels measured in wells near Ririe Reservoir vary seasonally in response to the elevation of water in Ririe Reservoir, and to a lesser extent other factors that influence regional groundwater conditions. Figure 3-2 shows water levels from selected shallow measurement points (less than 100 feet in depth) along with Ririe Reservoir elevations. The shallow groundwater levels closely follow the seasonal pattern of the reservoir elevations, rising as the reservoir elevation rises and falling as the reservoir elevation falls. There is a short lag time between when the reservoir peaks and when the groundwater levels peak.

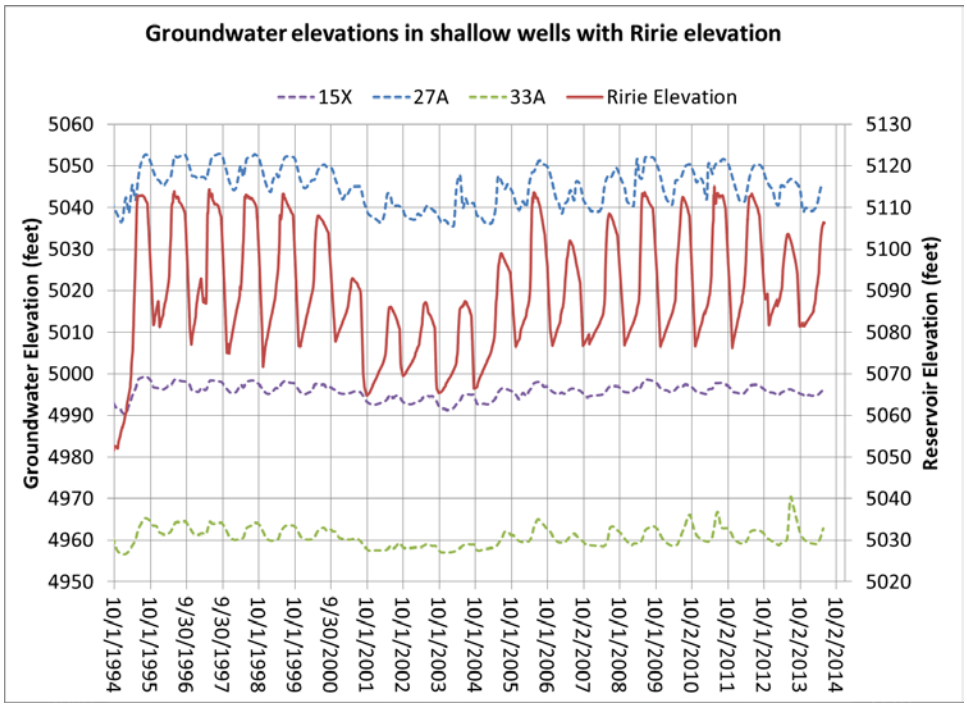

Figure 3-2. Groundwater elevations of selected shallow wells with Ririe elevation.

Figure 3-3 shows groundwater elevations in deep wells (wells with depth greater than 180 feet) along with Ririe Reservoir elevation. The deeper wells follow the seasonal pattern of the reservoir even more closely than the shallow wells with very little lag time between the reservoir peak elevation and the peak groundwater response.

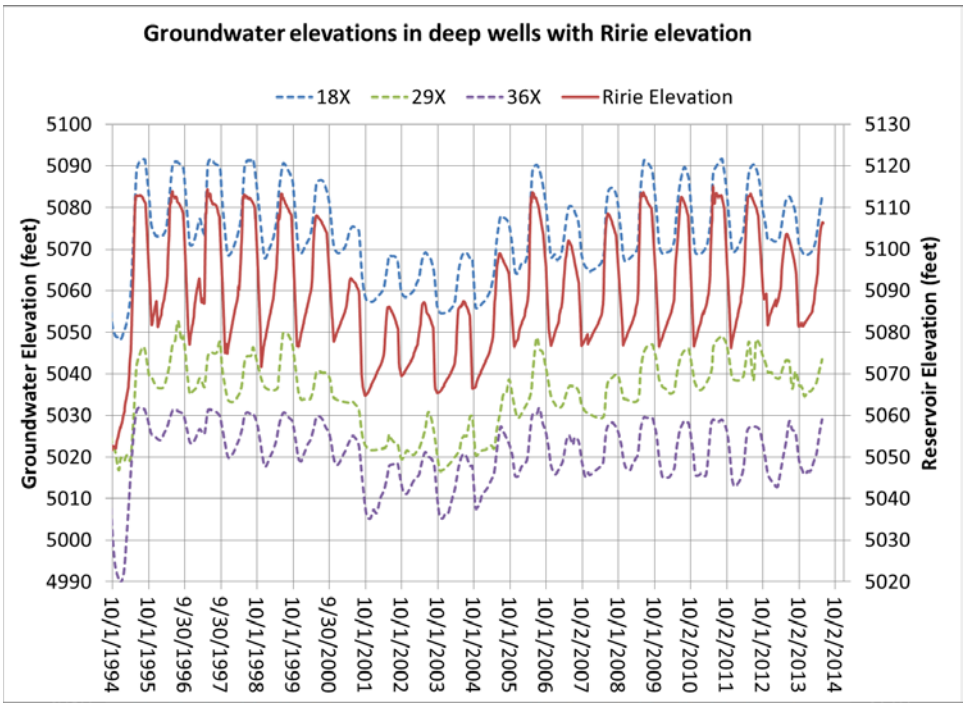

Figure 3-3. Groundwater elevations of selected deep wells with Ririe elevation.

Both Figure 3-2 and Figure 3-3 show that historically, the groundwater elevations have remained stable without any visible long-term trend. In drier periods (2001 through 2004), the groundwater levels tend to decrease more than the apparent response to the reservoir elevations. This is likely due to increased groundwater pumping when less surface water is available. Groundwater levels recover quickly from drier conditions when the reservoir is full.

Table 3-3 shows the maximum, minimum, and range of groundwater elevations for each well during the No Action time period.

Table 3-3. Maximum, minimum, and range of groundwater elevations for wells during No Action time period.

Name	Maximum elevation (feet)	Minimum elevation (feet)	Range (feet)
SP-P15X	4999	4990	9
SP-P17X	5102	5049	53
SP-P18X	5092	5048	43
SP-P19X	5106	5050	56
SP-P1X	5091	5053	38
SP-P20X	5084	5039	44
SP-P21X	5085	5059	27
SP-P25A	5062	5047	16
SP-P25X	5033	5009	24
SP-P26A	5049	5031	18
SP-P26X	5004	4985	20
SP-P27A	5053	5031	22
SP-P27B	5082	5077	5
SP-P27X	5006	4985	20
SP-P29X	5053	5017	36
SP-P33A	4977	4953	24
SP-P33X	4979	4953	26
SP-P36X	5032	4990	42
SP-P37X	5035	5002	33
SP-P38X	5105	5053	52
SP-P39X	5108	5067	41
SP-P3X	5033	4991	42
SP-P40X	4964	4950	14
SP-P42X	5045	5019	26
SP-P43X	5080	5039	41
SP-P44X	5068	5025	43
SP-P46A	5033	5014	19
SP-P46X	5024	4989	36
OW-245	5083	5039	44
OW-246	5081	5042	38
OW-249	4995	4953	43
OW-249A	4952	4909	43

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Under the proposed operation of Ririe Reservoir, groundwater levels near the reservoir would likely not exceed the minimum or maximum elevations that occurred during the No Action period. The proposed operation would cause the minimum elevation of the reservoir to be approximately 7 feet higher in normal and wet years. This higher elevation in the reservoir would likely result in higher minimum groundwater elevations. The proposed operation would not likely cause the reservoir to exceed previous maximum elevations.

In water year 1996, the Ririe Reservoir minimum elevation was close to the proposed minimum elevation 5082 feet and the reservoir filled to a normal maximum level later that year. The groundwater levels responded with a slightly higher minimum elevation and a maximum elevation similar to other years when the reservoir filled. The maximum groundwater elevation did not appear to increase even though the minimum elevation was higher. Water year 1996 is likely a good example of how groundwater will respond to the proposed operation. In water year 2013, the reservoir was not drawn below elevation 5082 feet, and the reservoir did not fill. Groundwater levels responded with lower minimum elevations and maximum elevations, as expected.

Since the minimum groundwater levels would likely be higher than past levels, and the maximum groundwater levels would likely remain similar to past levels, the seasonal variation of the water levels would likely decrease.

The short and long-term effects (2 and 10 years, respectively) both direct and indirect to the groundwater levels would not be adverse since the proposed operation is not outside the bounds of historical operation.

3.4 Water Quality

3.4.1 Affected Environment

The analysis area includes Ririe Reservoir and all streams flowing into and out of the reservoir, which includes the Floodway Outlet Channel (also referred to as Willow Creek). However, impact analyses of the two alternatives is limited to the reservoir and the Floodway Outlet Channel, because both alternatives are not likely to affect contributing streams' (flowing into the reservoir) water quality.

Streams with IDEQ designated beneficial uses are addressed under the Idaho Administrative Procedures Act (IDAPA)-58.01.02 Water Quality Standards. Ririe Reservoir and associated contributing streams are located in the Willow Creek Outlet watershed, and part of the Willow Creek subbasin (Hydrologic Unit Code 17040205). All streams within the sub-watershed have general use designations for secondary contact recreation, agricultural water

supply, wildlife habitat, and aesthetics. In addition to the general use designations, Ririe Reservoir and Willow Creek (from Bulls Fork Creek to the Reservoir) also have cold water communities, salmonid spawning, primary contact recreation, and domestic water supply use designations. Willow Creek, below Ririe Dam, to Eagle Rock Canal has cold water communities and salmonid spawning use designations (IDEQ 2012).

Every 2 years, IDEQ must furnish an Integrated Report to the EPA categorizing state waters and informing the public of the water quality status of state waters. Idaho's most recent approved version is the 2010 Integrated Report (IDEQ 2011). Figure 3-4 identifies stream reaches and their associated category. For the watershed, approximately 19 stream miles are supporting the water quality designated uses, 199 miles are not supporting one or more designated uses, and 121 miles have not been assessed. Ririe Reservoir is supporting all of its designated uses. Streams designated as impaired and for which Total Maximum Daily Loads (TMDLs) were developed include a 2.99-mile reach of Willow Creek, from Bulls Fork to Ririe Reservoir, for sedimentation/siltation, water temperature, and nutrients/eutrophication biological indicators. Also, a TMDL for sedimentation/siltation was developed for a 40.57-mile reach of Meadow Creek (source to Ririe Reservoir).

IDEQ's *Willow Creek Subbasin Assessment and TMDLs* (2004) document identified sediment as the primary source of nonpoint source pollution within the Willow Creek subbasin. Streambank erosion due to vegetation alteration was identified as the source of the sediment (IDEQ 2004). As streambank erosion progresses, depositional features form in the channel that redirect the current and further reduce bank stability. This fluvial morphological process continues until the stream forms a new floodplain and deposition forms new streambanks that become colonized with stabilizing vegetation. This process may take years to come to fruition once channel alteration begins. Streams impaired by high water temperature and sediment are usually near agricultural land use areas. The agricultural use that has the greatest effect on streambank stability is grazing. Grazing occurs throughout the subbasin in riparian areas. Other sources of nonpoint source sediment pollution can include roads and erosion from cultivated fields (IDEQ 2004).

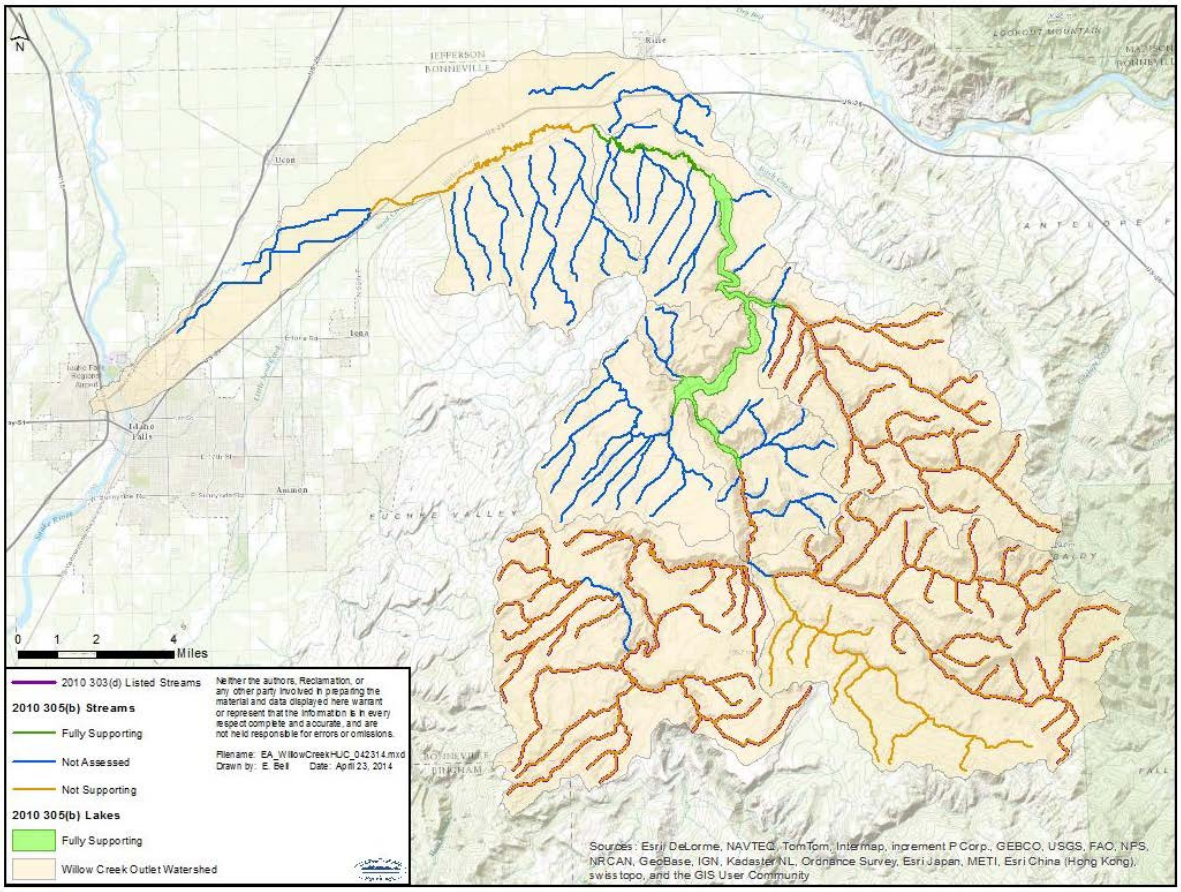

Figure 3-4. The 2010 IDEQ 305(b) and 303(d) listed waters within the Willow Creek outlet watershed.

Methods for Evaluating Impacts

Impacts were evaluated for the following water quality indicators:

1. Change in temperature stratification and water quality standards.
2. Change in oxygen depletion and water quality standards.
3. Change in nutrient cycle and IDEQ TMDL targets.
4. Change in sediment, turbidity, concentrations and water quality standards.

Information Used in the Analyses

The data used for water quality analyses was extracted from the Reclamation's PN Soil and Water database and includes the following:

- Ririe Reservoir and Willow Creek water chemistry data collections from years 1996 through 2013. In this data set, Ririe Reservoir was sampled at three locations during

the summer irrigation season. Willow Creek was sampled at one location over the same time period. As a result, limited information exists concerning winter limnology and nutrient cycling.

- Water quality analysis is also based on the proceeding hydrology sections of this report.

Ririe Reservoir Water Quality Conditions

Temperature

Lakes and reservoirs respond to air temperature changes and to heat changes from the sun in a clear natural progression. These water bodies undergo a season progression of developing layers that have different chemical concentrations, dissolved oxygen concentrations, and temperatures from the next layer. This process is called stratification. Temperature data collected throughout the year, and in different times of many years, shows the development of these stratified layers. Stratification is most pronounced in the summer. It is during this time that a typical lake or reservoir will develop layers of water with different temperatures. Typically, a lake will develop a mixed, warm, surface layer known as the epilimnion. This water is less dense than the underlying waters and floats upon the rest of the water column. The next layer is a transitional layer identified as the metalimnion. It is here where some limited mixing with the warm surface epilimnetic waters and the cool bottom layer waters can occur. The final layer is the deep cool bottom layer identified as the hypolimnion. These waters are isolated from the surface and middle layers and can behave very differently from the rest of the lake or reservoir. The hypolimnion waters are also the densest waters found in a lake or reservoir. This density causes the waters to sink to the bottom of the reservoir or lake.

In most areas of North America, lakes and reservoirs undergo a period where the air temperatures have cooled (or warmed) the surface water layer to a point that it can mix with the metalimnion (or thermocline, which means temperature gradient), and hypolimnion. This period of time is known as fall or spring turn-over. At such a time, a lake or reservoir has temperatures that are the same, or roughly the same, throughout the water column. When such conditions occur, the lake is isothermal, or one temperature.

Reclamation has collected temperature profiles periodically over the past 18 years at up to three reservoir locations. However, temperature profiles have been collected predominantly during the summer period. As a result, the annual progression of stratification and metalimnion (or thermocline) breakdown cannot be determined. One set of temperature data was collected during the winter of 2012. This data shows the typical inverse stratification with colder water next to the ice and slightly warmer, denser water near the bottom of the reservoir in ice covered conditions, or isothermal and transitioning to the inverse stratification conditions in the fall and winter.

The profiles collected earliest in a year occurred in June of 2000, and indicate that the reservoir is well stratified by this time (Figure 3-5). This stratification remains in place through July, with a well-developed epilimnion, a large and deep metalimnion, and stable and cold hypolimnion. Average epilimnion depth at this time is approximately 5 to 10 meters. The temperature difference between the surface waters and bottom waters averages approximately 14°C with maximum epilimnetic temperatures reaching 21°C while the temperatures near the bottom of the reservoir remain relatively constant between 6 and 7°C. The maximum epilimnetic temperature during the summer was 22.3°C. During this time, the epilimnion remained between 5 and 10 meters deep. In the hypolimnion, minimum temperature averaged 5.8°C. Due to the depth of the reservoir, it is highly likely that the reservoir would stratify in most years. It is unknown when this stratification will breakdown leading to isothermal conditions.

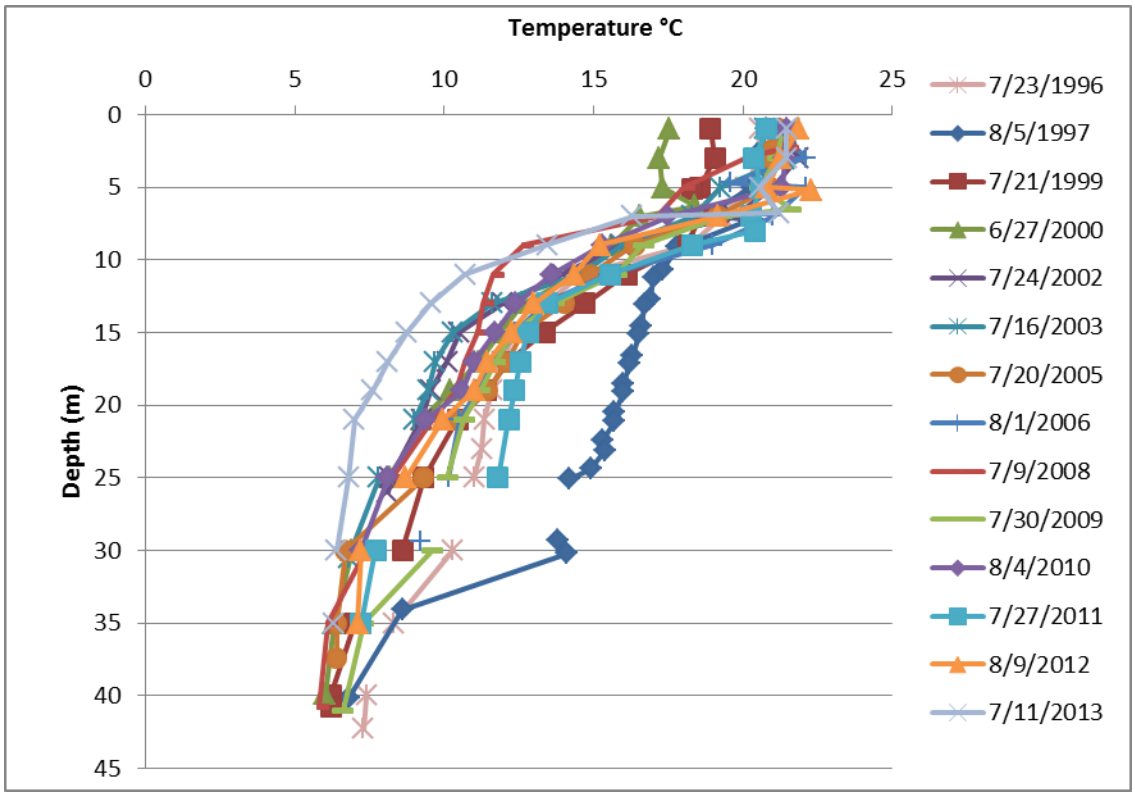

Figure 3-5. Temperature profiles in Ririe Reservoir, June through August.

Winter time temperature profiles were collected beginning in November of 2012 and ending February 9, 2013. A logger string was deployed in the dam bulwarks at approximately 0, 5, 9, 12, 18, and 23 meters in depth (Figure 3-6). This data set clearly illustrates the isothermal conditions of late fall transitioning to the inverse stratification seen in ice-covered conditions. However, the placement of the logger string precluded ice formation and in-reservoir conditions may be slightly different than conditions in the dam bulwarks.

Beginning near the end of November the reservoir was isothermal with temperatures near 8°C. As the month proceeded reservoir temperatures remained isothermal but fell rapidly to approximately 4°C, by the end of December. Water is at its most dense near 4°C. After December, as water cools an inverse density gradient can develop, with cooler water floating upon the warmer dense waters. This eventually leads to ice formation at the surface and hypolimnetic water remaining near 4°C as seen in the late January and February data.

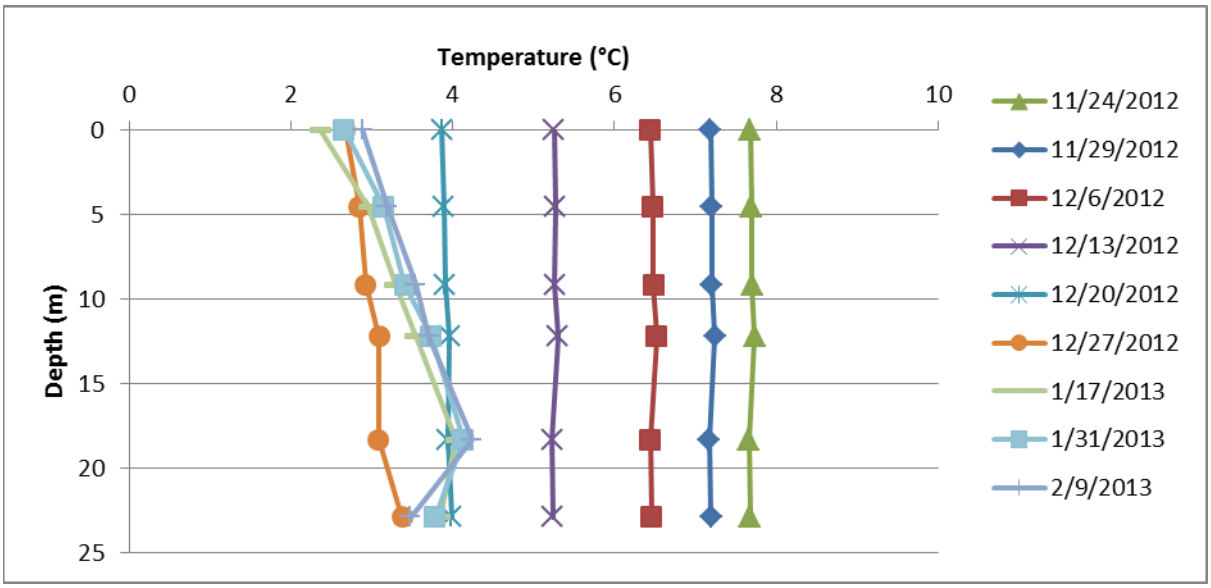

Figure 3-6. Temperature profiles in Ririe Reservoir, November through February.

Dissolved Oxygen

Dissolved oxygen profiles were also collected along with the temperature profiles and similar situations were observed. Throughout the summer, dissolved oxygen levels were suitable for cold water aquatic life through the top portion of the water column. Oxygen depletion was very evident in the summer months, likely due to the isolation of the hypolimnion and the increased respiration of the growing seasons carbon load. Bacterial respiration and sediment oxygen demand in the hypolimnion in deep hypolimnetic waters often removes dissolved oxygen. Oxygen depletion was noted below the thermocline and oxygen was depleted below 6 milligrams per liter (mg/L) in all reservoir profiles, often right below the epilimnion (Figure 3-7).

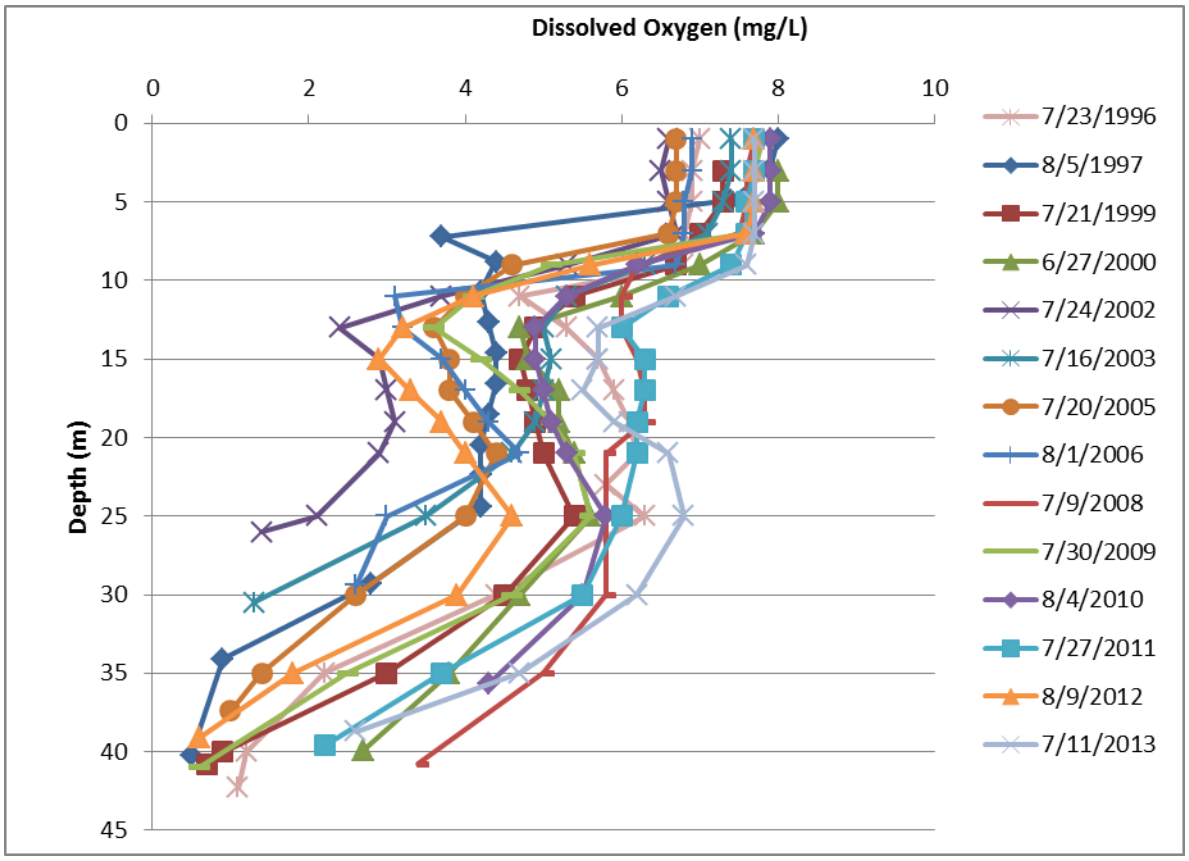

Figure 3-7. Dissolved oxygen profiles in Ririe Reservoir, June through August.

Sediment/Turbidity

Reclamation has periodically collected sediment/turbidity samples from Ririe Reservoir; 81 samples were collected in various years from the reservoir. Total suspended solids (TSS) levels were very low in this set of samples, with a mean concentration for the period of record of 5.97 mg/L and a range of less than 1 to 90 mg/L (Figure 3-8).

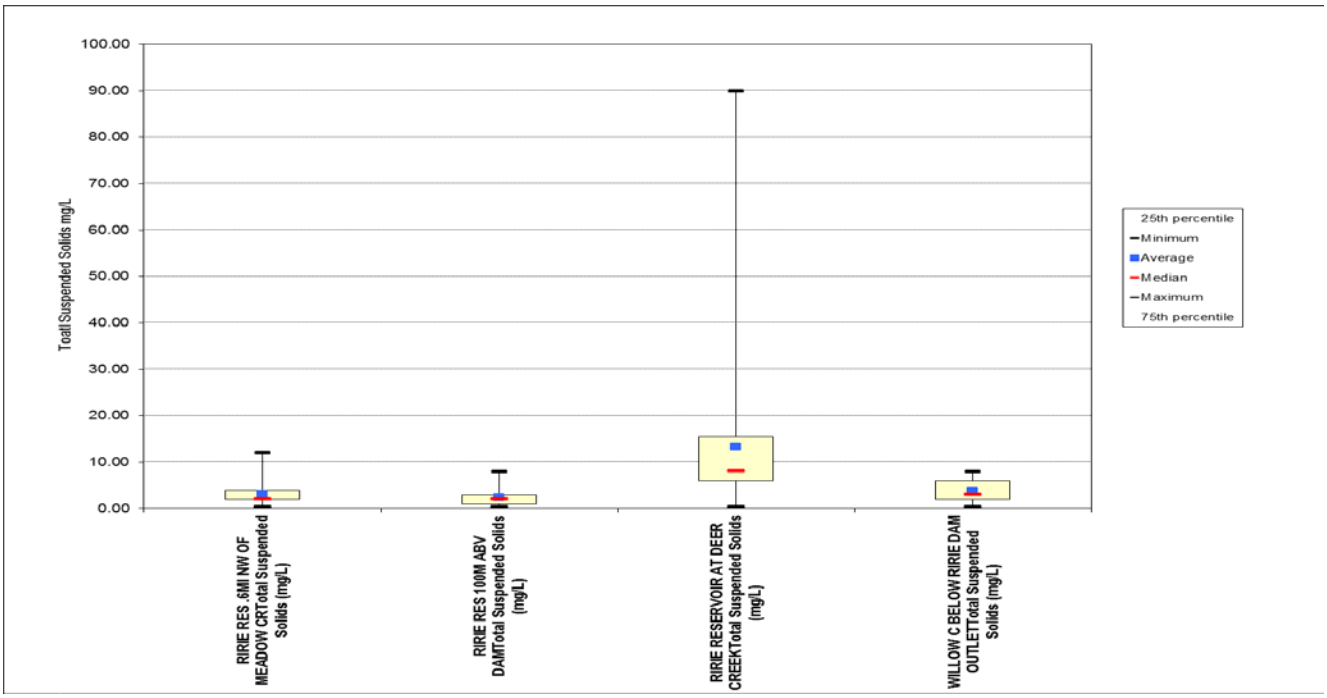

Figure 3-8. Total suspended solids concentrations at Ririe Reservoir.

In addition, Reclamation measured turbidity, Chlorophyll a, and Secchi depths of the reservoir waters. These measures are an indication of water clarity. While turbidity values were very low (mean reservoir turbidity was 3.69 nephelometric turbidity units [NTU]) indicating very clear water, Secchi depths were variable. Secchi depths ranged from very clear, near 7.7 meters deep, to relatively shallow at 0.3 meters deep. Chlorophyll a values were also very variable and indicative of higher productivity at times. Average concentrations of this parameter were 6.64 microgram per liter (µg/L) with a maximum concentration of 42.2 µg/L. Coupled with the clarity measures, chlorophyll a and TSS samples give an indication that the clarity issues in Ririe Reservoir are biological in origin, such as algae blooms, rather than sediment-impaired clarity. Biological clarity issues can be episodic in nature with variable frequency.

Nutrients

The levels of the measured constituents in Ririe Reservoir are moderate to high. These levels in most cases indicate a higher loading and lower water quality compared to nearby reservoirs. The average total phosphorus (TP) concentrations in the reservoir were 0.07 mg/L, and maximum TP concentrations averaged 0.25 mg/L (Figure 3-9). These high levels are likely due to the releases of TP from the reservoir bottom sediments when the reservoir becomes anoxic.

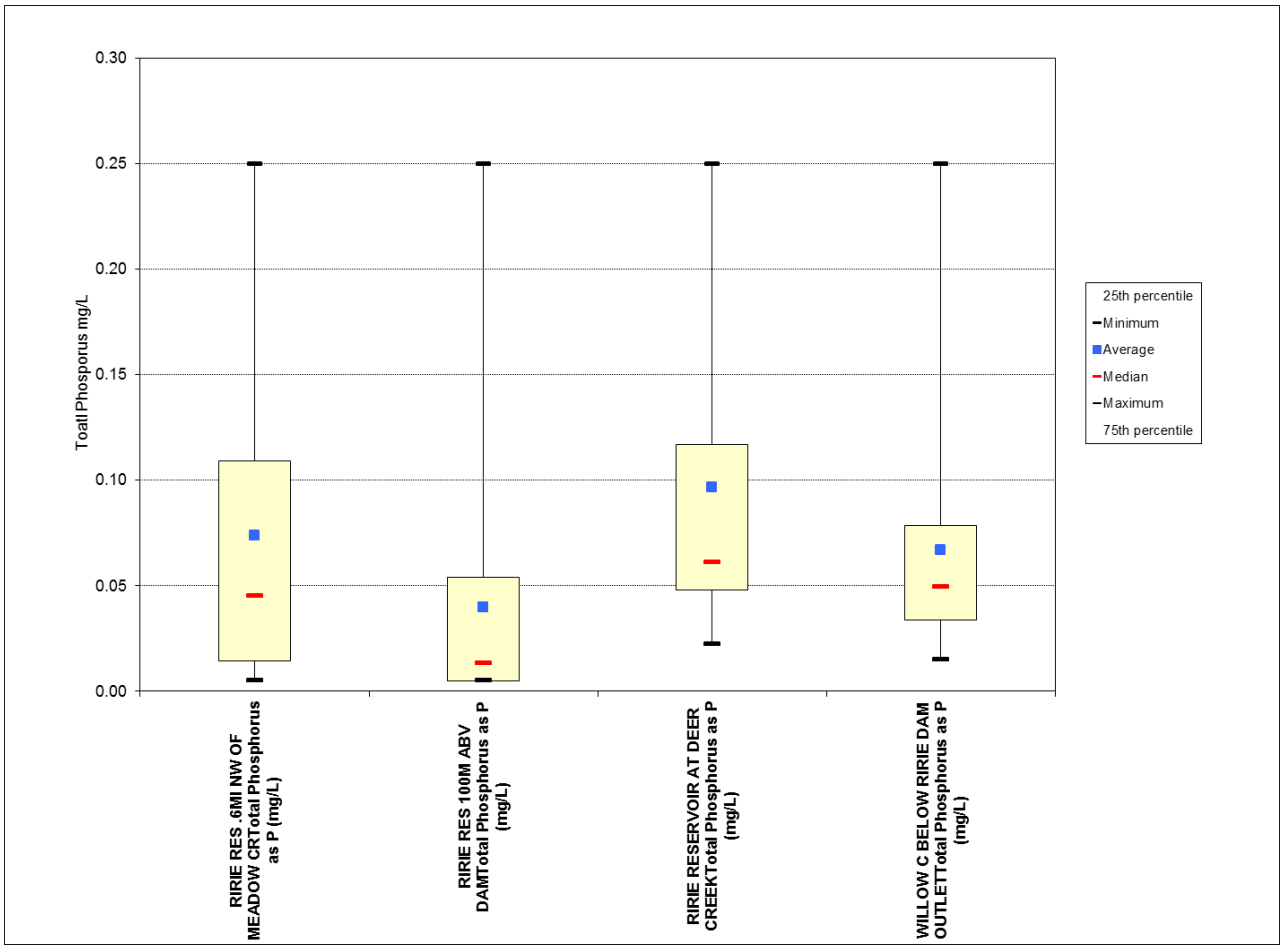

Figure 3-9. Total phosphorus concentrations at Ririe Reservoir.

In the reservoir, the ratio of total nitrogen to total phosphorus (TN:TP) was not well balanced. Average TN:TP ratio for the reservoir locations was 6.6. Biologically, this indicates that blue green algae and other unpalatable forms of nitrogen-fixing algae should dominate the reservoir as nitrogen is low. Furthermore, the types of algae often associated with TN:TP ratios such as these may not provide suitable forage for zooplankton and other aquatic invertebrates (Figure 3-10).

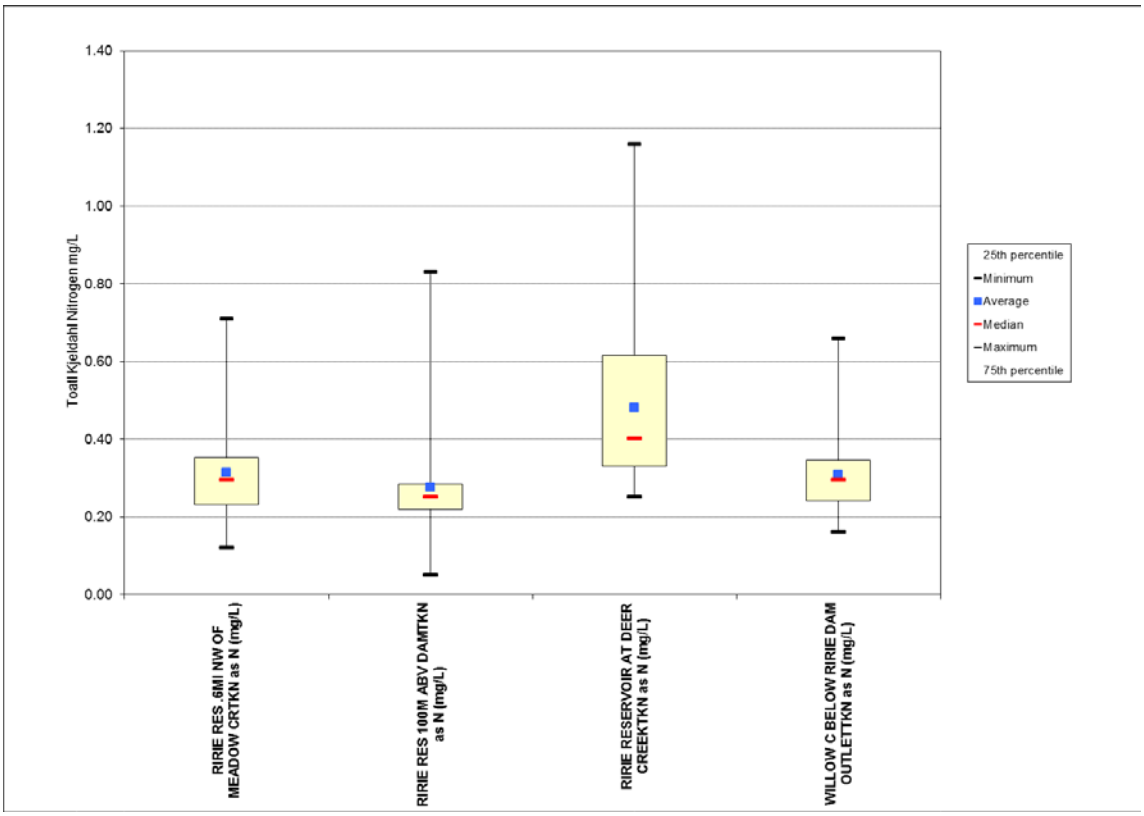

Figure 3-10. Total Kjeldahl nitrogen concentrations at Ririe Reservoir.

3.4.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

For the No Action alternative, short and long-term effects (5 and 10 years, respectively), both direct and indirect to the four parameters listed in the Methods for Evaluating Impacts section above are negligible and would continue to occur as they did in the past.

There would be no changes to temperature regimes, oxygen depletion, nutrient cycles, or erosion potential to the reservoir and in the downstream water bodies. Flows below Ririe Dam would be unchanged, and would continue to depend on inflow and demand. Water would be delivered for irrigation in the summer or evacuated in the fall to achieve the flood control required by the Operating Rules for Flood Control, just as in past years (Corps 2011b).

As documented in Section 3.2 – Hydrology, there would be no change in the flows to and from the reservoir for the No Action alternative. As a result, the reservoir should stratify at approximately the same annual time frame. The epilimnion should heat and develop a

similar temperature levels as seen in years past. The hypolimnion will undergo similar levels of oxygen depletion and the subsequent nutrient releases from the anoxic sediments will continue to occur. There would be no change in sediment delivery from the reservoir and from the downstream river channel banks.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Throughout this section, short and long-term effects (5 years and 10 years, respectively) impacts are not discussed individually because there is no difference between impacts at the two horizons. Both direct and indirect effects to the four parameters would be negligible or would be minor, and are discussed in detail below.

The factors most likely to cause a change in water quality conditions in Ririe Reservoir and in the Floodway Outlet Channel are changes in reservoir level and changes in flows below Ririe Dam. These factors were discussed at length in Section 3.2. In summary, there would be no adverse impacts to storage water gained. The water levels for any scenario would be within the range of current water levels and would be well below the high water mark on the reservoir and therefore not adverse. Increases in elevation from the No Action alternative are calculated to be 1.4 feet, with a maximum of 5.5 feet. In addition, any incremental flows would not cause total flows in the Floodway Outlet Channel to be above 900 cfs, its design capacity.

In is unknown if the increased winter depth in the reservoir would delay the onset of thermal stratification in the spring and early summer. However, the summer time reservoir temperature and oxygen regimes in wet years when the reservoir remains at higher elevations would still develop elevated epilimnetic temperatures and depressed oxygen levels in the hypolimnion. Alternative 1 should not change these processes in the reservoir. Consequently, the epilimnion should heat and develop similar temperature levels as seen in years past. The hypolimnion would undergo similar levels of oxygen depletion and the subsequent nutrient releases from the anoxic sediments would continue to occur.

As indicated in Section 3.2, there would be no change in sediment delivery from the downstream river channel banks. Flows of Willow Creek from the Eagle Rock Canal to the bifurcation would not exceed the flow of the No Action alternative. The additional incremental flows would not cause total flows in the Floodway Outlet Channel to be above its design capacity. The reach from the dam to the canal can pass 1,200 cfs without erosion problems. Erosion problems occur in the Eagle Rock to bifurcation reach only when more than 400 cfs of Ririe Dam releases are added to the irrigation delivery flow of 1,200 cfs. With maximum winter discharges of 900 cfs under Alternative 1, erosion problems are not expected because winter flows would be below the combined 1,200 cfs channel limit, therefore, no adverse impacts would occur.

3.5 Floodplain / Wetlands

3.5.1 Affected Environment

Wetlands and riparian communities perform many important ecological functions, including improving water quality, providing flood control, stabilizing the shoreline, contributing to groundwater recharge and streamflows, providing primary production in the food chain, and offering wildlife and fish habitat. In addition, they also provide social benefits as natural areas for aesthetic, recreational, and educational opportunities.

The project area includes riparian/wetland vegetation along the Ririe Reservoir shoreline and in Willow Creek below Ririe Dam. Due to fluctuating reservoir water levels during the growing season and the steep sides of Willow Creek Canyon (above the dam) there is low potential for wetland and riparian vegetation along reservoir shoreline. However, in shallow depressions and small inlets, small pockets of wetland and riparian vegetation can exist on the reservoir. Approximately 15 acres of forested or shrub-type riparian vegetation and 2 acres of emergent wetland vegetation occur along the south end of the reservoir (USGS 2014).

Willow Creek below Ririe Dam is a geologically confined channel approximately 650 feet at the widest cross section and has a robust forested/shrub wetland vegetation complex for about 2.5 miles. There are approximately 132 total acres of forested/shrub wetland vegetation complex, of which 20 acres are on Reclamation lands, and the remainder are on private lands (USGS 2014). Common overstory and understory riparian vegetation species are listed in Table 3-4.

Table 3-4. Wetland and riparian cover type species on Ririe Reservoir and below the dam on Willow Creek.

Common Name	Scientific Name
Overstory Species	
Booth willow	*Salix boothii*
Drummond willow	*Salix drummondiana*
Sandbar willow	*Salix exigua*
Bog birch	*Betula glandulosa*
Red Osier dogwood	*Cornus stolonifera*
Understory Species	
Several sedges	*Carex spp.*
Baltic rush	*Juncus balticus*
Kentucky bluegrass	*Poa pratensis*

Impact indicators include reservoir levels, releases down Willow Creek, and mapped hydric vegetation. The impact indicators were analyzed qualitatively with information from the 2001 *Ririe Reservoir Resource Management Plan*, ArcGIS wetland maps created in 2014, and hydrologic analyses presented in Section 3.2.

3.5.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

Ririe Dam and Reservoir would maintain its current water operations, and would be drafted by November 1 to 5,000 acre-feet below the fixed 50,000 acre-feet of flood control space requirement for a total of 55,000 acre-feet of available flood control space. Short and long-term effects (5 and 10 years, respectively) both direct and indirect to the floodplain/wetlands would be negligible and no adverse impacts would occur. Due to fluctuating reservoir water levels during the growing season and the steep sides of Willow Creek Canyon, there is low potential for wetland and riparian vegetation along reservoir shoreline. As such, reservoir areas with riparian and wetland vegetation would continue to persist in their current conditions. The robust forested/shrub wetland vegetation complex on Willow Creek below the dam would also continue to persist, having achieved its riparian vegetation potential in the confined channel.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Direct and indirect effects to the floodplain and wetland areas are negligible in the short and long terms (5 to 10 years, respectively) and there would be no adverse impacts from the proposed winter operations under Alternative 1. Section 3.2 states that the reservoir levels are within the range of current water levels and would be well below the high water mark and summer and fall discharges would be the same as in the No Action alternative, with fall transitional flow releases slightly reduced compared to the No Action alternative. Effects to reservoir area riparian and wetland vegetation and Willow Creek riparian vegetation below Ririe Dam for spring through fall would be the same as those described in the No Action alternative because of no sizeable differences in reservoir levels and flows.

However, winter flows could occur more often under Alternative 1 winter operations (58 percent of the time) compared to the No Action alternative (11 percent of the time). Willow Creek could receive a winter maximum flow of 900 cfs for an average duration of 4.1 days and a maximum of 9.1 days. Additionally, the average February reservoir elevation increase would be 1.4 feet, with a maximum of 5.5 feet. In February the elevation would increase 42 percent (8 out of 19 years) of the time. If streambank and/or reservoir banks are saturated with water, the soil water can freeze and expand, thereby increasing the soil volume (Wynn

2006). This increase in moisture content and decrease in density due to freeze-thaw cycling makes soils more susceptible to fluvial erosion (Wynn 2006).

The freezing effects of the winter flows would not affect the riparian vegetation because: 1) the changes in the reservoir surface level are minor and the wetted bank is not increased much from what it was before; 2) plants are dormant during the releases (December through February); and 3) the duration of the releases would be relatively short, decreasing the likelihood of any vegetation and soil pore water from freezing. Additionally, the forested/shrub wetland vegetation complex would have root systems capable of withstanding 900 cfs flows below the dam on Willow Creek, and riparian vegetation. The forested/shrub wetland vegetation complex below Ririe Dam and the small pockets of riparian vegetation along the reservoir would continue to persist as they would in the No Action alternative.

3.6 Aquatic and Terrestrial Biota

3.6.1 Affected Environment

The analysis area includes Reclamation lands adjacent to Ririe Reservoir. The dominant vegetation cover types are big sagebrush (*Artemisia tridentata*) and juniper (*Juniperus*) on steep, southeast-facing slopes above Ririe Reservoir. A bitterbrush shrub steppe community, consisting mainly of antelope bitterbrush (*Purshia tridentata*) and native bunch grasses and forbs, occurs in a few areas. A montane shrub community dominated by western serviceberry (*Amelanchier alnifolia*) is also a minor component within project lands.

Noxious Weeds

Noxious weeds have been under active control on Reclamation mitigation lands since management agreements between Reclamation and IDFG were completed in the late 1970s. Control efforts are limited because of access limitations and steep terrain. Control measures include proper land management practices such as mechanical control, chemical control, and biological control. The five main weed species being controlled are musk thistle (*Carduus nutans*), Canada thistle (*Cirsium arvense*), houndstongue (*Cynoglossum officinale*), salt cedar (*Tamarix*), and hoary cress or white top (*Cardaria draba*). Leafy spurge (*Euphorbia esula*) has not been identified on the area but is found on adjacent lands. Additionally, monitoring and active control of aquatic noxious weeds has been conducted on Ririe Reservoir since 2008 with the Idaho Department of Agriculture. Annual salt cedar surveys and removals are also conducted by Reclamation specialists and Bonneville County Weed Department.

The long-term noxious weed control objective is to eliminate chemical control and rely on biological weed control within the area. Biological control was started in the early 1980s by Reclamation and IDFG with the release of the musk thistle seed head weevil around Ririe

Reservoir. Starting in the early 1990s, releases of Canada thistle seed head weevils began on Tex Creek. Releases now include Canada thistle stem mining weevils and defoliating beetles. Chemical control is still used on infestations found along roadways, heavily used areas, and new infestations. However, rapid revegetation of disturbed soil prior to noxious weed infestation is the preferred management option.

Fish

Since its creation, Ririe Reservoir has developed into a popular fishery, with anglers targeting rainbow trout, kokanee salmon, yellow perch, and smallmouth bass. One of the main reasons for this popularity is the proximity to Idaho Falls. In addition to the reservoir, several of the larger tributaries upstream of the reservoir, as well as Willow Creek downstream of the dam, provide recreational fishing opportunities.

Reservoir Fishery

Ririe Reservoir provides a mixed fishery of both cold water and warm water game species. The reservoir also includes many non-game species that comprise the majority of the fish biomass in the reservoir. All species are listed in Table 3-5.

Table 3-5. Game and non-game fish species found in Ririe Reservoir (Simpson and Wallace 1978).

Common Name	Scientific Name
Cold Water Game Species	
Rainbow trout	*Oncorhynchus mykiss*
Brook trout	*Salvelinus fontinalis*
Brown trout	*Salmo trutta*
Kokanee salmon	*Oncorhynchus nerka*
Yellowstone Cutthroat trout	*Oncorhynchus clarki bouvier*
Warm Water Game Species	
Smallmouth bass	*Micropterus dolomieui*
Yellow perch	*Perca flavescens*
Walleye	*Sander vitreus* *
Non-game Species	
Utah chub	*Gila atraria*
Utah suckers	*Castostomus ardens*
Mountain suckers	*Catostomus platyrhynchus*
Redside shiner	*Notropis lutrensis*
Speckled dace	*Rhinichthys osculus*
Longnose dace	*Rinichthys cataractae*
Mottled sculpin	*Cottus bairdi*
* *Garren 2014*	

The game fish species were mostly established through stocking by IDFG. The only exception is yellow perch (*Perca flavenscens*) and walleye (*Sander vitreus*), which were illegally introduced in the 1980s (yellow perch) and around 2004 (walleye), but have established self-sustaining populations.

Within the reservoir, most of the fisheries management is concentrated on maintaining a viable sport fishery. The emphasis is on maintaining high game fish numbers in conjunction with high angler use and competition with non-game species. This goal is primarily addressed through stocking programs, because habitat in the reservoir is not considered a significant issue by IDFG.

Currently, only rainbow trout (*Oncorynchus mykiss*) and kokanee (*Oncorhynchus nerka*) are maintained by stocking programs, as the other game fish naturally reproduce within the reservoir or tributaries. Native fish such as Yellowstone cutthroats (*Oncorhynchus clarki bouvier*) are largely confined to streams but a few do occur in the reservoir. A few non-game fish are not stocked and include Utah suckers (*Catostomus ardens*) and Utah chub (*Gila atraria*). Smallmouth bass (*Micropterus dolomieui*) were introduced to the reservoir to help control chub populations and enhance the recreational sport. To date, this effort has not proved successful as chubs and suckers (*Catostomus ardens*) are still maintaining high populations primarily because bass growth rates are very slow due to low water temperatures and the short growing season.

The reservoir is open year-round during ice free periods, but when ice covers the lake angling is restricted to within 1 mile of the dam. Most of the sport fishing takes place in late spring through early fall and there is little opportunity for ice fishing on the reservoir, as the ice-over period is usually short (1 to 2 months) if at all in some years. When ice fishing is available, yellow perch are the primary species caught. During the summer months, smallmouth bass make up the bulk of anglers catch, with trout and kokanee comprising the second biggest component of the catch. Yellow perch are also targeted as are crayfish during the summer months. Walleye were illegally introduced into the reservoir and were first found in 2008 population surveys. Their impact to the reservoir has been minor to date, but they have the potential to impact other popular fisheries and should be monitored in the coming years.

Spawning conditions for warm water game and non-game fish in the reservoir are generally good. Shoreline gravels, rocks, and vegetation usually remain inundated long enough for spawning, egg development, and fry emergence to occur. The cold water species primarily use the tributaries for spawning. Rearing habitat conditions within the reservoir are generally good, even with reservoir drawdown operations, and adverse effects on the fishery are not known to occur. The reservoir has relatively deep water refuge habitat available near the dam during periods of low pool levels. This coupled with short or absent ice-over periods, has prevented low dissolved oxygen levels common to many western flood control and irrigation reservoirs. During summer, the pool level is maintained at relatively full levels, allowing

stratification of the water column that provides refuge habitat for cold water species during the warm summer months.

Recent gill net surveys have shown that yellow perch are currently the most abundant species in the lake, making up over 60 percent of the gill net catch. Chubs and suckers, which have made up a substantial component of the catch in prior years, only accounted for a combined abundance of 34 percent of the catch. Relative weights are an indication of forage availability and fish density and are described as a percentage of a determined standard weight for a given size of fish. The standards used to derive relative weights are thus, size and species specific. The relative weights of Kokanee in Ririe Reservoir are at acceptable levels at 93 percent (meaning, on average, the Kokanee in Ririe weigh 93 percent of the accepted standard). Rainbow Trout relative weights are low at 82 percent. Smallmouth bass appear to be doing well, with relative weights at 94 percent. Although food resources do not appear to be overly abundant based on relative weights, growth does appear to be adequate for most species with the exception of stocked catchable trout.

Reservoir Tributary Fishery

About 95 miles of streams are located in the Willow Creek drainage above Ririe Reservoir. All but a few of the major streams in the drainage eventually drain into Ririe Reservoir. Most of the streams are located in narrow canyons, with their flows varying from extremes of several thousand cfs during runoff to becoming intermittent during the late summer and winter. The three major streams draining into the reservoir are as follows:

- Willow Creek
- Meadow Creek
- Tex Creek

Most of the tributaries contain wild populations of Yellowstone cutthroat trout, brown trout (*Salmo trutta*), and brook trout (*Salvelinus fontinalis*). Yellowstone cutthroat trout are the species of primary focus for IDFG because they are the only native species of salmonids in the drainage.

Native Yellowstone cutthroat trout populations are currently depressed in the drainage, but remain viable. Habitat degradation, particularly riparian management, sedimentation and warming water temperatures appear to be the main cause of these lower than desirable cutthroat levels. Fortunately, these conditions are treatable, and should have direct benefits to cutthroat throughout the drainage when restoration actions are complete.

Cutthroat and brook trout currently dominate the catch in tributaries. Although stocked in the reservoir downstream for decades, no wild rainbow trout have been found in the Willow Creek drainage. Due to the lower than desirable levels of cutthroat, the species are closed to

harvest. However, anglers are allowed to harvest 25 brook trout per day, and are not limited by length restrictions on these prolific fish.

In the tributaries, habitat is the primary concern. As noted, habitat degradation is believed to be a major contributor to the decline of Yellowstone cutthroat in the Willow Creek drainage. Dry land farming and grazing practices have denuded riparian vegetation within the upper watershed. As a result, groundwater inflow is virtually nonexistent in some areas and water temperatures vary widely, both daily and seasonally. Turbidity is high during the late winter and spring runoff and generally remains so until mid-summer.

Winter cessation of flows out of Ririe Dam, coupled with seasonal cessation of flows from the canal into Willow Creek, provide insufficient flows for a winter fishery in Willow Creek below Ririe Dam. Due to icing problems from winter releases in 1978 through 1980, winter flows have been largely suspended in Willow Creek below Ririe Dam since 1981. For more details, see Section 1.6 – Project and Facilities Description, winter operations.

The majority of the specific Ririe and Willow Creek fisheries management information and data were from personal communications with IDFG (Garren 2014). Specific data taken from the personal communication with the IDFG will be published in the upcoming 2014 Fishery Management Annual Report. Any additional information was cited within the section.

Wildlife

Due to the proximity to Tex Creek WMA, the analysis area extends into the WMA because the area is used as a big game corridor to and from critical winter habitat. Summer resident big game include about 80 to 100 elk (*Cervus canadensis*), 200 mule deer (*Odocoileus hemionus*), 30 moose (*Alces alces*), and a small number of white-tailed deer (*Odocoileus virginianus*). Tex Creek WMA currently provides critical winter range for an estimated 3,200 elk, 4,000 to 5,000 mule deer, and 20 moose. The south and west-facing slopes, as well as the prevailing southwest wind, tend to minimize snow depths and keep travel routes and foraging areas available most of the winter. Typical critical elk and deer winter ranges are shown on Figure 3-11.

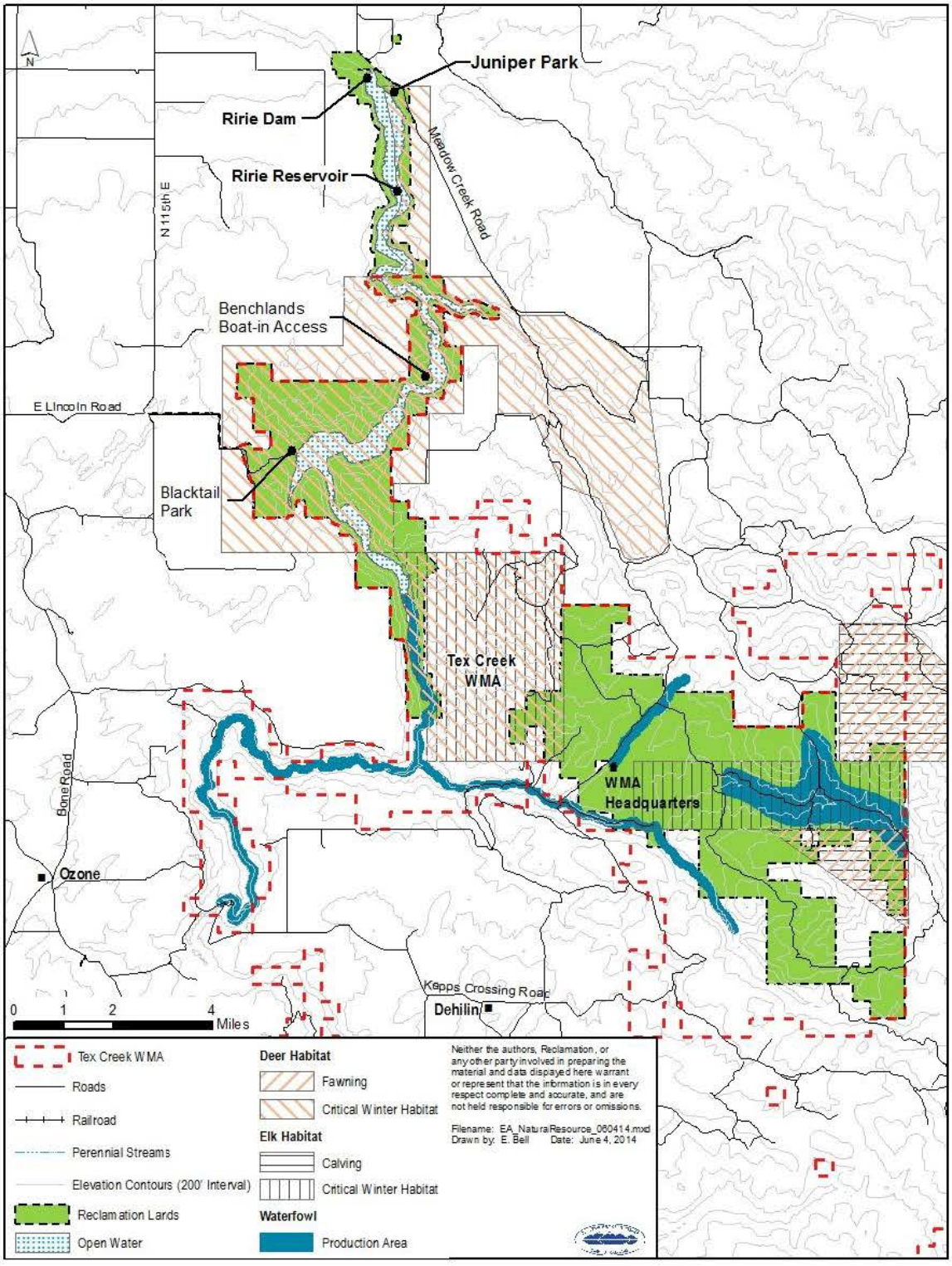

Figure 3-11. Major wildlife areas of Ririe Reservoir and Tex Creek WMA.

Critical winter use areas for elk vary from year to year depending on weather conditions, and include essentially all portions of Tex Creek at one time or another. The southeast end of public lands near Ririe Reservoir is identified as critical elk winter habitat (Figure 3-11). Occupied winter range also varies throughout the season as snow accumulation forces elk to use lower elevation areas. The abundant high quality winter range on Tex Creek minimizes elk depredation on adjacent private lands. The secure winter range available on Tex Creek is essential to the survival of these large big game herds.

Critical deer winter range includes most of the public lands around Ririe Reservoir as well as parts of the Meadow Creek drainage to the east of Ririe Reservoir (Figure 3-11). The Tex Creek WMA Management Plan (IDFG 1998) indicates that winter wheat grown on fields adjacent to Tex Creek is heavily used by wintering deer. IDFG suspects that this use permits more deer to winter in the Tex Creek area than would be possible on available native range alone. Thomas (1987 and 2014) found that deer that winter at Tex Creek tend to summer in the same areas as do the elk that winter at Tex Creek. Deer also follow the same general migration corridors as the elk.

Some of the abundant or common small mammal species that can be found in the analysis area are listed on Table 3-6. Predators that may be encountered include a few mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), and numerous coyotes (*Canas latrans*). A few black bears (*Ursus americanus*) are also present.

Table 3-6. Small mammals found on public lands near Ririe Reservoir (IDFG 1998; Groves et al. 1997; Thomas 2014).

Common Name	Scientific Name
Coyote	*Canus latrans*
Richardson's and golden-mantled ground squirrels	*Spermophilus richardsoni and S. lateralis*
Red squirrel	*Tamiascuirus hudsonicus*
Yellow-bellied marmot	*Marmota flaviventris*
Northern pocket gopher	*Thomomys talpoides*
Beaver	*Castor Canadensis*
Bushy-tailed wood rat	*Neotoma cinerea*
Badger	*Taxidea taxus*
Porcupine	*Erethizon dorsatum*
Several rodents	

Birds

Peregrine falcon (*Falco peregrinus*), which occur in the area, are known to occur in southeast Idaho (Levine, Beals, and Melquist 1998), although none nest in the immediate Ririe analysis area. There are several nests within 25 miles of the analysis area, and peregrines certainly pass through during migration and juvenile dispersal. A few of the more common avian species

include those listed in Table 3-7 as well as many neotropical migrants. Numbers of nesting waterfowl are low, with mallards (*Anas platyrhynchos*) the most common species. Mallards nest along perennial streams in Tex Creek. Bald eagles also occur in the area and have been known to nest in the tributaries near the reservoir. Wildlife use of areas along the Ririe Floodway Outlet Channel is likely limited to a few pheasants (*Phasianus colchicus*) and some seed-eating songbirds.

Table 3-7. Common bird species on public lands near Ririe Reservoir (IDFG 1998; Groves et al. 1997; Thomas 2014).

Common Name	Scientific Name
Golden eagle	*Aquila chrsaetos*
Bald eagle	*Haliaeetus leucocephalus*
Northern harrier	*Circus cyaneus*
Red-tailed hawk	*Buteo jamaicensis*
American kestrel	*Falco sparverius*
Killdeer	*Charadrius vociferous*
Blue grouse	*Dendragapus obscurus*
Ruffed grouse	*Bonasa umbellus*
Mourning dove	*Zenaida macroura*
Yellow-bellied sapsucker	*Sphyrapicus varius*
Black-billed magpie	*Pica pica*

Amphibians and Reptiles

Some of the more common amphibians and reptiles that occur in the analysis area include the western rattlesnake (*Crotalus viridus lutosus*), yellow-bellied racer (*Coluber constrictor mormon*), western terrestrial garter snake (*Thamnophis elegans*), common garter snake (*T. sirtalis*), gopher snake (*Pituophis melanoleucus deserticola*), and sagebrush lizard (*Sceloporus graciosus*). Rubber boas (*Charina bottae*) and northern leopard frogs (*Rana pipiens*) are occasionally seen.

Impact indicators include reservoir levels, releases down Willow Creek, and mapped hydric vegetation. The impact indicators were analyzed qualitatively with information from the 2001 Ririe Reservoir Resource Management Plan, ArcGIS wetland maps created in 2014, and hydrologic analyses presented in Section 3.2.

3.6.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

Fish Populations and Habitat

Overall, the present species diversity and fish population levels are expected to continue to remain unchanged with no adverse impacts. Young smallmouth bass, perch, and walleye would continue at current population levels as long as unforeseen drawdowns do not occur. Rainbow trout and kokanee are dependent on stocking levels. Conditions in the reservoir would remain unchanged for all other fish species. Entrainment of fish below the dam during fall and winter months is very unlikely unless emergency water release occurs. During the spring and summer months, entrainment is probable due to spring runoff through the month of June. The average amount of fish entrained on an annual basis is unknown but is relative to the amount of spring runoff through the dam during a given year (High 2014).

Aquatic Food Base

Overall, there would be no adverse impacts to the aquatic food base. There would be no change to reservoir operations under the No Action alternative. The current stands of aquatic macrophytes would remain relatively unchanged providing food directly for fish, as well as substrate for algae (periphyton). Nutrient levels in the reservoir would remain unchanged, at least as it relates to reservoir operations. Loss of zooplankton and phytoplankton due to entrainment through the dams can reduce productivity in a reservoir. In the case of Ririe Reservoir, entrainment rates would remain unchanged, so zooplankton and phytoplankton populations would remain relatively unchanged.

The current reservoir operation has been in effect for several years and has allowed the establishment of stands of aquatic macrophytes in shallow bays and shoreline areas sheltered from much of the wind and wave action. These stands would continue to be spawning and nursery habitat for fish during the spring period. Rocky bluffs composed of lava rock benches and boulders would also remain inundated during critical spring spawning and rearing periods, providing excellent juvenile and adult habitat.

Overwintering habitat is important for both young and juvenile fish, particularly for smallmouth bass and walleye which need adjacent cover for optimum survival. Under the current reservoir operation regime (No Action alternative), the reservoir water level and the macrophytes are sufficient to protect young and juvenile fish fairly well. Additionally, much of the cover provided by lava rock and boulders is inundated, greatly increasing the overwintering value of this habitat. Young smallmouth bass, perch, and walleye would have a small risk of predation because of the large amount of hiding cover.

Terrestrial Biota

Under the No Action alternative, the reservoir operations would essentially stay the same. The present distribution of minimal riparian vegetation in the narrow zone around the reservoir would remain unchanged and have no adverse impacts on the terrestrial biota.

Amphibian and Reptile Communities

Amphibian and reptile communities are not expected to be adversely impacted by the No Action alternative. The diversity, distribution, and relative abundance of amphibians and reptiles using the reservoir area are expected to remain the same as current conditions under the No Action alterative.

Prime and Unique Farmlands

There are no prime and unique farmlands within the boundaries of the proposed action area but the Tex Creek WMA does border the reservoir providing winter habitat to large numbers of elk and deer. Ririe Reservoir serves as somewhat of a barrier during winter months keeping elk and deer on the Tex Creek WMA and off of any adjacent farmlands. Under the No Action alternative, the existing water level would not change thus existing wildlife distribution and habits are expected to remain the same.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Overall effects (direct and indirect) to aquatic and terrestrial biota in the short and long terms (5 to 10 years, respectively) would be negligible to minor, with no adverse impacts associated with the proposed Alternative 1. Effects, if any, are discussed below.

Fish Populations and Habitat

Spawning and rearing conditions would remain at similar levels to the No Action alternative. Stands of aquatic macrophytes should remain at similar levels. Current nursery habitats would remain fully inundated during the critical spring period. Drawdown periods would remain the same as in the No Action alternative. The game fish populations in Ririe Reservoir would likely remain the same. Smallmouth bass, perch, and walleye populations may slightly increase in years when there is more water because additional lava rock/boulder habitat would remain inundated during the winter months. Juvenile smallmouth bass, perch, and walleye would have a slightly increased opportunity to seek cover from predators in the rocks and crevices throughout late fall and winter with potentially higher reservoir levels (compared to the No Action alternative). However, in water years that necessitate reservoir drawdowns to maintain the 5089 feet elevation, those cover opportunities may be diminished. Habitat for hatchery rainbow trout and kokanee would likely remain good as the overall reservoir productivity would not be adversely affected.

Aquatic Food Base

The overall extent of aquatic macrophytes in Ririe Reservoir would likely remain unchanged (see Section 3.5 Floodplain/Wetlands). Entrainment rates for zooplankton and phytoplankton would remain at similar levels, thus overall populations would remain unchanged. Ramping rates for draw down would remain the same as under the No Action alternative. Mortalities from drawdown may decrease slightly from the No Action alternative because more water would be stored during the winter. Juvenile fish would potentially have more cover/rocky habitat to use during the winter months and be able to escape predators easier.

Alternative 1 could increase the winter reservoir elevation by a maximum of 7 feet in relation to the current operations. However, Section 3.2 – Hydrology, identifies the average February reservoir elevation increase would be 1.4 feet, with a maximum of 5.5 feet and elevation increases would occur 42 percent (8 out of 19 years) of the time. Overall, the reservoir could carry more water during winter months.

It is unknown if the aquatic macrophyte community in the Ririe Reservoir littoral zone has been surveyed in detail. There are very few wetland plant species found around the reservoir except where tributaries enter the reservoir. Most of these are of the cattail and bulrush species. These wetland plant species are heavily used as spawning and rearing habitat for several species of fish present in Ririe Reservoir.

Stands of aquatic macrophytes would likely continue to persist in the littoral zone of Ririe Reservoir under Alternative 1 to the same extent as currently exists. In some hydrological regimes, cattails can become a nuisance by forming extremely dense, extensive stands. However, it is unlikely that this change in water storage scenario would increase the extent of cattails because the winter storage increase occurs outside of their growing season. Overall, the present level of aquatic macrophytes would continue to be available for spawning and rearing in the littoral zone.

Suitability of the shallow unvegetated flats in the draw down zone would remain at the same level for the crucial spring rearing period, as drawdowns would not occur until after juvenile fish of most species have left the shallow shoreline areas later in late spring. Overall, these shallow habitats would be available year round more often under Alternative 1 than presently occurs.

The lava/boulder habitat would remain unchanged from the No Action condition, as reservoir levels would remain at almost over 75 percent pool during the spring spawning and rearing period (depending on water year). The minor change to the reservoir habitat that juvenile fish would encounter is that the reservoir could have slightly more water during the winter period than presently occurs. This would reduce the amount of time that juvenile fish can rely on the cover of aquatic macrophytes or lava rock and boulder habitat for escape from predators and they would be forced into open water habitat.

Juvenile smallmouth bass, perch, and walleye would likely benefit by being able to seek cover from predators in lava rock and boulders during winter months. As these species are dependent on cover for optimum survival (Wallus 2008), this improvement in the reservoir levels would benefit smallmouth bass, perch, and walleye. Although the possible increase of walleye is seen as a negative impact by the IDFG (because it is an aggressive predator species) the benefit to other fish species is positive.

Terrestrial Biota

Under Alternative 1, the reservoir operations would essentially stay the same but there could be increased water levels (up to 7 feet) during the winter months. However, Section 3.2 – Hydrology identifies the average February reservoir elevation would increase 1.4 feet, with a maximum of 5.5 feet and would occur 42 percent (8 out of 19 years) of the time. The present distribution of riparian vegetation in the narrow zone round the reservoir would remain relatively unchanged. Some riparian vegetation species would be inundated longer during winter months but this should not decrease the overall riparian habitat around the reservoir.

Avian Communities

During the winter months, Ririe Reservoir does not provide useful habitat for many avian communities. Occasionally ice would recede along the reservoir edges and migrating waterfowl such as mallard ducks may utilize the open water, mainly near the dam. Since the total water increases during the winter months are so minimal, the avian community would remain essentially the same as presently occurs.

Mammalian Communities

Potential impacts to mammalian communities would be minimal. The winter time reservoir pool that currently exists for mammalian communities would only be slightly higher and these wildlife species habitats would not change. The big game species such as mule deer and elk would continue using the food and water resources around the reservoir as it exists.

A possible threat to deer and elk is the potential for wintering animals to fall through newly formed ice when attempting to cross the reservoir. On occasion, when drops in temperature coincide with an increase in water surface elevation (and the period of time when deer and elk numbers are at their highest), thin ice can form over the newly wetted perimeter. Light snow could mask the transition between water and ice. Deer and elk could then walk onto the newly formed ice and fall through.

Large common mammals occurring in the canyon such as coyotes, badger, beaver and porcupines would continue to benefit from the slight drawdown as it creates direct access across tributary bays, provide food, and travel corridors. The potential 7-feet rise in reservoir surface elevation (1.4-feet average rise) during the winter months would have no effect on

habits or habitat. Small mammals such as the black-tailed jackrabbits, montane voles, and deer mice would not be affected by the current winter drawdowns because they are mostly terrestrial species and generally would not use the drawdown zone along the edge of the reservoir.

Amphibian and Reptile Communities

There could be slight effects on amphibians, primarily northern leopard frogs. Leopard frogs can occasionally be found around the reservoir shoreline in the summer. They breed in shallow bays, especially those with emergent vegetation. These frogs use mud underwater to avoid ice formation during winter hibernation. Ice can form in the water above them as long as they do not freeze. The higher winter water levels would likely mean they would simply select similar water depths for hibernation. Water level rises after they enter hibernation in the fall could be a problem if the added depth leads to anaerobic conditions at the substrate in which they are buried. Leopard frogs are occasionally found around the shoreline but not in great numbers. The greatest danger to the leopard frog is freezing during drawdowns. If the frog can survive with the current 55,000 acre-feet winter drawdown, the proposed operation should have no effect. The other amphibian and reptile species using the reservoir would not be affected by the increase of winter water storage because they are mostly terrestrial species and generally would not use the drawdown zone along the edge of the reservoir during winter months.

Prime and Unique Farmlands

There are no prime and unique farmlands within the boundaries of the proposed action area but the Tex Creek WMA does border the reservoir, providing winter habitat to large numbers of elk and deer. Ririe Reservoir serves as somewhat of a barrier during winter months keeping elk and deer on the Tex Creek WMA and off of any adjacent farmlands. Under Alternative 1, the existing water level would change approximately 1.4 feet, but could potentially increase up to 7 feet, which is very minimal. Therefore, existing wildlife distribution and habitats are expected to remain the same.

3.7 Threatened and Endangered Species

3.7.1 Affected Environment

The USFWS web site for Idaho lists all the threatened and endangered, proposed and candidate species for each of the counties (USFWS 2009). Species that are known or expected to occur in the assessment area or that occur near the assessment area are identified in Table 3-8. Expected presence in the assessment area is based on recent surveys, habitat suitability, occurrence of similar habitats, and available literature. None of the species

identified in Table 3-8 are known to occur within or immediately adjacent to Ririe Reservoir or in the Willow Creek drainage below Ririe Dam; therefore, Reclamation has determined there would be no effect to the ESA-listed species through the implementation of the alternatives identified in this assessment. The greater sage-grouse has been documented on the Tex Creek WMA on sage-covered benches located near the reservoir; however their distribution is outside the area of potential effects of this water-management project. Due to their relative proximity, however, a discussion on this species is provided below.

Impacts to ESA-listed anadromous fish located within the Snake and Columbia River systems are not addressed in this analysis due to the nature of this water-management project. Deviations in the winter flood control space would have no impacts to Snake River flows past American Falls Reservoir and would not affect Reclamation's ability to deliver flow augmentation water from the upper Snake River system. This is primarily due to the fact the proposed action would only result in an increase in storage of only 1.9 percent over the 19 years analyzed. Due to the low fill probability of Alternative 1, the reservoir fills only one additional year over 19 years compared to the No Action alternative. Therefore, there are no adverse impacts to storage water gained and no measurable impacts to Reclamation's ability to deliver flow augmentation water.

Table 3-8. Federally-listed, proposed, and candidate species, and proposed and designated critical habitats that may occur in Bonneville County, Idaho.

Common Name	Scientific Name	Status
Birds		
Greater Sage-Grouse	*Centrocercus urophasianus*	Candidate Species
Yellow-Billed Cuckoo	*Coccyzus americanus*	Proposed Species
Mammals		
Canada Lynx	*Coccyzus americanus*	Threatened Species
Grizzly Bear	*Ursus arctos horribilis*	Threatened Species
North American Wolverine	*Gulo gulo luscus*	Proposed Species
Plants		
Ute Ladies'-Tresses	*Spiranthes diluvialis*	Threatened Species
Whitebark Pine	*Pinus albicaulis*	Candidate Species

Greater Sage-Grouse

Greater sage-grouse (*Centrocercus urophasianus*) once were abundant in sagebrush habitats of the western United States and Canada. Unfortunately, the bird and its habitat have declined in abundance. In Idaho, threats to greater sage-grouse populations include: wildfire, infrastructure development such as power lines and wind farms, annual grasslands, livestock impacts, human disturbance, West Nile virus, prescribed fire, seeded perennial grasslands, climate change, and conifer encroachment (Gillan and Strand 2010). The Willow Creek watershed was historically occupied habitat for greater sage-grouse. The IDFG and BLM

ranked this area as key habitat. According to BLM's 2011 greater sage-grouse habitat map, Tex Creek WMA provides suitable habitat but is not within a priority area for conservation. There are two perennially active leks in close proximity to the WMA and an additional historic lek whose current status is unknown. Surveys conducted by IDFG and Reclamation since 2008 have identified greater sage-grouse occupying suitable habitat within the WMA, but at low densities with intermittent occurrences.

To assess potential impacts to greater sage-grouse, impact indicators were identified. The impact indicators include reservoir storage and fill. The impact indicators were analyzed qualitatively with information from the USFWS web site on threatened and endangered, proposed, and candidate species in Idaho; surveys, species habitat suitability, occurrence of similar habitats and available literature; 2011 BLM greater sage-grouse habitat map; and hydrologic analyses presented in Section 3.2.

3.7.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

Greater Sage-Grouse

In the absence of a deviation in Reclamation's winter flood control operations, greater sage-grouse would continue to exist in their current state within the Tex Creek WMA. Ririe Reservoir would continue to be operated consistent with past operations, providing a winter flood control space of 55,000 acre-feet. It is not anticipated greater sage-grouse distribution, abundance, or local population viability would change under this alternative.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Greater Sage-Grouse

Under Alternative 1, greater sage-grouse would continue to exist in their current state within Tex Creek WMA. A reduction of winter flood control space of 8,000 acre-feet in Ririe Reservoir would have no direct or indirect effect on greater sage-grouse distribution, abundance, or local population viability for the short or long term (2 and 10 years, respectively). Impacts to storage water gain under Alternative 1 winter operations is minimal (1.4 percent increase over 19 years) and the reservoir fills in one additional year over 19 years compared to the No Action alternative. Therefore, there are no adverse impacts associated with an increase in storage water. This very small change in surface water management would have no effect on the greater sage-grouse. Additionally, the winter varial zone under this alternative does not possess characteristics associated with greater sage-

grouse habitat requirements in any way. There would be no affect to greater sage-grouse through the implementation of the action alternative.

3.8 Recreation

3.8.1 Affected Environment

Ririe Reservoir

Recreation activities in the reservoir area include both land- and water-based activities, with some seasonal opportunities for snow-based winter recreation. Most of the recreational users of this area are Idaho residents, and most are on day trips from Idaho Falls and Bonneville County. Its proximity to Idaho Falls makes the reservoir a popular destination for local recreationists, especially day users. It is estimated that approximately 75,000 visitors typically visit the area during the summer season (Reclamation 2001).

The most recent visitor use study performed in the project area was a limited questionnaire administered by the Bonneville County Department of Parks and Recreation (BCDPR) during three summer weekends in 1999. It identified some of the most popular activities in the area (EDAW and BCDPR 1999). This questionnaire was only administered a few select times and was not intended to be statistically valid. Visitors indicated that the most important primary activities while on their trip were waterskiing, fishing from a boat, powerboating, and fishing from shore. While these reflect the activity most important to their trip, visitors also participated in many other activities while on the same trip. The activities engaged in most frequently included swimming, waterskiing, resting or relaxing, picnicking, powerboating, and fishing from a boat. Other activities in the area include hunting, snowmobiling, hiking, and camping. Waterskiing was second to swimming in overall popularity, but the number one primary activity at the reservoir. This response is likely due to the nature of the reservoir's surface, types of facilities provided, proximity to an urban area, climate, and lack of other comparable sites in the immediate area for waterskiing.

Fishing continues to be one of Ririe Reservoir's main activities, and the area is known as one of the best kokanee fisheries of any reservoir in Idaho. IDFG stocks the reservoir (most recently) with kokanee and rainbow trout. Shore anglers are somewhat restricted due to the steep banks along the reservoir. However, unlike many other reservoirs in Idaho, there is relatively little summer drawdown at Ririe Reservoir. Therefore, although summer drawdown does have an effect on recreation facilities in late July and August, there is a stable fishery throughout the fishing season. The most popular game fish is rainbow trout, followed by smallmouth bass, kokanee salmon, and yellow perch. The fishing season runs all year long, with an ice fishing closure approximately one mile above the dam. The quality of the ice varies from year-to-year, making some warmer years unsuitable for ice fishing.

The southern half of Ririe Reservoir lies within Tex Creek WMA. Big game hunting occurs within the WMA, as does wildlife viewing, bird watching, camping, picnicking, horseback riding, hiking and mountain biking. Very primitive camping areas are present in the WMA, with facilities having limited to limited clearings with fire rings. Please refer to Section 3.6 – Aquatic and Terrestrial Biota, for additional information on the species present in Tex Creek WMA.

Recreation Facilities

Recreation facilities are currently provided at four developed sites on Ririe Reservoir by BCDPR, including Juniper Park, Blacktail Park, Benchland Park, and Willow Point Park, as well as dispersed recreation sites at Tex Creek operated by IDFG. Most of the recreation facilities were developed when the project was built in 1975. An additional site, Creekside Park, located downstream of the dam, was closed to recreational use in the late 1990s and the facilities at the site were later demolished. The road to the site is closed to protect the dam.

Juniper Park, located at the northern end of Ririe Reservoir, includes the park office with interpretive facilities, day-use areas with turf and several picnic shelters, an overlook of the reservoir, a campground with three loops containing 60 campsites and one camp host site (all with full hookups [water, power and sewer]), a small marina, and a two-lane boat ramp. The steep shoreline at Juniper Park limits recreational access to the water for non-boating visitors. Most of Juniper Park is compliant with accessibility requirements (i.e., access to visitors with mobility impairments) (Reclamation 2012a).

Blacktail Park is a day-use area near the southern end of Ririe Reservoir, offers a three-lane boat ramp, a large turfed area with numerous picnic shelters, a marina, a swimming area, and two vault toilet buildings. Most of Blacktail Park is compliant with accessibility requirements (Reclamation 2012a). Blacktail Park is significantly closer to Idaho Falls, so it receives a great deal of visitation, even on weekday afternoons and evenings. The site is closed in the winter to reduce potential impacts to wildlife. This park has the only designated swimming area on the reservoir. The swimming area is protected from boat traffic by a floating dock and several buoys defining a no-wake zone.

Benchland Park, a boat-in only day-use area along the western shore of Ririe Reservoir between Juniper and Blacktail, includes five picnic shelters on a turfed area with a floating vault toilet on the dock. One of the picnic shelters has an accessible route to the dock.

Willow Point Park consists of one picnic shelter with a table and barbecue grill, and a floating vault toilet on the dock. There is an improved access route from the beach area where boats are beached. Like Benchland Park, it is only accessible by boat.

Other developed facilities on Ririe Reservoir include scattered floating platforms that are moored close to shore at various points around the Reservoir. These “destination docks” are

needed because the steep grade of the reservoir shoreline limits the beaching of boats by visitors. These platforms are maintained by Bonneville County and serve as tie-ups for boaters during the day, as well as overnight moorage for people camping on their boats. At seasonal drawdown, most of these docks are beached along the exposed banks (Reclamation 2001). None of these platforms are accessible to people with disabilities.

Reclamation has an agreement with Bonneville County (Lease # 3-07-14-LA438) authorizing the County to provide management, operation, maintenance, development, and replacement of all recreation facilities at Ririe Reservoir. The agreement includes a provision allowing financial cost-sharing by Reclamation of no more than 50 percent for new and replacement recreation facilities. The agreement was last renewed in 2003, with the stipulation that it could be renewable for up to a total of 20 years.

Willow Creek and Sand Creek

There are no recreation facilities on Willow Creek or Sand Creek below Ririe Dam. These channels are not navigable due to a lack of public access and the presence of obstructions to motorized or non-motorized boating.

Despite the periodic cessation of flows from Ririe Dam, a seasonal fishery is present in Willow Creek below the dam. Fish are entrained below the dam and also swim up the canal to Willow Creek. There are no public facilities present for fishermen who walk in to the fishery by way of very poor trails.

Snake River

Water released from Ririe Dam that is not used for irrigation ultimately drains into the Snake River. Recreationists use the river for motorized and non-motorized boating, boat and bank fishing, sight-seeing, bird watching, and picnicking.

American Falls Reservoir

American Falls Reservoir lies approximately 60 miles southwest of Ririe Dam. American Falls Reservoir primarily attracts visitors from nearby communities including Pocatello and American Falls as well as other parts of southeastern Idaho. Popular activities include sightseeing, nature study, bird watching, hiking, camping, water-related activities, fishing, hunting, and various forms of motorized travel. Winter recreation is limited by inconsistent ice conditions and insufficient snow for snow machine use.

Because the reservoir capacities differ so much between Ririe and American Falls Reservoirs, any additional water from Ririe used to supplement American Falls is negligible and not perceived by recreationists at American Falls Reservoir. As stated in Section 3.2, a 15 percent change in Ririe Reservoir flood space reservation is equal to 0.5 percent of the

capacity of American Falls Reservoir and 0.2 percent of the capacity of the upper Snake River system. Therefore, recreation at American Falls Reservoir was not analyzed in detail.

3.8.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

Ririe Reservoir

The present visitation levels and recreation activities enjoyed at Ririe Reservoir are expected to continue into the foreseeable future. Visitation levels have remained fairly constant for the past 10 years, though slightly down from the level during the last visitation study in 1999 (EDAW and BCDPR 1999; Daniels 2014). The existing recreation facilities would continue to provide the same recreation opportunities now present at the reservoir. The mix of fish species available to fishermen is expected to remain unchanged (see Section 3.6), so the popularity of fishing at Ririe Reservoir is expected to continue at the present level.

Reservoir levels are drafted prior to November 1st to provide reservoir capacity for the flood season (see Section 1.6.3 - Operations, Winter). Ice fishing could be adversely affected by major storm events that raise reservoir levels to the point that the edges of the ice are too unstable for access to the ice surface. At these times, ice fishermen would either have to wait until the ice became sound again or forego ice fishing for the rest of the season.

Under the No Action alternative, winter reservoir operations would essentially stay the same and would have minimal adverse impact on established winter visitation levels, recreation activities, or facilities at Ririe Reservoir or at Tex Creek WMA that overlaps the southern portion of the reservoir.

Willow Creek and Sand Creek

Under the No Action alternative, the seasonal cessation of flows out of Ririe Dam, coupled with the seasonal cessation of flows from the canal into Willow Creek, provide insufficient flows for a winter fishery in Willow Creek below Ririe Dam. Therefore, winter reservoir operations and any corresponding water level changes in Willow Creek and Sand Creek would occur as they have in the past and would have no adverse impact on recreational uses in these channels.

Snake River

Under the No Action alternative, reservoir operations and any corresponding water flowing into the Snake River would have no adverse impact on recreational uses of the river. Recreation would continue to occur as it has in the recent past.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Ririe Reservoir

The present visitation levels and recreation activities enjoyed at Ririe Reservoir are expected to continue for the foreseeable future. Visitation levels have remained fairly constant for the past 10 years, though slightly down from the level during the last visitation study in 1999 (EDAW and BCDPR 1999; Daniels 2014). The existing recreation facilities would continue to provide the same recreation opportunities that are now present. The mix of fish species available to fishermen is expected to remain unchanged (see Section 3.6.1), so the popularity of fishing at Ririe Reservoir is expected to continue at the present level for both the short and long term (2 and 10 years, respectively).

Section 3.2 of the hydrologic analysis states that the reservoir levels for Alternative 1 would be within the range of current water levels and would be well below the high water mark, and summer and fall discharges would be the same as in the No Action alternative, with fall transitional flow releases slightly reduced compared to the No Action alternative. Effects to the reservoir area, Willow Creek, Sand Creek, and the Snake River below Ririe Dam for spring through fall would be the same as those described in the No Action alternative because of no sizeable differences in reservoir levels and flows.

Additionally, the average February reservoir elevation increase would be 1.4 feet, with a maximum of 5.5 feet and increases would occur 42 percent (8 out of 19 years) of the time. This increase in reservoir elevation, followed by an evacuation in anticipation of a major storm event, could potentially make the edges of ice on the reservoir buckle at angles that could make access for ice fishing quite difficult. These buckled chunks of ice would remain around the edges of the reservoir until the ice thawed, thereby curtailing the ice fishing season for most, if not all ice fishermen at the reservoir. It is also possible that once the reservoir elevation was restored to at least the pre-storm elevation, the weather could warm enough to melt the ice, then get cold enough to refreeze it again, thus restoring suitable ice fishing conditions. While this could feasibly occur under the No Action alternative, it is more likely to occur under Alternative 1 because of the increase in potential elevations prior to release.

Reservoir operations would have minimal direct adverse impacts on ice fishing visitation levels in those years when operations impact the quality of the ice on the reservoir. Reservoir operations would have no direct or indirect impact on other established visitation levels, recreation activities, or facilities at Ririe Reservoir or at Tex Creek WMA for both the short and long term.

Willow Creek and Sand Creek

Winter flows out of the dam could occur more often under Alternative 1 (58 percent of the time) winter operations than under the No Action alternative (11 percent of the time). Willow Creek could receive a winter maximum flow of 900 cfs for an average duration of 4.1 days and a maximum of 9.1 days. As in the No Action alternative, this would still be insufficient to support a winter fishery in Willow Creek.

Under Alternative 1, winter reservoir operations and any corresponding water level changes in Willow Creek and Sand Creek would have no adverse impact on recreational uses in these channels in either the short or long term because no fishery is present in these channels in winter.

Snake River

Under Alternative 1, reservoir operations and any corresponding water flowing into the Snake River would have no adverse impact on recreational uses of the river in either the short or long term because any flows released from Ririe Reservoir would be of insufficient volume to be perceptible to recreationists.

3.9 Cultural Resources

3.9.1 Affected Environment

The affected cultural resource environment is based on records from Reclamation, the Idaho State Historic Preservation Office (SHPO), and aerial photographs. The National Register of Historic Places (NRHP) does not include any listings in the immediate project area. Ririe Dam was constructed from 1970 to 1977 and has not achieved 50 years of age in order to be evaluated for National Register eligibility, and does not qualify as a historic property. Effects of the proposed project and its alternatives on the dam itself were therefore not considered in the Cultural Resources section of this EA.

Evidence of human occupation in southeastern Idaho dates as early as 14,500 years before present (B.P.). Three major prehistoric cultural periods have been identified for southeastern Idaho: the Early Prehistoric Period (15,000 to 7,500 B.P.), the Middle Prehistoric Period (7,400 to 1,300 B.P.), and the Late Prehistoric Period (1,300 to 150 B.P.). Sites excavated in the Ririe Reservoir area have yielded diagnostic tools that indicate the area was occupied for at least portions of the Middle and Late Prehistoric Periods. Historically, explorers and fur trappers first entered southeastern Idaho in the early 19th century. Settlement in the southeastern portion of the state began in 1860. Agriculture was and is the primary industry

of settlers, and irrigation systems were of considerable importance to agricultural development.

Cultural affiliations of ethnohistoric groups in the greater project area are Northern Shoshone and Bannock. These two groups spoke different dialects of the Numic language, and lived together in winter villages on the upper Snake River. Shoshone and Bannock territory consisted primarily of southern Idaho, including the study area, with bands congregating along the Snake and other rivers. After acquiring the horse, they ranged north into southern Alberta and east to the Black Hills to hunt bison and trade. The Fort Hall Indian Reservation of the Shoshone-Bannock Tribes was established in 1867.

Records show that seven archaeological sites have been documented in the area either within or immediately surrounding Ririe Reservoir (the area of potential effect). These sites include an artifact scatter, two lithic scatters, a prehistoric campsite, two rock shelters, and an historic trash scatter. None of these sites has received an official determination of eligibility for listing on the NHRP, but information included in the Ririe Reservoir Resource Management Plan (RMP) states that three of these sites (a rock shelter, a lithic scatter and an artifact scatter) should be considered eligible. All but three of the seven known archaeological sites are now inundated year-round by the reservoir, and their present condition is unknown. The inundated sites, of which the eligible rock shelter is one, are not available to evaluate for official eligibility determination.

As part of this EA, Reclamation requested information from local Native American groups regarding areas or resources of concern (including traditional cultural properties [TCPs]) in or near the project area. No written responses by the Tribes were brought forward.

Impact indicators include reservoir level changes and releases down Willow Creek. The impact indicators were analyzed qualitatively with records from SHPO and NRHP and with information from the 2001 Ririe Reservoir RMP, aerial photographs, and hydrologic analyses presented in Section 3.2.

3.9.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

The No Action alternative involves no change to existing conditions. Sites that are already inundated year-round would remain inundated, and sites above the high water line would remain above the high water line. Therefore, implementation of the No Action alternative would have no short or long term (2 and 10 years, respectively) adverse, direct or indirect effects on cultural resources.

Alternative 1 –Winter Flood Control Space of 42,000 Acre-Feet

The implementation of Alternative 1 would essentially mean that water levels are held at a higher level for a longer amount of time in some years. The high water line would not be changed, and the drawdown of water levels during irrigation season would still occur.

As in the No Action alternative, the operation changes involved in Alternative 1 would have no adverse direct or indirect effects on cultural resources for the short and long terms. Sites that are already inundated year-round would remain inundated, and sites above the high water line would remain above the high water line. Sites that are inundated would remain unevaluated for eligibility to the NHRP due to their inaccessibility by archeologists.

Inundation of archeological sites that contain surface artifacts and/or features could potentially diminish or eliminate data important for a better understanding of the nature of the site. All four of the known inundated sites were excavated prior to being inundated. While data collection standards have increased since then, at least some data was salvaged prior to the filling of the reservoir. Any buried information that may still exist below the waters of the reservoir could, at least in theory, be available to future researchers if and when the sites once again become available for study. The change in operations afforded by Alternative 1 would not change that potential outcome.

3.10 Sacred Sites and Traditional Cultural Properties

3.10.1 Affected Environment

This section discusses sacred sites as defined by Executive Order (EO) 13007 and the potential of the No Action alternative and Alternative 1 impacts on sacred sites, as well as the Memorandum of Understanding (MOU) signed by the Advisory Council on Historic Preservation (ACHP) and numerous participating federal agencies which further identifies federal agency responsibilities to identify and protect Indian sacred sites. Sacred sites are defined by EO 13007 as specific, discrete, narrowly delineated locations on federally-owned land that is identified by an Indian individual or Tribe determined to be an identified and appropriate representative of an Indian religion, as sacred by virtue of its established religious importance to, or ceremonial use by, an Indian religion. As a part of EO 13007 and the MOU between ACHP and multiple federal agencies, federal agencies must accommodate access to and ceremonial use of all Indian sacred sites by Indian religious practitioners, and avoid any adverse effects to the physical integrity of sacred sites. In addition to this, federal agencies must also make a good faith effort to improve the protection of tribal access to Indian sacred sites through enhanced and improved interdepartmental coordination and collaboration.

There is no information on any specific Indian sacred sites within the study area. However, the *Ririe Reservoir Resource Management Plan Final EA* (Reclamation 2001) identified various natural features and locations on the study area landscape that would have held spiritual or religious significance to aboriginal Tribes. Certain physical and natural features that could be located near the study area include mountains, foothills, buttes, springs, lakes, rivers, and rock shelters, among others. Additionally, specific cultural sites may be regarded as sacred to Tribes such as altars; vision quest sites; water sources, springs, and headwaters; burial sites; historical places, for example, battlegrounds, rendezvous sites, sites where ceremonies occurred, and routes traveled by important persons; and others.

3.10.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

Under the No Action alternative, there would be no direct, indirect, short term, long term, or cumulative effects to Indian sacred sites and TCPs. Ririe Dam and Reservoir would maintain its current water operations, and would be drafted by November 1 to 5,000 acre-feet below the fixed 50,000 acre-feet of flood control space requirement for a total of 55,000 acre-feet of available flood control space. The existing conditions would remain intact and would not be affected.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Potential effects to Indian sacred sites can only be dealt with in a generalized fashion due to the fact that the specific location and nature of sacred sites within the study area are unknown. If Indian sacred sites are located within the study area, it is unlikely their integrity would compromised by physical disturbances or audio and/or visual intrusions because Alternative 1 is a winter operational change with no ground disturbance. Section 3.2 states that the reservoir levels are within the range of current water levels and predicted water levels would be well below the high water mark and summer and fall discharges would be the same as in the No Action alternative. As a result, there would be no adverse effects (direct or indirect) to culturally important areas for the short and long-terms (3 to 10 years, respectively) with this project. Impacts associated with the proposed Alternative 1 would not affect Indian sacred sites or their eligibility for listing in the NRHP.

3.11 Indian Trust Assets

3.11.1 Affected Environment

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for Indian tribes and individuals. The Secretary of the Interior, acting as trustee, holds many assets in trust for Indian tribes and individuals. Examples of trust assets are lands, minerals, grazing, hunting, fishing, and water rights. While most ITAs are on-reservation, they may also be found off-reservation on federally-managed unoccupied lands.

The United States has a responsibility to protect and maintain rights reserved by or granted to Indian tribes and Indian individuals by treaties, statutes, and executive orders. These are sometimes further interpreted through court decisions and regulations.

The Shoshone-Bannock Tribes, a federally-recognized tribe, located at the Fort Hall Indian Reservation in southeastern Idaho have trust assets both on and off reservation lands. The Fort Bridger Treaty was signed and agreed to by the Bannock and Shoshone headman on July 3, 1868. The treaty states in Article 4, that members of the Shoshone-Bannock Tribes "…shall have the right to hunt on unoccupied lands of the United States…" this has been interpreted to mean unoccupied federal lands and to include fishing as a form of hunting.

The tribes included fishing after the case of State of Idaho vs. Tinno, an off-reservation fishing case in Idaho. The Idaho Supreme court determined that the Shoshone word for "hunt" also included "fish." Under Tinno, the court affirmed the Tribal Members' right to take fish off-reservation pursuant to the Fort Bridger Treaty (Shoshone-Bannock Tribes v. Fish & Game Commission Idaho 1994).

The Nez Perce Tribe is a federally-recognized Tribe located at the Nez Perce Reservation in northern Idaho. The United States and the Tribe entered into three treaties (Treaty of 1855, Treaty of 1863, and Treaty of 1868) and one agreement (Agreement of 1893). The rights of the Nez Perce Tribes include the right to hunt, gather, and graze livestock on open and unclaimed lands, and the right to fish in all usual and accustomed places.

Other federally-recognized Tribes are the Shoshone-Paiute Tribes of the Duck Valley Reservation located on the Idaho/Nevada border and the Burns Paiute near Burns Oregon. These Tribes have cultural and religious interests in the area of the proposed project. These interests are protected under historic preservation laws, NAGPRA, and EO 13007 – Indian sacred sites.

3.11.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

Under the No Action alternative there would be no direct, indirect, short or long term, or cumulative effects to ITAs. Ririe Dam and Reservoir would maintain its current water operations, and would be drafted by November 1 to 5,000 acre-feet below the fixed 50,000 acre-feet of flood control space requirement for a total of 55,000 acre-feet of available flood control space. The existing conditions would remain intact and would not be affected.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Alternative 1 would not affect any known ITAs of lands, minerals, water rights, monetary holdings, and gathering rights in the direct vicinity of Ririe Dam and Reservoir. The ability to capture and store water in Ririe Reservoir is consistent with Policy 4B of the Idaho State Water Plan, which promotes the development of additional projects that would enhance the water supply above Milner Dam. The storing of additional water in Ririe Reservoir can benefit Tribal water rights above Milner Dam.

As part of its scoping process, Reclamation requested information from Tribes that traditionally and currently use the area; however, no responses were received. The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response Reclamation assumes that there would be no adverse effects to ITAs such as lands, minerals, water rights, monetary holdings, and gathering rights in the direct vicinity of Ririe Reservoir and Dam (Appendix C). Implementation of the Alternative 1 would not affect tribal hunting and fishing rights outside of the study area.

3.12 Socioeconomics

3.12.1 Affected Environment

The Mitigation, Inc. study area includes the Idaho counties of Bonneville, where Ririe Dam and reservoir are located, as well as Bingham, Fremont, Jefferson, and Madison counties. This study area, a subset of the upper Snake region, is based on the geographic location of the Mitigation, Inc. irrigation companies and individuals. The study area is justified because Mitigation, Inc. contracts the storage allocated to irrigation in Ririe Reservoir. The majority of the Mitigation, Inc. lands are shown in Figure 3-12.

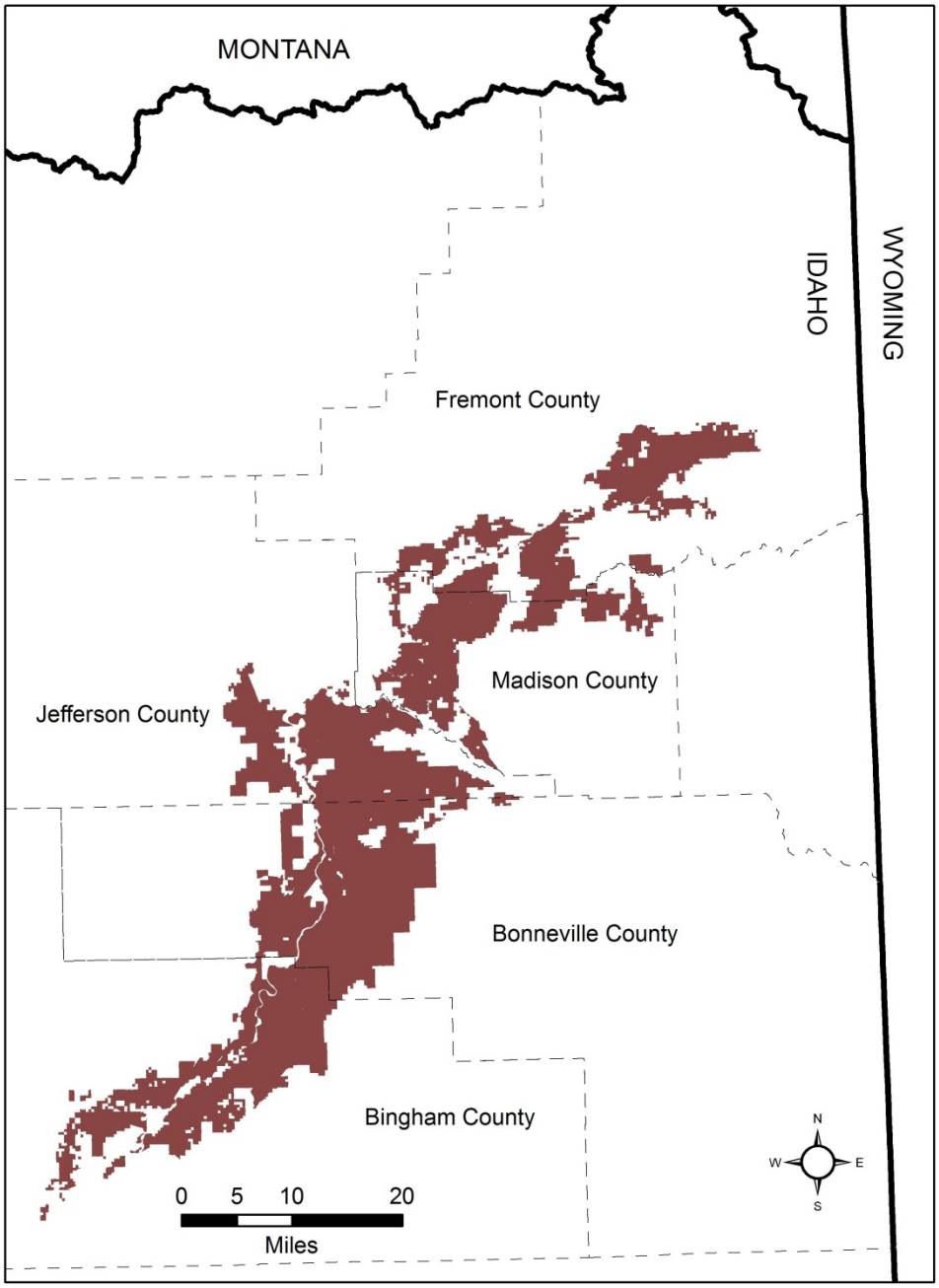

Figure 3-12. Location of majority of Mitigation, Inc., lands.

Ririe Reservoir is one of several storage reservoirs in the upper Snake system. Storage in the other reservoirs, which is contracted by irrigation delivery entities within Water District 1, may also be impacted by Alternative 1. The upper Snake study area, where Water District 1 lands are located, includes the five counties included in the Mitigation Inc. study area plus the eight Idaho counties of Bannock, Cassia, Jerome, Minidoka, Power, Teton, and Twin Falls.

Methods for Evaluating Impacts

Impacts were evaluated for the following indicators:

1. Change in rental pool revenues derived from additional storage allocations.
2. Change in costs for channel cleaning.
3. The net change between additional rental pool revenues and channel cleaning costs.

Information Used in the Analyses

1. Potential water storage increase in Ririe Reservoir (discussed in Section 3.2).
2. Rental pool procedures and rates.
3. Costs for channel cleaning (discussed in Section 3.2).

Analysis Methods

A financial analysis was conducted to compare the estimated rental pool revenues generated from additional storage in Ririe Reservoir and other upper Snake River system reservoirs to the additional costs required for channel cleaning. The financial analysis uses a 10-year analysis period to be consistent with the 10-year interim operations period discussed in Section 3.2. Mitigation Inc. contracts the irrigation water stored in Ririe Reservoir. The irrigation water stored in the other upper Snake River system reservoirs is contracted by irrigation delivery entities and individuals within Water District 1. The additional revenues generated from the additional storage water, discussed in Section 3.2 are estimated based on the 2013 Water District 1 rental pool rates (IDWR 2013). Water District 1 prices from the *2013 Water District 1 Rental Pool Procedures* (IDWR 2013) are as follows:

- Tier 1: If the storage system fills, the rental price for purposes above Milner shall be $6.00 per acre-foot.
- Tier 2: If the storage system does not fill but storage is provided for flow augmentation the rental price for purposes above Milner shall be $14.50 per acre-foot.
- Tier 3: If the storage system does not fill and no flow augmentation water is provided the rental price for purposes above Milner shall be $22.00 per acre-foot.

The tiered rental pool rate for this analysis is based on the hydrologic conditions for each year additional storage water is available. Table 3-9 shows the years when additional storage water is available and the assumed rental pool rate.

Table 3-9. Water district rental pool rates for years where additional storage is available (IDWR 2013).

Year	Rental Price
2000	$6
2001	$22
2002	$22
2003	$22
2005	$22
2007	$22
2008	$6
2010	$6

The rental pool rates shown in Table 3-9 are applied to the estimated additional storage water available (shown in Table 3-1 in Section 3.2). The average annual revenue over the 19-year period of record is then calculated. The average annual revenues are discounted[1] over the 10-year analysis period using a 3.5 percent discount rate (2014 discount rate for Water Resources Planning[2]) to estimate the total revenue generated. The 10-year analysis period is based on the interim operational period discussed in Section 2.3.

The next step in the financial analysis is to estimate the additional expenses for channel cleaning. As discussed in Section 3.2, channel cleaning would be required 4 out the 15 years under the No Action conditions. Channel cleaning would be required 9 out the 19 years under Alternative 1 if the channel snow depth criteria to initiate mechanical cleaning are exceeded. Channel cleaning requires 325 machine hours on average. The cost per machine hour for channel cleaning is estimated as $126.19 in 2013 dollars ($117 per hour in 2011 dollars indexed to 2013 dollars using the National Agricultural Statistic Service [NASS] prices paid index). The annual cost for channel cleaning indexed to 2013 dollars equals $41,010. The estimated average annual cleaning cost is calculated and discounted over the 10-year analysis period to estimate the total cleaning cost for each alterative.

The final step in the financial analysis is to compare the estimated total discounted revenues to the estimated total discounted costs for channel cleaning.

[1] Before the rental pool revenues and costs can be compared, they must be converted to common dollars. A basic financial/economic concept, referred to as the "time value of money," suggests that a dollar today is worth more than a dollar a year from now since today's dollar could be deposited in a bank and earn interest. More generally, future dollars are worth less than current dollars, and past dollars are worth more than current dollars. Discounting is the technique for estimating the present value, or today's value, of revenues or costs to be received or paid at later dates.

[2] Change in Discount Rate for Water Resources Planning. FR Doc. 2013-27089. November 8, 2013.

Study Area Description

To provide the context for the financial analysis, while not expected to be impacted by Alternative 1, the following characteristics of the study areas are discussed.

1. Population
2. Per capita income
3. Unemployment
4. Percent employment by sector
5. Agricultural acreage
6. Value of agricultural production

Table 3-9 and Table 3-10 summarize the following statistics for the Mitigation Inc. study area and the upper Snake study area: population, unemployment, per capita income and the percent employment by sector.

Population

The U.S. Census estimated the 2012 total population as 229,255 and 475,265 for the Mitigation Inc. study area and the upper Snake study area, respectively. Both study areas are considered rural areas. The city with the largest population in the five county Mitigation Inc. study area is Idaho Falls, located in Bonneville County, with a 2012 population of 58,048. Within the eight counties outside the Mitigation Inc. study area the most populous cities are the City of Twin Falls located in Twin Falls County (2012 population 45,133), Burley in Cassia County (2012 population 10,425), and American Falls in Power County (2012 population 4,421).

Income and Employment

The 2012 per capita income in the Mitigation Inc. study area is $32,255 and $32,555 for the total upper Snake study area as shown in Table 3-10.

The services related industries employ the largest percentage of employees in the Mitigation Inc. study area (64.3 percent). The non-services related industries employ the second largest number of employees (18.7 percent) based on the percent of total employment. Farming makes up 5.4 percent of the non-services related industries. The unemployment rate for the Mitigation Inc. study area is 5.4 percent (2013).

The service related industries employ the largest percentage of employees in the upper Snake study area (52.3 percent). The non-service industries employ the second largest number of employees (30.0 percent) based on the percent of total employment. Farming makes up 13.3

percent of the non-services related industries. The unemployment rate for this region is 5.6 percent (2013).

Table 3-10. Population, income, and employment, and percent of total employment by industry.

	Mitigation Inc. Study Area	Upper Snake Study Area
Population		
Population, 2012	229,255	475,265
Population % change, 1970-2012	97.7%	82.2%
Income and Employment		
Per capita income, 2012 (2013 $s)	$32,255	$32,555
Unemployment rate, 2013	5.4%	5.6%
Percent of Total Employment by Industry[1]		
Non-services related	**18.7%**	**30.0%**
Farm	5.4%	13.3%
Forestry, fishing, & related activities	0.7%	1.3%
Mining (including fossil fuels)	0.2%	0.3%
Construction	6.1%	5.6%
Manufacturing	6.2%	9.5%
Services related	**64.3%**	**52.3%**
Utilities	0.2%	0.6%
Wholesale trade	6.1%	6.6%
Retail trade	12.0%	7.7%
Transportation and warehousing	2.7%	4.7%
Information	1.2%	1.3%
Finance and insurance	3.9%	3.1%
Real estate and rental and leasing	4.4%	1.0%
Professional and technical services	5.2%	5.0%
Management of companies and enterprises	0.2%	0.5%
Administrative and waste services	4.7%	3.9%
Educational services	0.8%	0.3%
Health care and social assistance	9.7%	11.1%
Arts, entertainment, and recreation	1.7%	0.4%
Accommodation and food services	6.1%	2.5%
Other services, except public administration	5.4%	3.6%
Government	**12.7%**	**16.0%**

[1] Some data are withheld by the federal government to avoid the disclosure of potentially confidential information, but the estimates are included in the totals. Therefore, the percent of employment by industry may not add up to 100 percent.
Population Source: U.S. Census Bureau 2012
Income and Employment Source: BLS 2012
Percent of Total Employment by Industry Source: BEA 2012

Agriculture

Mitigation Inc. supplies water for irrigation to approximately 500,000 acres in the study area. The primary crops grown in the study area are hay and pasture, grains and oilseeds, and potatoes based on the 2012 NASS Crop Data Layer (CDL) and the irrigation boundaries for the Mitigation Inc. irrigation companies.

Table 3-11 shows the number of farms by crop production for the entire primary study area which includes lands that are not part of Mitigation Inc. The upper Snake study area grows the same type of crops that are found in the Mitigation Inc. study area. Table 3-12 shows the net income that is received by farm operators in the respective study areas.

Table 3-11. Study area farms by crop and percent to total crops (USDA 2014).

	Mitigation Inc. Study Area	Upper Snake Study Area
All Farms	4,007	8,569
Oilseed & Grain Farming	541	1,290
Vegetable & Melon Farming	229	385
Fruit & Nut Tree Farming	33	72
Greenhouse, Nursery, etc.	81	149
Other Crop Farming	1,101	2,462
Beef Cattle Ranch & Farm.	1,166	2,477
Cattle Feedlots	41	68
Dairy Cattle & Milk Prod.	69	232
Hog & Pig Farming	43	73
Poultry & Egg Production	48	94
Sheep & Goat Farming	100	235
Animal Aquaculture & Other Animal Prod.	555	1,032
Percent of Total		
Oilseed & Grain Farming	13.5%	15.1%
Vegetable & Melon Farming	5.7%	4.5%
Fruit & Nut Tree Farming	0.8%	0.8%
Greenhouse, Nursery, etc.	2.0%	1.7%
Other Crop Farming	27.5%	28.7%
Beef Cattle Ranch & Farm.	29.1%	28.9%
Cattle Feedlots	1.0%	0.8%
Dairy Cattle & Milk Prod.	1.7%	2.7%
Hog & Pig Farming	1.1%	0.9%
Poultry & Egg Production	1.2%	1.1%
Sheep & Goat Farming	2.5%	2.7%
Aquaculture & Other Prod.	13.9%	12.0%

Table 3-12. Total cash receipts, production expenditures, and net income (BEA 2012).

	Mitigation Inc. Study Area	Upper Snake Study Area
Total Cash Receipts & Other Inc. ($1000)	1,521,945	4,557,872
Cash Receipts from Marketings	1,467,283	4,405,031
Livestock & Products	407,298	2,154,604
Crops	1,059,985	2,250,427
Other Income	54,662	152,841
Government Payments	25,680	66,359
Imputed Rent & Misc. Income	28,982	86,482
Total Production Expenses	1,060,121	3,203,250
Realized Net Income (Receipts - Expenses)	461,824	1,354,622
Value of Inventory Change	37,308	113,166
Total Net Income Including Corp. Farms	499,132	1,467,788

3.12.2 Environmental Consequences

The alternatives are evaluated for the Mitigation Inc. and upper Snake study areas based on the following indicators:

1. Change in rental pool revenues derived from additional storage allocations.
2. Change in costs for channel cleaning.
3. Net change between additional rental pool revenues and channel cleaning costs.

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

The short and long-term effects (both direct and indirect) to each of the indicators listed above are negligible or would continue to occur as they did in the past under the No Action alternative. The effects to each indicator are described below.

Under the No Action alternative, channel cleaning would be required in 4 years of the 15 years in the period of record. The annual channel cleaning costs are estimated as $41,010 in 2013 dollars. The average channel cleaning costs under the No Action conditions equal $10,940/year. The average annual channel cleaning costs are discounted using a 3.5 percent discount rate (2014 discount rate for Water Resources Planning) over the 10-year analysis period. The total discounted No Action channel cleaning costs for the Upper Snake study area equal $94,169 as shown in Table 3-13.

Channel cleaning associated with the No Action alternative is to facilitate evacuation of water to comply with flood control regulations. The costs associated with flood control are considered non-reimbursable costs and are not paid for by the project beneficiaries but rather are covered by federal appropriations.

Table 3-13. No Action alternative channel cleaning costs for the upper Snake study area.

Year	Average Annual Channel Cleaning Costs	Discounted Annual Channel Cleaning Costs
1	$10,940	$10,940.00
2	$10,940	$10,570.00
3	$10,940	$10,213.00
4	$10,940	$9,867.00
5	$10,940	$9,534.00
6	$10,940	$9,211.00
7	$10,940	$8,900.00
8	$10,940	$8,599.00
9	$10,940	$8,308.00
10	$10,940	$8,027.00
Total Discounted Channel Cleaning Costs		$94,169

Mitigation, Inc. Study Area

No Action Rental Pool Revenues

Mitigation Inc. does not receive additional storage water under the No Action alternative. Based on this assumption there are no additional rental pool revenues under the No Action conditions.

No Action Costs for Channel Cleaning

The analysis assumes that Mitigation Inc. does not pay any costs for channel cleaning under the No Action alternative.

Upper Snake Study Area

No Action Rental Pool Revenues

The analysis assumes there is no additional storage water in Ririe Reservoir or the other system reservoirs in the upper Snake study area. Based on this assumption there are no estimated rental pool revenues under the No Action conditions.

No Action Costs for Channel Cleaning

The analysis assumes that Mitigation Inc. and the entities within Water District 1 do not pay any costs for channel cleaning under the No Action alternative.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

The Mitigation Inc. study area would be adversely affected (both in the short and long term) under Alternative 1. The analysis results indicate that Mitigation Inc. would receive some additional rental pool revenue associated with the estimated additional storage water, however, the net change between the additional rental pool revenue and the additional costs for channel cleaning is negative. Channel cleaning costs could be less than anticipated if cleaning was not necessary (i.e., snow/debris amounts do not warrant cleaning). These specific environmental conditions are difficult to predict, so the conservative approach of maximum channel cleaning costs was applied.

The short and long-term effects in the upper Snake study area would also be adverse. The net change between revenues and the total estimated additional channel cleaning costs are negative. The effects of each indicator are discussed below.

Mitigation Inc. Study Area

Average Annual Rental Pool Revenues

Calculating the annual rental pool revenues is the first step in comparing the alternatives. The average rental pool revenues are calculated based on the 19-year historical hydrologic period of record. The annual hydrologic conditions are used to determine the appropriate rental pool pricing tier as discussed previously. The estimated additional storage water available (Table 3-14 Column A) was multiplied by the rental pool rate (Column B) to calculate the annual rental pool revenues (Column C). The rental pool revenues associated with Mitigation Inc.'s additional storage water are averaged to estimate the average annual rental pool revenues (average of column C) which are used in the analysis. The estimated average annual rental pool revenue for the Mitigation Inc. study area equals $10,000, as shown in Table 3-14.

Table 3-14. Alternative 1 average annual rental pool revenues for the Mitigation, Inc. study area.

	Column A	Column B	Column C
Year	Additional Water Storage, acre-feet (Ririe Reservoir Account) [1]	Rental Pool Rate (acre-feet)	Rental Pool Revenues
1994	0		$0
1995	0		$0
1996	0		$0
1997	0		$0
1998	0		$0
1999	0		$0
2000	754	$6.00	$4,524
2001	4,753	$22.00	$104,566
2002	0		$0
2003	0		$0
2004	0		$0
2005	0		$0
2006	0		$0
2007	3,556	$22.00	$78,232
2008	0		$0
2009	0		$0
2010	436	$6.00	$2,616
2011	0		0
2012	0		0
Average Annual Rental Revenue			$10,000
[1]Additional storage water estimate discussed in Section 3.2			

Total Rental Pool Revenues

The average annual rental pool revenues, which Mitigation Inc. would receive for the additional storage water under Alternative 1, are discounted using a 3.5 percent discount rate (2014 discount rate for Water Resources Planning) over the 10-year analysis period. The total discounted annual revenue equals $86,080 as shown in Table 3-15.

Table 3-15. Alternative 1 discounted average annual rental pool revenue – Mitigation, Inc. study area.

Year	Average Annual Rental Pool Revenue	Discounted Annual Rental Pool Revenue
1	$10,000	$10,000
2	$10,000	$9,662
3	$10,000	$9,335
4	$10,000	$9,019
5	$10,000	$8,714
6	$10,000	$8,420
7	$10,000	$8,135
8	$10,000	$7,860
9	$10,000	$7,594
10	$10,000	$7,337
Total discounted revenue		$86,080

Average Annual Channel Cleaning Costs

As discussed in Section 3.2, channel cleaning under Alternative 1 is required 9 times out of the 19-year historical hydrologic period of record. Mitigation Inc. would be responsible for all channel cleaning costs under this alternative. The estimated annual channel cleaning cost which is required in 9 of the 19 years equals $41,010 in 2013 dollars. The average annual cleaning costs equals $19,430 as shown in Table 3-16.

Table 3-16. Alternative 1 average annual channel cleaning costs – Mitigation Inc. study area.

Year	Annual Channel Cleaning Cost
2001	$0
2002	$0
2003	$0
2004	$0
2005	$0
2006	$41,010
2007	$41,010
2008	$0
2009	$0
2010	$41,010
2011	$41,010
2012	$41,010

Year	Annual Channel Cleaning Cost
1994	$0
1995	$0
1996	$41,010
1997	$41,010
1998	$41,010
1999	$0
2000	$41,010
Average Annual Channel Cleaning Costs	$19,430

Average Total Channel Cleaning Costs

The average costs for channel cleaning are discounted using a 3.5 percent discount rate (2014 discount rate for Water Resources Planning) over the 10-year analysis period. The No Action alternative is treated as the baseline from which the proposed alternatives are compared. The incremental costs are calculated by subtracting the total discounted No Action alternative costs for channel cleaning from the total discounted costs for Alternative 1. As stated previously, Mitigation Inc. does not pay the costs for channel cleaning under the No Action alternative. The total discounted cost for channel cleaning for the Mitigation Inc. study area equals $167,247 as shown in Table 3-17.

Table 3-17. Alternative 1 total discounted channel cleaning costs– Mitigation, Inc. study area.

Year	Average Annual Channel Cleaning Costs	Discounted Annual Channel Cleaning Costs
1	$19,430	$19,430
2	$19,430	$18,773
3	$19,430	$18,138
4	$19,430	$17,525
5	$19,430	$16,932
6	$19,430	$16,360
7	$19,430	$15,806
8	$19,430	$15,272
9	$19,430	$14,755
10	$19,430	$14,256
		$167,247

Net Change Between Additional Rental Pool Revenues and Channel Costs

The hydrologic analysis estimated that Mitigation Inc. would receive additional storage water in Ririe Reservoir in 4 of the 19 years in the hydrologic period of record. Further, the analysis assumes that Mitigation Inc. pays the costs for channel cleaning in 9 of the 19 years under Alternative 1 and there are no costs for channel cleaning associated with the No Action alternative. Based on these assumptions, the net change between the total discounted additional rental pool revenues and the total discounted channel cleaning costs equals -$81,167 ($86,080 minus $167,247). On an annual basis the net change equals -$9,430 ($10,000 minus $19,430). These calculations are shown in Table 3-18 below.

Table 3-18. Alternative 1 net revenue calculations on an annual and discounted basis.

	Revenues	Channel Costs	Net Revenue
Annual basis	$10,000	$19,430	$-9,430
Discounted Total	$86,080	$167,247	$-81,167

The results of this analysis indicate that Mitigation Inc. would be adversely effected based on the assumptions under Alternative 1 conditions. Although Mitigation Inc. would receive additional revenue associated with the additional storage water, the additional revenue would be less than the additional costs for channel cleaning which Mitigation Inc. would be required to pay under Alternative 1.

Upper Snake Study Area - Alternative 1

Average Annual Revenue

The average annual rental pool revenues for the upper Snake study area, which includes revenues received by Mitigation Inc. and the entities within Water District 1, are calculated using the estimated additional storage water available in Ririe Reservoir and the other system reservoirs as shown in Table 3-1 in Section 3.2. The 19-year historical hydrologic period of record is used to compute the average annual rental pool revenues. The annual hydrologic conditions are used to determine the appropriate rental pool pricing tier as discussed in Section 3.8.2. The estimated additional storage water available (Columns A and B, respectively) is multiplied by the rental pool price (Column C) to calculate the annual rental pool revenues (Columns D, E, and F, respectively). The calculated average annual rental pool revenue (including Mitigation Inc. and the entities within Water District 1) for the upper Snake study area equals $12,400, as shown in Table 3-19.

Table 3-19. Alternative 1 average annual rental pool revenues for the upper Snake study area.

	Column A	Column B	Column C	Column D	Column E	Column F
Year	Additional Water Storage, acre-feet (Ririe Reservoir Account) [1]	Additional Water Storage, acre-feet (Other System Reservoir Accounts)[1]	Rental Pool Rate (acre-feet)	Mitigation Inc. Rental Pool Revenues	Rental Pool Revenues (Entities within Water District 1)	Total Additional Rental Pool Revenues (Mitigation Inc. and the Entities within Water District 1)
1994	0	0		$0		$0
1995	0	0		$0		$0
1996	0	0		$0		$0
1997	0	0		$0		$0
1998	0	0		$0		$0
1999	0	0		$0		$0
2000	754	0	$6.00	$4,524		$4,524
2001	4,753	0	$22.00	$104,566		$104,566
2002	0	152	$22.00	$0	$3,344	$3,344
2003	0	452	$22.00	$0	$9,944	$9,944
2004	0	0		$0		$0
2005	0	2	$22.00	$0	$44	$44
2006	0	0		$0		$0
2007	3,556	0	$22.00	$78,232		$78,232
2008	0	5,394	$6.00	$0	$32,364	$32,364
2009	0	0		$0	0	$0
2010	436	0	$6.00	$2,616	0	$2,616
2011	0	0		0	0	0
2012	0	0		0	0	0
Average Annual Rental Revenue (rounded)				$10,000	$2,400	$12,400

[1]Additional storage water estimate discussed in Section 3.2

Total Rental Pool Revenues

The average rental pool revenues, which Mitigation Inc. and the entities within Water District 1 would receive for the additional storage water under Alternative 1, are discounted using a 3.5 percent discount rate (2014 discount rate for Water Resources Planning) over the 10-year analysis period. The total discounted rental pool revenue received by Mitigation Inc. and the entities within Water District 1 equals $106,740 as shown in Table 3-20.

Table 3-20. Alternative 1 discounted average annual rental pool revenue – upper Snake study area.

	Mitigation Inc.		Entities within Water District 1		Upper Snake Study Area Total	
Year	Average Annual Rental Pool Revenue	Discounted Annual Rental Pool Revenue	Average Annual Rental Pool Revenue	Discounted Annual Rental Pool Revenue	Average Annual Rental Pool Revenue	Discounted Annual Rental Pool Revenue
1	$10,000	$10,000	$2,400	$2,400	$12,400	$12,400
2	$10,000	$9,662	$2,400	$2,319	$12,400	$11,981
3	$10,000	$9,335	$2,400	$2,240	$12,400	$11,576
4	$10,000	$9,019	$2,400	$2,165	$12,400	$11,184
5	$10,000	$8,714	$2,400	$2,091	$12,400	$10,806
6	$10,000	$8,420	$2,400	$2,021	$12,400	$10,440
7	$10,000	$8,135	$2,400	$1,952	$12,400	$10,087
8	$10,000	$7,860	$2,400	$1,886	$12,400	$9,746
9	$10,000	$7,594	$2,400	$1,823	$12,400	$9,417
10	$10,000	$7,337	$2,400	$1,761	$12,400	$9,098
Total discounted revenue (rounded)		$86,080		$20,660		$106,740

Average Annual Channel Cleaning Costs

As discussed in Section 3.2, channel cleaning under Alternative 1 in 9 out of the 19 years based on the historical hydrologic period of record. The estimated annual channel cleaning costs, which Mitigation Inc. would be responsible for equals $41,010 in 2013 dollars for the upper Snake study area. Based on this assumption, the average annual cleaning costs equal $19,430 as shown in Table 3-21.

Table 3-21. Alternative 1 average annual channel cleaning costs – upper Snake study area.

Year	Annual Channel Cleaning Costs
2012	$41,010
2011	$41,010
2010	$41,010
2009	$0
2008	$0
2007	$41,010
2006	$41,010
2005	$0
2004	$0
2003	$0
2002	$0
2001	$0
2000	$41,010
1999	$0
1998	$41,010
1997	$41,010
1996	$41,010
1995	$0
1994	$0
Average Annual Channel Cleaning Costs	$19,430

Total Channel Cleaning Costs

The average channel cleaning costs are discounted using a 3.5 percent discount rate (2014 discount rate for Water Resources Planning) over the 10-year analysis period. The No Action alternative is treated as the baseline from which the proposed alternatives are compared. Mitigation Inc. and the entities within Water District 1 would not be responsible for any channel cleaning costs under the No Action alternative. The total discounted incremental channel cleaning costs for the upper Snake study area equals $167,247 ($167,247 minus $0.00) as shown in Table 3-22.

Table 3-22. Alternative 1 total discounted channel cleaning costs – upper Snake study area.

Year	Average Annual Channel Cleaning Costs	Discounted Annual Channel Cleaning Costs
1	$19,430	$19,430
2	$19,430	$18,773
3	$19,430	$18,138
4	$19,430	$17,525
5	$19,430	$16,932
6	$19,430	$16,360
7	$19,430	$15,806
8	$19,430	$15,272
9	$19,430	$14,755
10	$19,430	$14,256
		$167,247

Net Change Between Additional Rental Pool Revenues and Channel Costs

The analysis assumes that additional storage water would be available in Ririe Reservoir and the other upper Snake system reservoirs in 8 out of the 19 years. Therefore, the average rental pool revenues are estimated for 8 out of the 19 years in the period of record. Costs for channel cleaning are assumed in 9 of the 19 years in the period of record for Alternative 1 and 4 out of the 19 years for the No Action alternative. Based on these assumptions, the net change between additional rental pool revenues and the total channel cleaning costs for Mitigation Inc. and the entities within Water District 1 equals -$-60,507 ($106,740 minus $167,247). On an annual basis the net change between additional rental pool revenues and the costs for channel cleaning equals $-7,030 ($12,400 minus 19,430). These calculations are shown in Table 3-23 below.

Table 3-23. Alternative 1 net revenue calculations on an annual and discounted basis.

	Revenues	Channel Costs	Net Revenue
Annual basis	$12,400	$19,430	$-7,030
Discounted Total	$106,740	$167,247	$-60,507

The results of this analysis indicate that under Alternative 1, the combined revenues (Mitigation Inc. and the entities within Water District 1) do not exceed the total additional costs for channel cleaning. Alternative 1 assumes that Mitigation Inc. would be responsible for the additional costs for channel cleaning. The results of the analysis also suggest that if the channel cleaning costs are shared between Mitigation Inc. and the remaining entities within Water District 1, the collective districts combined would lose $7,030 on annual basis (-$60,507 discounted over the 10-year analysis period).

3.13 Environmental Justice

Executive Order 12898 "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," dated February 11, 1994, requires agencies to identify and address disproportionately high and adverse human health or environmental effects of their actions on minorities and low-income populations and communities as well as the equity of the distribution of the benefits and risks. Environmental justice addresses the fair treatment of people of all races and incomes with respect to actions affecting the environment. Fair treatment implies that no group should bear a disproportionate share of negative impacts (59 FR 7629). The U.S. Department of the Interior (DOI) Environmental Compliance Memorandum No. ECM 95-3 "National Environmental Policy Act Responsibilities Under the Departmental Environmental Justice Policy" provides guidance to DOI agencies for complying with EO 12898 and evaluating impacts of any proposed projects, actions or decisions on minority and low-income populations and communities, as well as the equity of the distribution of the benefits and risks of those decisions (DOI 1995).

3.13.1 Methods for Evaluating Impacts

In order to satisfy EO 12898, this analysis has been prepared to identify and address any disproportionate and adverse impacts on minority or low-income populations potentially resulting from the proposed action.

Potential impacts of the proposed action are analyzed in terms of effects on minority and low-income populations to determine whether the proposed action would result in disproportionately high and adverse impacts on those populations.

Methodology

The environmental justice analysis for the proposed action follows the guidance and methodologies recommended in the federal Council on Environmental Quality's (CEQ) Environmental Justice Guidance under the National Environmental Policy Act (December 1997) and the DOI Environmental Compliance Memorandum No. ECM 95-3 "National Environmental Policy Act (NEPA) Responsibilities under the Departmental Environmental Justice Policy" (DOI 1995). These are summarized below.

CEQ Guidance

The federal CEQ, which has oversight of the federal government's compliance with EO12898 and NEPA, developed its guidance to assist federal agencies with their NEPA procedures so environmental justice concerns are effectively identified and addressed.

The CEQ methodology involves collecting demographic information on the area where the project may cause significant and adverse effects; identifying low-income and minority populations in that area using census data; and identifying whether the project's adverse effects are disproportionately high on the low-income and minority populations in comparison to those on other populations. Mitigation measures should be developed and implemented for any disproportionately high and adverse effects. Under NEPA, the potential for disproportionately high and adverse effects on minority and/or low-income populations should then be one of the factors the federal agency considers in making its finding on a project and issuing a FONSI or a Record of Decision (ROD).

DOI'S Environmental Compliance Memorandum No. ECS 95-3

DOI's ECM 95-3 provides guidance to DOI agencies for complying with EO 12898 and evaluating impacts of any proposed projects, actions or decisions on minority and low-income populations and communities. It stipulates all environmental documents specifically analyze and evaluate the impacts of any proposed projects, actions or decisions on minority and low-income populations and communities, as well as the equity of the distribution of the benefits and risks of those decisions.

To comply with the environmental justice policy established by the Secretary, bureaus and offices are to identify and evaluate, during the scoping and/or planning processes, any anticipated effects, direct or indirect, from the proposed project, action or decision on minority and low-income populations and communities, including the equity of the distribution of the benefits and risks. If any significant impacts to minority and low-income populations and communities are identified during the scoping and/or planning processes the environmental document should clearly evaluate and state the environmental consequences of the proposed project, action or decision on minority and low-income populations and communities. However, if a project or an action is expected to have either an insignificant impact or no impact on minority and low-income populations, the environmental document, under an appropriately titled section, should specifically state that the proposed project or action is expected to have either insignificant impact or no impact, direct or indirect, with reasons given.

Methodology used for this Assessment

The assessment of environmental justice for the proposed action was based on CEQ guidance, as described above. It involved four basic steps:

1. Identify the area where the project may cause significant and adverse effects (i.e., the study area);
2. Compile population, race, ethnicity and poverty status data for the study area and identify minority or low-income populations;

3. Identify the proposed action's potential adverse effects on minority and low-income populations; and
4. Evaluate the proposed action's potential adverse effects on minority and low-income populations relative to its overall effects to determine whether any potential adverse impacts on those populations would be disproportionate, and thus disproportionately high and adverse.

Identification of minority and Low-income Populations

There are no requirements for, nor are records maintained on, the race, ethnicity, or income of the water users within water districts or irrigation districts. Published data does not indicate the race, ethnicity, or income levels of these specific individuals. Thus, county level data were used for the analysis for this EA. Data on population, race, ethnicity, and poverty status were gathered from the U.S. Census for the counties within each study area and then aggregated for the study area as a whole. For comparison purposes, data for the State of Idaho were also compiled. Based on Census data on racial and ethnic characteristics and poverty status and the guidance documents described above, potential environmental justice areas were identified as follows:

- Minority communities: CEQ guidance defines minorities to include American Indians or Alaskan Natives, Asian and Pacific Islanders, African Americans or Black persons, and Hispanic persons. This environmental justice analysis also considers minority populations to include persons who identified themselves as being either "some other race" or "two or more races" in the US Census. CEQ guidance requires minority communities to be identified where either the minority population exceeds 50 percent, or where the minority population percentage is meaningfully greater than the minority population in the comparison areas.
- Low-income populations and communities: The percent of individuals below poverty level in each county from the US Census data was used to identify low-income populations. CEQ guidance does not specify a threshold to be used for identifying low-income populations.

Minority and Low-income Populations in the Study Area

Section 3.13.2 describes population, race, ethnicity, and poverty characteristics for the study area's counties, each study area as a whole, and for the State of Idaho. Minority representation in both study areas is below the CEQ's 50 percent threshold. Although individual counties have lower incomes than the aggregated study area, neither study area as a whole is considered low income.

Public Participation

EO 12898 requires federal agencies to work to ensure greater public participation in the decision-making process. In addition, CEQ guidance suggests federal agencies should acknowledge and seek to overcome linguistic, cultural, institutional, geographic, and other barriers to meaningful participation.

The proposed action's public outreach and participation component as required by EO 12898 is described in Section 1.9 – Scoping and Development of Issues.

3.13.2 Affected Environment

The environmental justice study areas are consistent with those used for the socioeconomics analysis (Section 3.12). The first area of analysis for potential environmental justice impacts consists of the five Idaho counties within which Mitigation, Inc. delivers irrigation water: Bingham, Bonneville, Fremont, Jefferson, and Madison. The second analysis area, identified as the upper Snake study area, incorporates the Mitigation Inc. study area counties and adds the following seven Idaho counties corresponding to Water District 1 (upper Snake River) as created by order of the Director of IDWR: Bannock, Cassia, Jerome, Minidoka, Power, Teton, and Twin Falls. The federally-recognized Shoshone-Bannock Tribes of the Fort Hall Reservation (Tribes) are located within the four Idaho counties of Bannock, Bingham, Caribou, and Power. As discussed elsewhere in this document including Section 3.11 Indian Trust Assets and Section 3.2 Hydrology there would be no effects to the Tribes under either of the alternatives; therefore the Tribes are not described separately in this environmental justice section. There are no requirements for, nor are records maintained on, the race, ethnicity, or income of the water users within water districts or irrigation districts. Published data does not indicate the race, ethnicity, or income levels of these specific individuals. Thus, county level data were used for this analysis.

Table 3-24 provides the U.S. Census Bureau 2012 numbers and percentages of population for seven racial categories (White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, Some Other Race, and Two or More Races), the racial minority population (the total of the nonwhite races), the Hispanic or Latino population, a minority ethnic group, and the total minority population (the sum of the nonwhite, not Hispanic or Latino population and the Hispanic or Latino population of any race) for the State of Idaho, each county, and the combined Mitigation Inc. study area (U.S. Census Bureau 2013). Table 3-25 provides the same racial, ethnic, and minority information for the upper Snake study area (U.S. Census Bureau 2013).

Table 3-24. Population, race, and ethnicity – Mitigation Inc. study area (U.S. Census Bureau 2013).

Geographic Area	Total Population	White alone	Black or African American alone	American Indian alone	Asian alone	Native Hawaiian & Other Pacific Islander alone	Some other race alone	Two or more races	Racial Minority Population [1]	Hispanic or Latino (of any race)	Total Minority Population [2]
State of Idaho	**1,567,803**	**92.2%**	**0.6%**	**1.2%**	**1.2%**	**0.1%**	**2.2%**	**2.5%**	**7.8%**	**11.2%**	**16.1%**
Bingham County	45,312	88.3%	0.2%	5.6%	0.6%	0.1%	2.9%	2.3%	11.7%	17.2%	24.8%
Bonneville County	104,177	92.1%	0.7%	0.5%	0.7%	0.1%	3.7%	2.3%	8.0%	11.4%	14.7%
Fremont County	13,123	96.7%	0.0%	0.8%	0.3%	0.0%	1.0%	1.2%	3.3%	12.6%	14.7%
Jefferson County	25,940	95.5%	0.2%	0.7%	0.2%	0.1%	2.0%	1.4%	4.6%	10.2%	12.4%
Madison County	37,311	95.8%	0.6%	0.2%	0.8%	0.2%	0.4%	2.1%	4.3%	5.9%	9.4%
Mitigation Inc. Study Area	**225,863**	**92.6%**	**0.5%**	**1.5%**	**0.6%**	**0.1%**	**2.6%**	**2.1%**	**7.4%**	**11.6%**	**15.6%**

[1] Racial Minority is the percent of the total population of all nonwhite races

[2] Total Minority Population is the percent of the total population of the sum of the nonwhite, not Hispanic or Latino population and the Hispanic or Latino population of any race

Table 3-25. Population, race, and ethnicity – upper Snake study area (U.S. Census Bureau 2013).

Geographic Area	Total Population	White alone	Black or African American alone	American Indian alone	Asian alone	Native Hawaiian & Other Pacific Islander alone	Some other race alone	Two or more races	Racial Minority Population [1]	Hispanic or Latino (of any race)	Total Minority Population [2]
State of Idaho	**1,567,803**	**92.2%**	**0.6%**	**1.2%**	**1.2%**	**0.1%**	**2.2%**	**2.5%**	**7.8%**	**11.2%**	**16.1%**
Bannock County	82,584	90.5%	0.7%	3.4%	1.2%	0.3%	1.3%	2.6%	9.5%	6.9%	13.7%
Bingham County	45,312	88.3%	0.2%	5.6%	0.6%	0.1%	2.9%	2.3%	11.7%	17.2%	24.8%
Bonneville County	104,177	92.1%	0.7%	0.5%	0.7%	0.1%	3.7%	2.3%	8.0%	11.4%	14.7%
Cassia County	22,813	90.4%	0.5%	0.6%	0.4%	0.0%	6.0%	2.1%	9.6%	25.0%	27.3%
Fremont County	13,123	96.7%	0.0%	0.8%	0.3%	0.0%	1.0%	1.2%	3.3%	12.6%	14.7%
Jefferson County	25,940	95.5%	0.2%	0.7%	0.2%	0.1%	2.0%	1.4%	4.6%	10.2%	12.4%
Jerome County	22,140	88.5%	0.2%	1.9%	0.0%	0.0%	7.7%	1.7%	11.5%	31.0%	33.2%
Madison County	37,311	95.8%	0.6%	0.2%	0.8%	0.2%	0.4%	2.1%	4.3%	5.9%	9.4%
Minidoka County	19,909	85.3%	0.3%	0.8%	0.2%	0.0%	10.7%	2.8%	14.8%	32.2%	34.5%
Power County	7,717	92.3%	0.3%	1.5%	0.0%	0.4%	4.4%	1.0%	7.6%	29.6%	31.6%
Teton County	10,007	96.2%	0.0%	0.1%	1.6%	0.0%	2.1%	0.1%	3.9%	16.4%	18.3%
Twin Falls County	77,122	92.2%	0.5%	0.7%	1.2%	0.0%	3.6%	1.9%	7.9%	13.6%	17.2%
Upper Snake Study Area	**468,155**	**91.6%**	**0.5%**	**1.6%**	**0.8%**	**0.1%**	**3.3%**	**2.1%**	**8.4%**	**13.9%**	**18.0%**

[1] Racial Minority Population is the percent of the total population of all nonwhite races

[2] Total Minority Population is the percent of the total population of the sum of the nonwhite, not Hispanic or Latino population and the Hispanic or Latino population of any race

The percentage of total minority population in the five-county Mitigation Inc. study area is 15.6, about one half of one percent less than the State's percentage of 16.1. Within this study area Bingham County has the greatest percentage of total minority population as shown in Table 3-24.

As shown in Table 3-25 the percentage of total minority population in the twelve-county Upper Snake study area is 18.0, about two percent greater than the State's percentage of 16.1. Minidoka County has the highest percentage of total minority population within the upper Snake study area.

Low income populations are identified by several socioeconomic characteristics. Specific characteristics used in this description of the existing environment, as categorized by the 2012 Census, are income (per capita income and median household income) and percentage of the population below poverty (individual people and families). Table 3-26 and Table 3-27 provide income and poverty information for the Mitigation Inc. and the upper Snake study areas, respectively.

As shown in Table 3-26, per capita income for the counties within the Mitigation Inc. study area was less than the State with the exception of Bonneville County where per capita income was greater by about $700. Per capita income for the other counties ranged from about $2,900 less than the state in Jefferson County to nearly $8,000 less in Madison County.

Table 3-26. Income and poverty – Mitigation Inc. study area (U.S. Census Bureau 2013).

	Per Capita Income	Median Household Income	People Below Poverty	Families below poverty
State of Idaho	**$22,581**	**$47,015**	**15.1%**	**10.9%**
Bingham County	$18,892	$46,817	15.4%	13.7%
Bonneville County	$23,306	$51,254	11.6%	9.4%
Fremont County	$19,199	$43,053	10.8%	9.2%
Jefferson County	$19,712	$52,980	11.0%	7.7%
Madison County	$14,623	$33,776	36.2%	23.7%
Mitigation Inc. Study Area	**na[1]**	**na[1]**	**16.2%**	**12.1%**

[1] Per Capita Income and Median Household Income were not available for regional aggregations

Median household income was less than the State in three of the five Mitigation Inc. study area counties, ranging from about $200 less in Bingham County to over $13,200 less in Madison County. Median household income was about $4,200 more than the State in Bonneville County and almost $6,000 more for Jefferson County.

Compared to the State's percentages, the Mitigation Inc. study area has about one percent more people and families below poverty. However, the percent of people below poverty in Madison County (36.2) is more than twice the study area percentage of 16.2 and the percent of families below poverty (23.7) is almost twice the study area percentage of 12.1.

As shown in Table 3-27 per capita income and median household income for the upper Snake study area were generally less than the State. Per capita income for each of the counties within the study area was less than the State with the exception of Bonneville and Teton counties where per capita income was greater by about $700 and $1,600 respectively. Per capita income for the other counties ranged from about $1,100 less than the State in Bannock County to nearly $8,000 less in Madison County.

Table 3-27. Income and poverty – upper Snake study area (U.S. Census Bureau 2013).

Geographic Area	Per Capita Income	Median Household Income	People Below Poverty	Families Below Poverty
State of Idaho	**$22,581**	**$47,015**	**15.1%**	**10.9%**
Bannock County	$21,478	$45,860	14.1%	10.0%
Bingham County	$18,892	$46,817	15.4%	13.7%
Bonneville County	$23,306	$51,254	11.6%	9.4%
Cassia County	$18,019	$43,039	16.1%	12.6%
Fremont County	$19,199	$43,053	10.8%	9.2%
Jefferson County	$19,712	$52,980	11.0%	7.7%
Jerome County	$17,240	$40,309	18.6%	15.2%
Madison County	$14,623	$33,776	36.2%	23.7%
Minidoka County	$19,466	$43,301	15.0%	10.9%
Power County	$18,189	$41,950	12.5%	10.4%
Teton County	$24,207	$56,532	8.5%	5.1%
Twin Falls County	$20,271	$42,639	15.4%	12.2%
Upper Snake Study Area	**na[1]**	**na[1]**	**15.5%**	**11.7%**

[1] Per Capita Income and Median Household Income were not available for regional aggregations

Median household income was less than the State in nine of the twelve upper Snake study area counties ranging from about $200 less in Bingham County to over $13,200 less in Madison County. Median household income was about $4,200 more than the State in Bonneville County, almost $6,000 more for Jefferson County, and more than $9,500 for Teton County.

Compared to the State, the upper Snake study area had nearly the same percentages of people and families below poverty. Teton County had the lowest percentages of people and families

below poverty within the study area at 8.5 and 5.1 percent, respectively while the percentages for Madison County were more than two times higher.

3.13.3 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

No adverse natural resource or socioeconomic impacts adversely affecting minority and low-income populations have been identified; therefore, there are no environmental justice impacts.

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

No adverse natural resource or socioeconomic impacts adversely affecting minority and low-income populations have been identified; therefore, there would be no environmental justice impacts. The adverse socioeconomic impacts identified in Section 3.12 would be shared equally by all affected water users within the Mitigation Inc. study area and the upper Snake study area. Thus, no disproportionately high and adverse effects on minority and low-income populations (environmental justice impacts) would be expected.

3.14 Climate Change

3.14.1 Affected Environment

Climate change has the potential to profoundly alter the aquatic habitat through both direct and indirect effects. Direct effects would be evident in alterations of water yield, runoff timing, peak flows, and stream temperature. Future projections suggest that the Pacific Northwest may gradually become wetter than historical conditions. This is also significantly different from projections in the southern United States. Warming trends may lead to a shift in cool season precipitation, resulting in more rain and less snow which would cause increased rainfall-runoff volume during the cool season accompanied by less snowpack accumulation (Reclamation 2011d). Future climate projections based on hydrologic analyses suggest that warming and associated loss of snowpack will persist over much of the western United States.

Warming is expected to diminish the accumulation of snow during the cool season (i.e., late autumn through early spring) and the availability of snowmelt to sustain runoff during the warm season (i.e., late spring through early autumn). Decreased snowpack volume also could result in decreased groundwater infiltration, runoff, and ultimately decreased contribution to summer base flow in rivers.

Warming is expected to lead to more rainfall-runoff during the cool season than snowpack accumulation. This would lead to increases in the December to March runoff and decrease the April to July runoff. For example, for cold-water associated salmonids in mountainous regions, where the upper distribution is often limited by impassable barriers, an upward thermal shift in suitable habitat can result in a reduction in size of suitable habitat patches and loss of connectivity among patches, which in turn can lead to a population decline (USFWS 2011).

The Climate Impacts Group (CIG) at the University of Washington has analyzed the effects of global climate change on the Pacific Northwest (CIG 2006). Relative to average temperatures from 1970 to 1999 climate models project a future rate of warming in the Pacific Northwest of approximately 0.5°F (0.3°C) per decade through 2050, with the greatest temperature increases being during June through August. Models also indicate rising temperatures could affect regional precipitation including decreased snow packs and summer flows, increased winter flows, and earlier spring runoffs.

In 2011, Reclamation completed the River Management Joint Operating Committee (RMJOC) Climate Change Study in collaboration with the BPA and the Corps, to adopt climate change and hydrology datasets for their longer-term planning activities in the Columbia-Snake River Basin. These agencies collaborated to develop climate change and hydrology datasets to be used in their longer-term planning activities in the Columbia-Snake River Basin.

The RMJOC is a subcommittee of the Joint Operating Committee that was established through direct funding MOAs between BPA, Reclamation, and the Corps. Four reports were generated as a result of this work and include:

- Part I: Future Climate and Hydrology Datasets
- Part II: Reservoir Operations Assessment – Reclamation Tributary Basins
- Part III: Reservoir Operations Assessment – Columbia Basin Flood Control and Hydropower
- Part IV: Summary Report

These reports can be downloaded online at http://www.usbr.gov/pn/climate/planning/reports/index.html. The three partners are collaborating again to update the RMJOC Climate Change Study results and to generate new hydrology and climate change datasets for use. In the first RMJOC Climate Change Study, projections were selected based on the changes in temperature and precipitation averaged over the Columbia River Basin. When these same projections were used to evaluate the Snake River basin, they tended towards wetter conditions overall. In the update to the RMJOC Climate Change Study, projections will be selected based on temperature and

precipitation changes over the Snake River basin, which will provide for a broader range of wet to dry in potential future climate. This work is ongoing and will be completed by FY17.

In Part II, Reclamation conducted analysis on the potential impacts of climate change on the upper Snake River basin and major tributaries to the Snake River (Reclamation 2011). For each river system, five metrics were evaluated including inflow to major reservoirs, end-of-month storage, flow, surface water deliveries, ESA flow augmentation, and ESA for resident species and other environmental objectives. A water supply model using a monthly time step was used to evaluate the potential impacts of changes in water supply on the river systems.

For the Snake River system, the models indicate both earlier peak runoff (from June to May) and higher inflows during the cooler months (December to May) to some of the major reservoirs above Brownlee Reservoir. In addition, decreased inflow was predicted during the summer months when compared to the same climates. Reservoir storage volume was expected to increase significantly in the spring months due to an increase of flow (likely due to increased snowmelt and precipitation in general) above historical conditions, with a decrease during the summer months. The amount of surface water delivered (as opposed to storage water) above Brownlee Reservoir decreases slightly resulting in decreased overall water deliveries during the irrigation season (July and August) in most results. The greatest decrease in surface water delivered is projected to occur in September near the end of the irrigation season in most locations evaluated, which is also when streamflows are historically at the lowest. More information on this subbasin and others in the Snake River basin can be found at http://www.usbr.gov/pn/climate/planning/reports/index.html.

Impact indicators include irrigation water deliveries and water storage. The impact indicators were analyzed qualitatively with information from the 2001 Ririe Reservoir RMP, 2011 Climate and Hydrology Datasets for Use in the RMJOC Agencies' Longer-Term Planning Studies: Part II – Reservoir Operations Assessment for Reclamation Tributary Basins, and hydrologic analyses from Section 3.2. In addition, results specific to Ririe Reservoir storage, inflow and outflow are provided for the No Action alternative using the hydrology results from the RMJOC Climate Change Study.

3.14.2 Environmental Consequences

No Action Alternative – Initial Winter Flood Control Space of 55,000 Acre-Feet

The environmental consequences analysis for the climate change section analyzes two scenarios: what impacts the action (No Action or Alternative 1) has on climate change and what impacts climate change has on the action. Both scenarios are presented for each alternative.

Ririe Dam and Reservoir would maintain its current water operations, and would continue to be drafted by November 1 to 5,000 acre-feet below the fixed 50,000 acre-feet of flood control space requirement for a total of 55,000 acre-feet of available flood control space. Short and long-term (3 and 10 years, respectively) effects (both direct and indirect) on climate change would be negligible. Any minor effects would be indirectly derived from agriculture. Agriculture accounts for approximately 8.1 percent of the total greenhouse gas emissions in the United States (EPA 2014). Irrigation water from Ririe Reservoir is used primarily to grow hay and row crops. These crops use carbon dioxide and sequester carbon in vegetation biomass and soil, thereby reducing the greenhouse gas. The overall soil carbon gain is minor (0.4 percent positive flux meaning soil sequestration slightly exceeds soil emissions) (Takle and Hofstrand 2008).

Many agricultural producers use fertilizers on crops. Nitrogen fertilizer use for crop production increases the emissions of nitrous oxide, a greenhouse gas, from the soil through microbial processes of nitrification and de-nitrification. Soil nitrous oxide emissions account for approximately 61 percent of the US agricultural sector emissions. However, the majority these emissions are from fertilizer-heavy crops such as corn and soy-beans (EPA 2014) and by contrast, typical crops (barley, wheat, alfalfa, etc.) grown in the general area use much less fertilizer (comparatively). Also, many agricultural producers follow conservation till and efficient fertilizer practices that aid in soil carbon sequestration and reduces soil nitrous oxide emissions by reducing fertilizer inputs (Takle and Hofstrand 2008) (EPA 2014).

Climate change impacts were identified in Section 3.14.1. In short, the models indicate earlier and higher reservoir inflows during the cooler months of December through May and decreased Reservoir inflow during the summer months. Modeling results suggest a potential decrease in end-of-month Reservoir storage volume in September. In general, surface water deliveries from contracted space had a higher likelihood of continuing to be met than those from the natural flows (Reclamation 2011).

Alternative 1 – Winter Flood Control Space of 42,000 Acre-Feet

Short and long-term effects (3 and 10 years, respectively) both direct and indirect on climate change under Ririe Reservoir operations proposed under Alternative 1 would be minor, and have no adverse impacts on the proposed operations. Section 3.2 identifies storage water gain is minimal (1.4 percent increase over 19 years) and the reservoir fills in one additional year (52.6 percent) out of 19 years compared to the No Action alternative (47.4 percent). Therefore, there are no adverse impacts to storage water gained and to the subsequent irrigation deliveries. Indirect effects from agriculture on climate change due to winter operational changes would be the same as those described in the No Action alternative and would have no adverse impacts on climate change.

The climate models predict earlier and higher reservoir inflows during December through May (Reclamation 2011). This suggests that the proposed winter operations could capitalize on the predicted earlier and higher inflows in the early spring by storing more water in the reservoir and partially offset or mitigate changes in surface water deliveries.

3.15 Cumulative Impacts

3.15.1 Affected Environment

"Cumulative Effect of Impact" is defined as the "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7). The CEQ interprets this regulation as referring only to the cumulative impact of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Because many of the resources would experience little or no effects from Alternative 1, no cumulative effects would occur. However, the potential of gaining additional storage water, as identified in the hydrologic analyses in Section 3.2, could have some additive effects to downstream water quantity and quality. Additionally, climate change can have an incremental effect. Impacts from both are discussed below in the Environmental Consequences section.

The affected environment area includes the upper Snake River and its tributaries from the point where the river enters the State of Idaho downstream to Milner Dam which is located between Burley and Twin Falls. Because water from Ririe Reservoir can be used to supplement at least part of this system, the upper Snake River basin is considered. Total storage capacity of the system is approximately 4,166,000 acre-feet, which includes Jackson Lake, Palisades Reservoir, Grassy Lake, Island Park Reservoir, Ririe, American Falls Reservoir, and Lake Walcott (Reclamation 2014). Peak total system storage (average) occurs in June, and is approximately 3,400,000 acre-feet (Reclamation 2014).

Past, Present, and Reasonably Foreseeable Future Actions

Past and Present Actions

With the advent of the Oregon Territory, all of the land in the upper Snake River basin became the public domain of the United States. Through congressional actions, various mechanisms were established by which these lands could be transferred to individuals, states, or reserved for federal purposes. The federal homestead, desert land entry, and land reclamation programs, along with other opportunities, encouraged individuals and groups to occupy and develop these lands.

Irrigated agriculture has historically been an important land use activity in the upper Snake River basin. Systematic irrigation in the region began in the 1870s. Acreage under irrigation rapidly increased as a result of the Desert Land Act of 1877, the Carey Act of 1894, and the Reclamation Act of 1902 (IWRB 1998). By 1905, irrigation demand left the Snake River dry for several days each year in a 10-mile reach near Blackfoot (Kjelstrom 1986). Through the early 1900s, reservoir construction and resultant surface water storage increased the amount of water available for seasonal use. By1945, farmers irrigated 1.5 million acres in the basin (IWRB 1998).

The present patterns of land ownership, as shown on Figure 3-13, largely reflect the adjustments in land allocation which have evolved through the years. Irrigated crops and non-irrigated rangelands dominate the land use patterns in the upper Snake River basin, at an estimated 4.3 million acres (NLCD 2014). The lands irrigated with Snake River water often extend considerable distances beyond the river where irrigation conveyances reach out many miles to transport water from river diversion points. Similar developments in the broad tributary valleys outside the aquifer also follow this pattern (IWRB 1998). Domestic livestock grazing on native and improved rangeland dominate public and private lands where water supplies are not economically sufficient for cultivation, or where the choice has been made to pursue ranching. Dryland farming occurs in the Snake River tributary valleys where hay, grains, and forage crops are produced and precipitation allows. Urban and related industrial land uses are increasing in many areas.

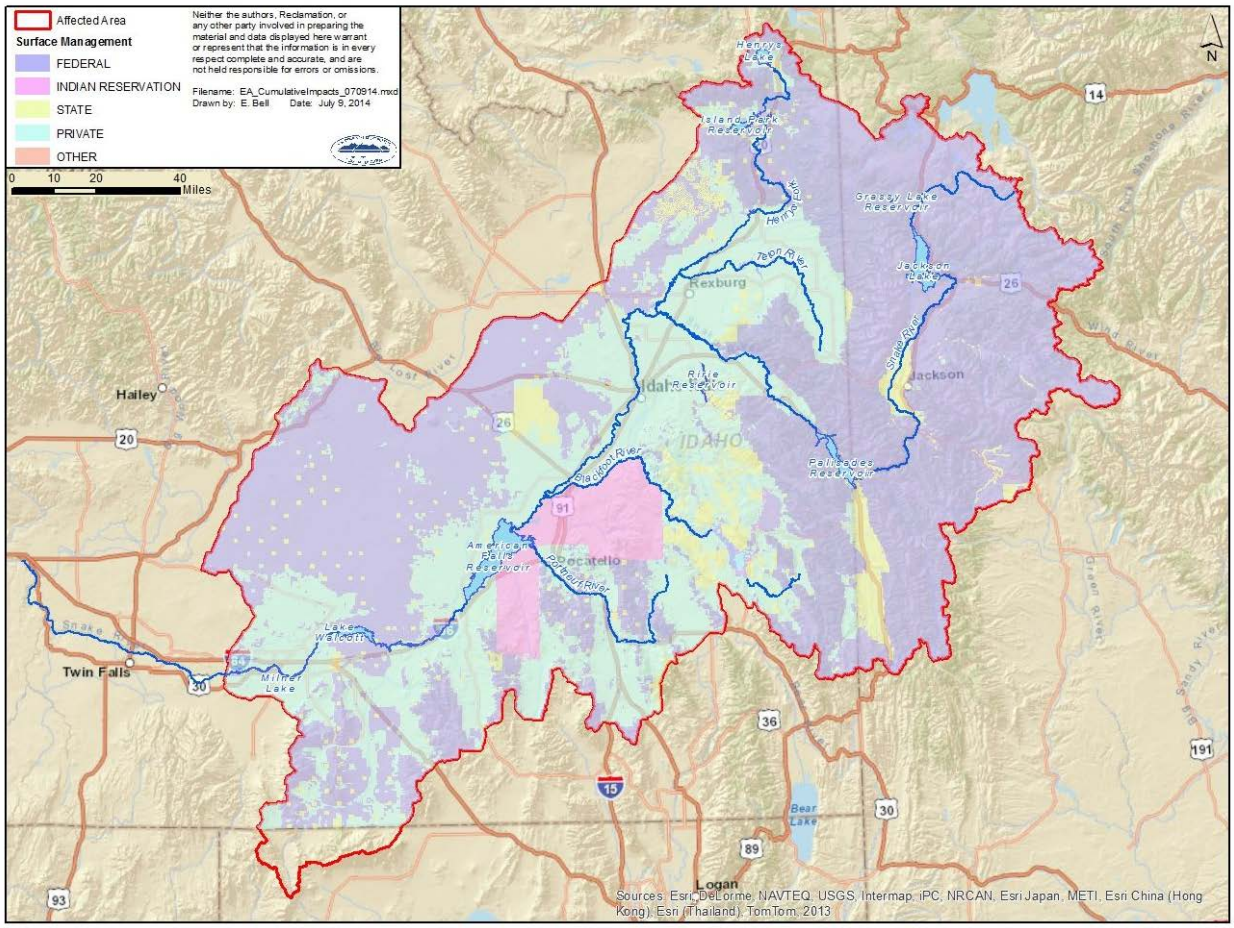

Figure 3-13. Present land ownership and management of the upper Snake River basin.

At present, approximately 3.9 million acres in the upper Snake River basin are irrigated (NLCD 2014). Roughly 66 percent of that acreage is irrigated with surface water and one-third with groundwater. Since the 1940s, groundwater has supplied a steadily increasing amount of irrigation water. Use of groundwater has permitted irrigation where surface water is not available or is not adequate or dependable. Groundwater used as a supplemental water source increases the flexibility of on-farm irrigation. About 85 percent of the Snake River basin groundwater withdrawals take place above King Hill (IWRB 2010). In the last several decades, there has been large scale conversion to sprinklers; however, water use is currently at or above historical levels due to changing crop types and amounts.

The highly productive aquifer beneath the eastern Snake River Plain exists within layered basalts and occasional deposits of sediments between rocks (IWRB 2010). Fractured rubble zones between the numerous layers create highly permeable zones that provide the primary conduit for groundwater flow. Aquifer recharge occurs primarily via irrigation percolation, canal and stream losses, and subsurface flow from surrounding areas (Cosgrove, Contor, and Johnson 2006). Variations in weather patterns and irrigation practices on the Snake River

Plain have caused changes in aquifer water levels. During the past several decades, ground water storage has been depleted, causing water levels to drop. Some areas of the aquifer have experienced significant drops in water levels and other areas have experienced only slight decreases in water levels (Johnson et al. 1999).

Future Actions:

IWRB is exploring aquifer recharge projects in the Snake River basin to advance groundwater recharge. IWRB has obtained funding; however, suitable sites are currently being explored. This project is not analyzed in this EA for cumulative impacts because specific sites are still being determined.

A&B Irrigation District – Unit A Pumping Plant #2 (A&B Pumping Plant #2)

The A&B Irrigation District has proposed developing an additional pump station on the Snake River including associated pipelines that would be used to restore and/or improve reliability of surface water delivery to approximately 4,500 acres of existing Unit A lands in Minidoka County, and deliver surface water supplies, when available (for the most part from existing rental pools), to an additional 1,500 acres of Unit B lands. The project would enhance delivery equity and efficiency to the existing Unit A system but would not result in an increase in diversions from the Snake River.

Approximately 118 cfs is expected to be pumped from the river at the proposed replacement pumping plant during irrigation season. This diversion at the new pumping plant would be accompanied for most years by corresponding reduction in diversions from the original pumping plant downstream (i.e., a reduction in diversions at the original pumping plant from 275 cfs to 157 cfs). The one exception to this "no change" condition in overall pumping volume could occur during the peak irrigation season, typically in mid-June through August, when total pumping at the two plants may be increased by approximately 30 cfs to 305 cfs for a week or two to meet irrigation demands. In all cases, including the periodic, short-term increased to 305 cfs, total pumping from the two plants would be within the District's existing water right. Delivery of surface water when available to the additional 1,500 acres in Unit B would allow six to eight wells to be idled when surface water is available, and ensure water delivery to areas where lands historically served by wells have already transitioned to surface water. This project is analyzed in the cumulative impacts section of this EA.

Henrys Fork River Basin Study

The Henrys Fork River basin study began with Reclamation and IWRB entering into a partnership to identify opportunities for developing water supplies, improving water management, and sustaining environmental quality in the Henrys Fork River basin. Since the Henrys Fork River basin overlies part of the Eastern Snake Plain Aquifer (ESPA),

opportunities for managed recharge within the basin were explored for the benefit of the ESPA Comprehensive Aquifer Management Plan (CAMP). The study developed and analyzed 12 alternatives that would potentially improve the water supply reliability in the Henrys Fork River basin and the ESPA. The findings of the study identify that a meaningful contribution to meeting the existing and future water supply needs of the Henrys Fork Basin, as well as such high state priorities as the ESPA, cannot be made by any single action but through an integrated program of actions. Grouping of alternatives into one or more integrated packages is likely to be necessary in order to meet the broadest set of needs. This study was not analyzed in this EA for cumulative impacts because the State of Idaho is moving forward with additional analysis on Island Park.

3.15.2 Environmental Consequences

Hydrology

Potential storage water gained in Ririe Reservoir is relatively minor in comparison to American Falls Reservoir and upper Snake River system capacities. A 15 percent change in Ririe flood space reservation is equal to 0.5 percent of the capacity of American Falls Reservoir and 0.2 percent of the capacity of the upper Snake system. Table 3-1 in Section 3.2 identifies potential Ririe winter water storage increases and where the additional water could be credited (either to Ririe Reservoir accounts or to other system reservoirs' accounts). An approximate 15,500 acre-feet of potential storage water over 19 years could be gained; this equates to an approximate 816 acre-feet average gain per year. The potential water gain would not be realized yearly, as depicted by the average, but was analyzed to occur seven times in 19 years. Within those 7 years, 3 years (2001, 2007, and 2008) had 4,753, 3,556, and 5,394 acre-feet (respectively) of additional water available. A more conservative estimate would be water gains in 3 of 19 years – about 16 percent of the time, or about twice in a 10-year period. The gain in storage water supply would cause a proportional increase in storage allocation to Water District 1 space holders, who would utilize the storage to meet in-season irrigation demands, carry it over for the following season's irrigation supply, or make it available for lease through the upper Snake rental pool.

If the Water District 1 space holders make the additional water available through the upper Snake rental pool, this water could potentially be leased by IWRB or A&B Irrigation District to supplement the A&B Pumping Plant # 2 project. If the additional water gained is used for the proposed A&B Pumping Plant # 2 project, additional water would be beneficial, but the magnitude of the effects is unknown.

In the short and long terms (2 to 10 years, respectively), Ririe winter storage water gained could, if available, potentially contribute water for the A&B Pumping Plant # 2 project. However, the benefit from the potential Ririe winter water gained would be minimal. The water need from the proposed project is much greater than the potential storage water gained

in Ririe, and when combined with past and present effects, the incremental effects would be minimal in the short and long terms.

Water Quality

Potential storage water gained from Ririe could be used to mitigate water quality concerns at American Falls Reservoir. Currently, when American Falls Reservoir contents fall to near 100,000 acre-feet, Reclamation moves water from upstream reservoirs to American Falls to preserve water quality. Some of this water could come from Ririe Reservoir. Moving water from Ririe for American Falls water quality enhancement may preclude the carryover of water in Ririe to benefit storage in the following year. A 15 percent change in Ririe flood space reservation is equal to 0.5 percent of the capacity of American Falls Reservoir. The cumulative effect of additional water to American Falls water quality would be minor because the additional water benefits would likely occur as a one-time event in 10 years. Additionally, because the reservoir capacities differ so much between Ririe and American Falls, the incremental effects of any additional water from Ririe used to supplement American Falls is negligible, and therefore any water quality effects would be negligible.

Climate Change

There are no significant impacts to storage water gained and to the subsequent irrigation deliveries under 2010 level operations. Effects from agriculture on climate change would be the same as those described in the No Action alternative in Section 3.14.

The proposed winter operations could allow projected earlier and higher peak inflows in the spring to be passed through Ririe Reservoir (see Section 3.14). This unquantified amount of water could be used to supplement potential recharge projects, the A&B Pumping Plant #2 project, and American Falls water quality, in addition to the potential minimal storage water gains described earlier. Although the amount of water is unknown, the combined amount of water needed from potential projects and to alleviate American Falls water quality concerns is likely much greater than the potential storage water or future water gained in Ririe. Therefore, when these effects are combined with past and present effects, the resultant incremental effects would likely be negligible in the short and long terms.

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Chapter 4 CONSULTATION AND COORDINATION

Reclamation announced a proposal to potentially improve Ririe Reservoir fill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk through a Tribal/public letter on December 10, 2010. The announcement stated that the study would involve analyzing flood control storage and winter water release scenarios under various conditions. It further stated that there would be opportunity for public involvement in the upcoming NEPA process. Reclamation mailed scoping letters to: 5 Tribes, 164 individuals; congressional delegates; organizations; irrigation districts and federal, state, and local agencies. The letters discussed the project and served as notification of the future Tribal/public scoping meeting. Tribal and public scoping meetings were held on January 11and 12, 2011 at Fort Hall and Idaho Falls, Idaho. The Tribal and public scoping meetings provided information and requested input on the proposed alternatives.

4.1 Public Involvement

The EA was postponed until the "Ririe Reservoir Winter Release Test Plan" was completed and successfully tested in February 2013. The plan tested the capacity of Willow Creek and the Ririe Outlet Channel to evacuate flood control space during winter conditions. Based on the results of the test, Reclamation revised the proposed alternatives and sent out scoping letters to: five Tribes, 157 individuals; congressional delegates; organizations; irrigation districts and Federal, state, and local agencies. Tribal and public scoping meetings were held on December 17 and 18, 2013 at Fort Hall and Idaho Falls, Idaho. The Draft EA was made available on September 5, 2014 to more than 150 federal, state, and local agencies, elected officials, Tribal governments, irrigation districts, interest groups, and individuals for a 30-day comment period (Appendix D).

4.2 Agency Consultation and Coordination

Reclamation met with and had written correspondence with the Corps on several occasions from the start of the Ririe Winter Storage project in 2008 through March, 2014 to discuss improving reservoir fill reliability and increase water availability for irrigation and other water demands. Reclamation also met with IDFG in 2011and 2014 during the annual Tex Creek Coordination meeting, and on December 18, 2013 and discussed the proposed alternatives and potential effects to fish and wildlife. Reclamation received written scoping comments from

IDFG dated February 8, 2011 and January 16, 2014. The Draft EA was mailed on September 5, 2014 to both the Corps and IDFG for their comment.

4.3 Tribal Coordination and Consultation

Reclamation mailed scoping letters to: Shoshone-Bannock Tribes; Shoshone-Paiute Tribes, Burns Paiute Tribe, Nez Perce Tribe, and Northwestern Shoshone Tribe in December, 2010 and then again in November, 2013. The letters discussed the project and served as notification of the future Tribal public scoping meeting. Reclamation also provided information to the Shoshone-Bannock Tribes through local media and written correspondence; met with the Shoshone-Bannock Tribal Council, and solicited oral and written comments at Tribal public scoping meeting held in Fort Hall, Idaho, on January 12, 2011 and on December 18, 2013. No response or concerns from the Tribes from either of the two scoping periods were brought forward. A letter was sent on June 30, 2014 to the Shoshone-Bannock Tribes asking if the Tribes have any cultural concerns with the project and no response or concerns were received. A Draft EA was sent to Shoshone-Bannock Tribes; Shoshone-Paiute Tribes, Burns Paiute Tribe, Nez Perce Tribe, and Northwestern Shoshone Tribe on September 3, 2014 for comment.

Chapter 5 REFERENCES

Parenthetical Reference	Bibliographic Citation
40 CFR 1508.7	Code of Federal Regulations Title 40 - Protection of Environment Chapter V Council on Environmental Quality, Part 1508 Terminology and Index Section, 1508.7 Cumulative Impact. 1 July, 2012.
59 FR 7629	Federal Register. 1994. Executive Order 12898. Federal Actions to Address Environmental Justice in Minority Populations and Low-income Populations. Available online: http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/Req-EO12898envjustice.pdf. (Verified 20140729)
BEA 2012	U.S. Department of Commerce Bureau of Economic Analysis. 2012. Available online: http://bea.gov/bea/regional/data.htm
BLS 2012	U.S. Department of Labor Bureau of Labor Statistics. 2012. Available online: http://www/bls.gov/lau
CEQ 1997	Council on Environmental Quality. 1997. Council on Environmental Quality Environmental Justice Guidance Under the National Environmental Policy Act. December 10. Two versions: Available: http://energy.gov/sites/prod/files/nepapub/nepa_documents/RedDont/G-CEQ-EJGuidance.pdf . (verified 20140729) and http://energy.gov/sites/prod/files/QualityEnvironmentalJustice.pdf (verified 20140729)]
CIG 2006	Climate Impacts Group. 2006. University of Washington, Joint Institute for the Study of the Atmosphere and Ocean Center for Science in the Earth System. http://www.cses.washington/edu/cig/pnwc/cc.shtml Updated February 14, 2006.
Corps 1966	U.S. Army Corps of Engineers. 1966. "Design Memorandum No. 1 Ririe Dam and Reservoir, Willow Creek, Idaho. Hydrology." Letter from Ferald, Chief of Engineering of the NWD in Portland, Oregon to Chief of Engineers. U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington. February 1966.
Corps 1976	U.S. Army Corps of Engineers. 1976. "Memorandum of Agreement Providing for the Transfer of the Ririe Lake Project for Operations and Maintenance." Department of the Army, Corps of Engineers to the Bureau of Reclamation. Contract No. DACW68-75-C-0124. 14-06-100-9201. October 14, 1976.

Parenthetical Reference	Bibliographic Citation
Corps 1977	U.S. Army Corps of Engineers. 1977. Cooperative Agreement Concerning Use of Lands and Waters for Fish and Wildlife Conservation and Management. Ririe Lake Project, Willow Creek, Idaho. Corps of Engineers, Bureau of Reclamation, and Director of Idaho Fish and Game Department. P. 11.
Corps 1985	U.S. Army Corps of Engineers. 1985. *Reservoir Regulation Manual, Ririe Dam, Willow Creek, Idaho, Ririe Project*. U.S. Army Corps of Engineers, Walla Walla District, Walla Walla, Washington. March 1985.
Corps 2001	U.S. Army Corps of Engineers. 2001. *Standing Operating Procedures, Ririe Dam*. U.S. Department of Interior, U.S. Bureau of Reclamation, Pacific Northwest Region, Ririe Project, Idaho. June 2001, as revised.
Corps 2011a	U.S. Army Corps of Engineers. 2011. Tracy Schwartz. Personal communication. Letter to Reclamation dated January 4, 2011.
Corps 2011b	U.S. Army Corps of Engineers. 2011. *Standing Operating Procedures, Reservoir Regulation, Ririe Dam, Willow Creek, Idaho, Ririe Project, Idaho*, prepared by: U.S. Army Engineer District, Walla Walla Corps of Engineers, Operated by: Minidoka Project Office, Bureau of Reclamation, Burley, Idaho, ca 1977 as revised.
Corps 2012	U.S. Army Corps of Engineers. 2012. CRREL Review of Ririe Reservoir Winter Release Test Plan. U.S. Army Engineering Research and Development Center Cold Regions Research and Engineering Laboratory. Hanover, NH. 2012.
Cosgrove, Contor, and Johnson 2006	Cosgrove, D.M., B.A. Contor, and G.S. Johnson. 2006. Enhanced Snake Plain Aquifer Model Final Report. Idaho Water Resources Research Institute Technical Report 06-002. Eastern Snake Plain Aquifer Model Enhancement Project Scenario Document Number DDM-019.
Daniels 2014	Daniels, Craig. 2014. Bonneville County Recreation Manager. Idaho Falls, Idaho. Personal communication. June 12.
EDAW and BCDPR 1999	EDAW and Bonneville County Department of Parks and Recreation. 1999. Visitor Questionnaire Results at Ririe Reservoir Recreation Sites.
EPA 2014	U.S. Environmental Protection Agency. 2014. *DRAFT Inventory of U.S. Greenhouse Gas Emissions and Sinks: 1990-2012*. Washington, D.C. February 21, 2014.
Garren 2014	Garren, Dan. 2014. Idaho Department of Fish and Game. Regional Fisheries Manager. Idaho Falls, Idaho. Personal communication.
Gillan and Strand 2010	Gillan, J.K., and E.K Strand. 2010. "Sage-grouse habitat in Idaho: A practical guide for landowners and managers." University of Idaho. Forest,

Parenthetical Reference	Bibliographic Citation
	Wildlife, and Range Experiment Station. Moscow, Idaho.
Groves et al. 1997	Groves, C.R., B. Butterfield, A. Lippincott, B. Csuti, and J.M. Scott. 1997. *Atlas of Idaho's Wildlife: Integrating Gap Analysis and Natural Heritage Information.* Idaho Department of Fish and Game, Nongame and Endangered Wildlife Program. Boise, Idaho.
H. Doc. 531 1948	House Document No. 531. 1948. "Report on Columbia River and Tributaries." 81st Congress, 2nd Session. 1948.
H. Doc. 562 1962	House Document No. 562. 1962. "Ririe Dam and Reservoir, Willow Creek, Idaho." 81st Congress, 2nd Session. 1962.
High 2014	High, Brett. 2014. Idaho Department of Fish and Game. Regional Fisheries Biologist. Idaho Falls, Idaho. Personal communication.
IDEQ 2004	Idaho Department of Environmental Quality. 2004. *Willow Creek Subbasin Assessment and TMDLs*. Boise, Idaho.
IDEQ 2011	Idaho Department of Environmental Quality. 2011. *Idaho's 2010 Integrated Report*. Boise, Idaho.
IDEQ 2012	Idaho Department of Environmental Quality. 2012. Idaho Administrative Code 58.01.02 Water Quality Standards. Boise, Idaho.
IDFG 1998	Idaho Department of Fish and Game. 1998. *Tex Creek Wildlife Management Area Management Plan.* Idaho Department of Fish and Game. Idaho Falls, Idaho.
IDWR 2013	Idaho Water Resource Board. Water Water District 1 Rental Pool Procedures, Idaho Department of Water Resources, 2013. http://www.idwr.idaho.gov/WaterManagement/WaterRights/WaterSupply/PDFs/2013%20Rental%20Pool%20Rules-Proposed%201-3-13.pdf
IWRB 1998	Idaho Water Resources Board. 1998. Resource Inventory Upper Snake River Basin. Available online: http://www.idwr.idaho.gov/waterboard/WaterPlanning/PDFs/Resource_Inventory_Upper_SRB.pdf
IWRB 2010	Idaho Water Resources Board. 2010. State of Idaho Water Resource Inventory. Available online: http://www.idwr.idaho.gov/waterboard/WaterPlanning/PDFs/2010_Resource-Inventory.pdf
Johnson et al. 1999	Johnson, G.S., W.H. Sullivan, D.M. Cosgrove, and R.D. Schmidt. 1999. "Recharge of the Snake River Plain Aquifer: Transitioning from Incidental to Managed." Journal of the American Water Resources Association. Vol.35 pp.123-131

Parenthetical Reference	Bibliographic Citation
Kjelstrom 1986	Kjelstrom, L.C. 1986. Flow Characteristics of the Snake River and Water Budget: for the Snake River Plain, Idaho and Eastern Oregon. U.S. Geological Survey Hydrologic Investigations Atlas HA-680.
Levine, Beals, and Melquist 1998	Levine, E., J. Beals, and W. Melquist. 1998. *Idaho Peregrine Falcon Survey and Nest Monitoring: 1998 Annual Summary.* Idaho Department of Fish and Game. Nongame and Endangered Wildlife Program. Threatened and Endangered Species Report. Project E-22-1. Boise, Idaho.
NLCD 2014	National Land Cover Database. 2014. Open Water, Cultivated Crop Lands, Hay/Pasture Lands, and Forested Lands: 2001 National Land Cover Database, produced by the Multi-Resolution Land Characteristics Consortium (MRLC). Manipulated by Reclamation GIS Staff. July, 2014.
P. L. 108-447	The Mediator's Term Sheet (also known as the Snake River Water Rights Agreement) dated April 20, 2004, approved, ratified, and confirmed in the Snake River Water Rights Act of 2004 (P.L. 108-447)
P. L. 87-874 76	*Flood Control Act of October 23, 1962*. Public Law 87-874, 76 Statute 1193.
Reclamation 1997	U.S. Bureau of Reclamation. 1997. *Operations Manual, Mid-Snake River, Upper Snake River*. U.S. Department of the Interior, Bureau of Reclamation. Pacific Northwest Region. Boise, Idaho. December 1997.
Reclamation 2001	U.S. Bureau of Reclamation. 2001. *Ririe Reservoir Resource Management Plan*. U.S. Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho. November 2001.
Reclamation 2010	U.S. Bureau of Reclamation. 2010. *Phase 1 Study of Proposed Modifications of Flood Control operations, Ririe Dam and Reservoir*. U.S. Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho. September 2010.
Reclamation 2011	U.S. Bureau of Reclamation. 2011. *Climate and Hydrology Datasets for Use in the RMJOC Agencies' Longer-Term Planning Studies: Part II – Reservoir Operations Assessment for Reclamation Tributary Basins*. U.S. Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho. January 2011.
Reclamation 2012a	U.S. Bureau of Reclamation. 2012a. Solicitation No. R12PS10049-Contract No. R13PC1004 Operation and Maintenance of the Teton Mitigation Area. Upper Snake Field Office. U.S. Bureau of Reclamation, Idaho. September 24, 2012.
Reclamation 2012b	U.S. Bureau of Reclamation. 2012b. *Ririe Reservoir Winter Release Test Plan*. U.S. Bureau of Reclamation, Pacific Northwest Region, Boise, Idaho. September 17, 2012.

Parenthetical Reference	Bibliographic Citation
Reclamation 2014	U.S. Bureau of Reclamation. 2014. Hydromet Data Accessed from Hydromet. Pacific Northwest Region. Boise, Idaho.
S. 2605 2004	S.2605. 2004. Snake River Water Rights Act of 2004. 108th Congress 2nd Session. November 20, 2004.
Shoshone-Bannock Tribes v. Fish & Game Commission Idaho 1994	Shoshone-Bannock Tribes v. Fish & Game Commission Idaho. 1994. 42 F. 3d 1278. No. 94-35280. United States Ninth Circuit Court of Appeals.
Simpson and Wallace 1978	Simpson, J.C., and R.L. Wallace. 1978. *Fishes of Idaho.* The University Press of Idaho. Moscow, Idaho.
Takle and Hofstrand 2008	Takle, E., and D. Hofstrand. 2008. "Global Warming – Agriculture's Impact on Greenhouse Gas Emissions." Ag Decision Maker April 2008 Newsletter. Iowa State University. http://www.extension.iastate.edu/agdm/articles/others/TakApr08.html
Thomas 1987	Thomas, Terry R. 1987. *Yearlong Movements and Habitat Use of Mule Deer Associated with the Willow Creek Winter Range in Southeastern Idaho.* Master of Science Thesis. Montana State University. Bozeman, Montana.
Thomas 2014	Thomas, Terry. 2014. Idaho Department of Fish and Game. Idaho Falls, Idaho. Personal communication.
U.S. Census Bureau 2012	U.S. Department of Commerce Census Bureau. 2012. Available online: http://www.census.gov
U.S. Census Bureau 2013	U.S. Department of Commerce Census Bureau. 2013. American Community Survey Office, Washington, D.C. Available: http://www.census.gov/acs/www/ or http://www.census.gov
USDA 2013	National Agricultural Statistics Service, Prices Paid Index, United States Department of Agriculture. 2013. ttp://www.nass.usda.gov/Surveys/Guide_to_NASS_Surveys/Prices_Paid_and_Prices_Paid_Indexes/index.asp
USDA 2014	National Agricultural Statistics Service, Census of Agriculture, U.S. Department of Agriculture. 2014. Washington, D.C. Available online: http://www.agcensus.usda.gov
USDOI 1995	U.S. Department of the Interior. 1995. Environmental Compliance Memorandum No. ECM 95-3. Office of the Secretary, Washington DC. Available: http://www.doi.gov/pmb/oepc/upload/ECM-95-3.pdf (Verified 20140731)

Parenthetical Reference	Bibliographic Citation
USFWS 2009	U.S. Fish and Wildlife Service. 2009. Idaho Endangered, Threatened, Proposed, and Candidate Species by County. Available: http://idahoes.fws.gov/county
USGS 1962	U.S. Geological Survey. 1962. Floods of February 1962 in Southern Idaho and Northeastern Nevada. Circular 467. Washington, D.C.
USGS 2014	U.S. Geological Survey. 2014. National Weather Information System. USGS Current Conditions for the Nation. Online at http://waterdata.usgs.gov/nwis/uv. Page last modified: 2014-05-14 14:53:18 EDT.
Wallus 2008	Wallus, R. 2008. Smallmouth Bass *Micropterus dolomieu Lacepede*. In R. Wallus and T.P. Simon, Eds. Reproductive Biology and Early Life History of Fishes in the Ohio River Drainage. Elassomatidae and Centrarchidae. CRC Press.
Wynn 2006	Wynn, Tess. 2006. "Streambank retreat: a primer." AWRA Hydrology & Watershed Management Technical Committee. Watershed Update 4.1 pp. 1-14.

APPENDICES

APPENDIX A
PUBLIC SCOPING

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

USF-6300
ADM-11.10

DEC 10 2010

Subject: Invitation to Public Meetings and Request for Comments Regarding Ririe Reservoir and Dam, Bonneville County, Idaho: Proposed Interim Operations

Dear Interested Party:

The United States Department of Interior, Bureau of Reclamation and the United States Army Corps of Engineers, Walla Walla District (Corps) are asking for your assistance to help identify issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam, Bonneville County, Idaho. This study would involve analyzing flood control storage and winter water release scenarios under various conditions. The period of study would be for approximately 3-5 years. Data from these tests will provide the needed information to determine how operations may be modified in the future that will continue to meet the needs of providing flood protection for the downstream area, but also increase the opportunity to store additional winter flows for later use.

Reclamation has determined that an Environmental Assessment (EA) is required under the National Environmental Policy Act in order to undertake this action. The EA will evaluate the impacts of the proposed action on both human and natural environments. This analysis, together with input from the public, will assist Reclamation and the Corps in making an informed decision on the winter release testing options. In order to properly identify issues and concerns, a public meeting is scheduled for January 11, 2011, at the Red Lion Convention Center, 475 Parkway in Idaho Falls, Idaho. The meeting will begin at 6:00 p.m. and conclude at 8:00 p.m. It is anticipated that the Draft EA will be distributed for public review and comment in the late spring of 2011.

Please help us identify important issues and concerns of the public, by sending your written comments by February 11, 2011, to: Mr. Robert. L. "Hap" Boyer, Natural Resource Manager, Bureau of Reclamation, Upper Snake Field Office, 1359 Hansen Avenue, Burley, Idaho 83318-1821.

As part of this proposed action, Reclamation is also updating our mailing list. Please complete and return the enclosed form to Mr. Ryan Newman, Natural Resource Specialist, at the address listed in the above paragraph, or notify him by phone at 208-678-0461, extension 38, if you wish to receive a copy of the Draft EA. Reclamation will assume you do not wish to be on the mailing list if we do not receive notification. For more information, please go to www.usbr.gov/pn/programs/ea/idaho/ririe/index.html.

Sincerely,

ACTING FOR

Jerrold D. Gregg
Area Manager

Enclosure

Ririe Reservoir and Dam, Bonneville County, Idaho:
Proposed Interim Operations

☐ **Please keep my name on the mailing list for the Ririe Reservoir Proposed Interim Operations Environmental Assessment**

☐ **Please change my address on your mailing list to:**

_____
Name

_____
Address

_____
City, State, Zip Code

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

USF-6300
ADM-11.10

DEC 1 0 2010

Honorable Nathan Small
Chairman
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

Subject: Invitation to Public Meetings and Request for Comments Regarding Ririe Reservoir and Dam, Bonneville County, Idaho: Proposed Interim Operations

Dear Chairman:

The United States Department of Interior, Bureau of Reclamation and the United States Army Corps of Engineers, Walla Walla District (Corps) are asking for your assistance to help identify issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam, Bonneville County, Idaho. This study would involve analyzing flood control storage and winter water release scenarios under various conditions. The period of study would be for approximately 3-5 years. Data from these tests will provide the needed information to determine how operations may be modified in the future that will continue to meet the needs of providing flood protection for the downstream area, but also increase the opportunity to store additional winter flows for later use.

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Reclamation has confirmed a meeting with the Fort Hall Business Council l on January 12, 2011, from 10:00 to 11:00 a.m. A Tribal public meeting will be held in Fort Hall, Idaho on the Fort Hall Reservation at the Tribal Council Chambers beginning at 5:00 p.m. and concluding at 7:00 p.m. It is anticipated that the Draft EA will be distributed for public review and comment in the late spring of 2011.

Please help us identify important issues and concerns of the public, by sending your written comments by February 11, 2011, to: Mr. Robert. L. "Hap" Boyer, Natural Resource Manager, Bureau of Reclamation, Upper Snake Field Office, 1359 Hansen Avenue, Burley, Idaho 83318-1821.

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Sincerely,

ACTING FOR

Jerrold D. Gregg
Area Manager

Enclosure

cc: Mr. Chad Colter
Fish And Wildlife Director
Shoshone Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

Ms. Yvette Tuell
Environmental Program Manager
Shoshone Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

Ms. Becky Martin
Emergency Manager
Shoshone Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

Ririe Reservoir and Dam, Bonneville County, Idaho:
Proposed Interim Operations

☐ **Please keep my name on the mailing list for the Ririe Reservoir Proposed Interim Operations Environmental Assessment**

☐ **Please change my address on your mailing list to:**

_____
Name

_____
Address

_____
City, State, Zip Code

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

USF-6300
ADM-11.10

DEC 1 0 2010

Honorable Robert C. Bear
Chair
Shoshone-Paiute Tribes
P.O. Box 219
Owyhee, NV 89832

Subject: Invitation to Public Meetings and Request for Comments Regarding Ririe Reservoir and Dam, Bonneville County, Idaho: Proposed Interim Operations

Dear Chair:

The United States Department of Interior, Bureau of Reclamation and the United States Army Corps of Engineers, Walla Walla District (Corps) are asking for your assistance to help identify issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam, Bonneville County, Idaho. This study would involve analyzing flood control storage and winter water release scenarios under various conditions. The period of study would be for approximately 3-5 years. Data from these tests will provide the needed information to determine how operations may be modified in the future that will continue to meet the needs of providing flood protection for the downstream area, but also increase the opportunity to store additional winter flows for later use.

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Sincerely,

ACTING FOR

Jerrold D. Gregg
Area Manager

Enclosure

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

USF-6300
ADM-11.10

DEC 10 2010

Honorable McCoy Oatman
Chairman
Nez Perce Tribe
P.O. Box 305
Lapwai, ID 83540

Subject: Invitation to Public Meetings and Request for Comments Regarding Ririe Reservoir and Dam, Bonneville County, Idaho: Proposed Interim Operations

Dear Chairman:

The United States Department of Interior, Bureau of Reclamation and the United States Army Corps of Engineers, Walla Walla District (Corps) are asking for your assistance to help identify issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam, Bonneville County, Idaho. This study would involve analyzing flood control storage and winter water release scenarios under various conditions. The period of study would be for approximately 3-5 years. Data from these tests will provide the needed information to determine how operations may be modified in the future that will continue to meet the needs of providing flood protection for the downstream area, but also increase the opportunity to store additional winter flows for later use.

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Sincerely,

ACTING FOR

Jerrold D. Gregg
Area Manager

Enclosure

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

USF-6300
ADM-11.10

DEC 1 0 2010

Honorable Diane Teeman
Chair
Burns Paiute Tribe
HC-71, 100 Pasigo Street
Burns, OR 97720-9303

Subject: Invitation to Public Meetings and Request for Comments Regarding Ririe Reservoir and Dam, Bonneville County, Idaho: Proposed Interim Operations

Dear Chair:

The United States Department of Interior, Bureau of Reclamation and the United States Army Corps of Engineers, Walla Walla District (Corps) are asking for your assistance to help identify issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam, Bonneville County, Idaho. This study would involve analyzing flood control storage and winter water release scenarios under various conditions. The period of study would be for approximately 3-5 years. Data from these tests will provide the needed information to determine how operations may be modified in the future that will continue to meet the needs of providing flood protection for the downstream area, but also increase the opportunity to store additional winter flows for later use.

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Sincerely,

ACTING FOR

Jerrold D. Gregg
Area Manager

Enclosure

United States Department of the Interior
BUREAU OF RECLAMATION
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

TAKE PRIDE IN AMERICA

USF-6300
ADM-11.10

DEC 10 2010

Honorable Gwen Davis
Chair
Northwestern Shoshone Tribe
707 N. Main Street
Brigham City, UT 84302

Subject: Invitation to Public Meetings and Request for Comments Regarding Ririe Reservoir and Dam, Bonneville County, Idaho: Proposed Interim Operations

Dear Chair:

The United States Department of Interior, Bureau of Reclamation and the United States Army Corps of Engineers, Walla Walla District (Corps) are asking for your assistance to help identify issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam, Bonneville County, Idaho. This study would involve analyzing flood control storage and winter water release scenarios under various conditions. The period of study would be for approximately 3-5 years. Data from these tests will provide the needed information to determine how operations may be modified in the future that will continue to meet the needs of providing flood protection for the downstream area, but also increase the opportunity to store additional winter flows for later use.

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Sincerely,

ACTING FOR

Jerrold D. Gregg
Area Manager

Enclosure

Ririe Reservoir and Dam, Bonneville County, Idaho:
Proposed Interim Operations

☐ **Please keep my name on the mailing list for the Ririe Reservoir Proposed Interim Operations Environmental Assessment**

☐ **Please change my address on your mailing list to:**

_____
Name

_____
Address

_____
City, State, Zip Code

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-6300
ADM-11.10

NOV 25 2013

Subject: Invitation to an Open House and Request for Comments Regarding Proposed Interim Winter Operations at Ririe Dam and Reservoir, Ririe Project (Project), Bonneville County, Idaho

Dear Interested Party:

The Bureau of Reclamation intends to prepare an Environmental Assessment (EA) as required under the National Environmental Policy Act on Proposed Interim Winter Operations (proposed action) to reduce Ririe Reservoir winter drawdown for a 10-year interim period to improve refill reliability and increase water availability for irrigation without an increase to downstream flood risk. Reclamation is requesting public comment to help identify issues and concerns associated with the proposed action.

The Ririe Dam and Reservoir was constructed by the U.S. Army Corps of Engineers (USACE) and transferred to Reclamation for operation and maintenance through a memorandum of agreement in 1976. Reclamation manages the Project for multiple purposes including water storage for irrigation; the USACE is responsible for the flood control operations of the Project as required by Section 7 of the Flood Control Act of 1944. Proposed actions at the Project must be developed with consideration of impacts to flood risk.

On January 11, 2011, Reclamation conducted an initial scoping meeting in Idaho Falls, Idaho, to identify issues and concerns associated with the proposed interim operations. Following this meeting, the EA was postponed while Reclamation considered initial scoping comments and worked with USACE, Water District 1, and Mitigation Inc. to complete a "Ririe Reservoir Winter Release Test Plan (Plan)." The purpose of the Plan was to test/study the capacity of Willow Creek and the Ririe outlet channel to evacuate flood control space during winter conditions without an increase in flood risk. The test was conducted in February 2013. Based on the information gained from the test, Reclamation has revised the alternatives to be evaluated in the EA and is conducting a public scoping on these revised alternatives.

The EA will evaluate the impacts of the proposed action on human environments. To properly identify issues and concerns, an open house is scheduled for December 17, 2013, at The Hotel on the Falls, 475 River Parkway in Idaho Falls, Idaho. The meeting will begin at 6:00 p.m. and conclude at 8:00 p.m. Anyone needing sign language interpretation or other accessible accommodations should contact Mr. Don Bowden at 208-678-0461, extension 13, by December 6, 2013. It is anticipated that the Draft EA will be distributed for public review and comment in the spring of 2014.

Please send your written comments by January 17, 2014, to: Mr. Rich Jackson, Natural Resource Specialist, Bureau of Reclamation, Upper Snake Field Office, 470 22nd Street, Heyburn Idaho 83336 or via email at ririeea@usbr.gov.

Reclamation is also updating the mailing list for distribution of the Draft EA. If you wish to receive either a CD or hard copy of the Draft EA, please complete and return the enclosed form to Mr. Rich Jackson at the address listed above, or notify him by phone at 208-678-0461, extension 38. For more information, please go to www.usbr.gov/pn/programs/ea/idaho/ririe/index.html.

Sincerely,

Jerrold D. Gregg
Area Manager

Enclosures - 2

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-6300
ADM-11.10

NOV 2 2 2013

Honorable Nathan Small
Chairman
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

Subject: Invitation to an Open House and Request for Comments Regarding Proposed Interim Winter Operations at Ririe Dam and Reservoir, Ririe Project (Project), Bonneville County, Idaho

Dear Nathan Chairman:

The Bureau of Reclamation intends to prepare an Environmental Assessment (EA) as required under the National Environmental Policy Act on Proposed Interim Winter Operations (proposed action) to reduce Ririe Reservoir winter drawdown for a 10-year interim period to improve refill reliability and increase water availability for irrigation without an increase to downstream flood risk. Reclamation is requesting public comment to help identify issues and concerns associated with the proposed action.

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On January 12, 2011, Reclamation conducted an initial scoping with the Fort Hall Business Council and the Tribal Public in Fort Hall to identify issues and concerns associated with the proposed interim operations. Following this meeting, the EA was postponed while Reclamation considered initial scoping comments and worked with USACE, Water District 1, and Mitigation Inc. to complete a "Ririe Reservoir Winter Release Test Plan (Plan)." The purpose of the Plan was to test/study the capacity of Willow Creek and the Ririe outlet channel to evacuate flood control space during winter conditions without an increase in flood risk. The test was conducted in February 2013. Based on the information gained from the test, Reclamation has revised the alternatives to be evaluated in the EA and is conducting a public scoping on these revised alternatives.

The EA will evaluate the impacts of the proposed action on human environments. To properly identify issues and concerns, an open house is scheduled for December 18, 2013, at the Shoshone-Bannock Tribes Tribal Business Center in Fort Hall, Idaho. The meeting will begin at 6:00 p.m. and conclude at 8:00 p.m. Anyone needing sign language interpretation or other accessible accommodations should contact Mr. Don Bowden at 208-678-0461, extension 13, by December 6, 2013. It is anticipated that the Draft EA will be distributed for review and comment in the spring of 2014.

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Sincerely,

Jerrold D. Gregg
Area Manager

Enclosures - 2

cc: Mr. Wes Jones
Emergency Manager
Shoshone Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203

Mr. Chad Colter
Fish and Wildlife Director
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

Mr. Cleve Davis
Environmental Program Manager
Shoshone-Bannock Tribes
P.O. Box 306
Fort Hall, ID 83203-0306

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-6300
ADM-11.10

NOV 2 2 2013

Honorable Jason S. Walker
Chairman
Northwestern Shoshone Tribe
707 N. Main Street
Brigham City, UT 84302

Subject: Invitation to an Open House and Request for Comments Regarding Proposed Interim Winter Operations at Ririe Dam and Reservoir, Ririe Project (Project), Bonneville County, Idaho

Dear Chairman:

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Sincerely,

Jerrold D. Gregg
Area Manager

Enclosure – 2

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-6300
ADM-11.10

NOV 2 2 2013

Honorable Charlotte Roderique
Chairperson
Burns Paiute Tribe
HC-71, 100 Pasigo Street
Burns, OR 97720-9303

Subject: Invitation to an Open House and Request for Comments Regarding Proposed Interim Winter Operations at Ririe Dam and Reservoir, Ririe Project (Project), Bonneville County, Idaho

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Jerrold D. Gregg
Area Manager

Enclosure – 2

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-6300
ADM-11.10

NOV 2 2 2013

Honorable Silas C. Whitman
Chairman
Nez Perce Tribe
P.O. Box 305
Lapwai, ID 83540

Subject: Invitation to an Open House and Request for Comments Regarding Proposed Interim Winter Operations at Ririe Dam and Reservoir, Ririe Project (Project), Bonneville County, Idaho

Silas

Dear Chairman:

The Bureau of Reclamation intends to prepare an Environmental Assessment (EA) as required under the National Environmental Policy Act on Proposed Interim Winter Operations (proposed action) to reduce Ririe Reservoir winter drawdown for a 10-year interim period to improve refill reliability and increase water availability for irrigation without an increase to downstream flood risk. Reclamation is requesting public comment to help identify issues and concerns associated with the proposed action.

The Ririe Dam and Reservoir was constructed by the U.S. Army Corps of Engineers (USACE) and transferred to Reclamation for operation and maintenance through a memorandum of agreement in 1976. Reclamation manages the Project for multiple purposes including water storage for irrigation; the USACE is responsible for the flood control operations of the Project as required by Section 7 of the Flood Control Act of 1944. Proposed actions at the Project must be developed with consideration of impacts to flood risk.

On January 11, 2011, Reclamation conducted an initial scoping meeting in Idaho Falls, Idaho, to identify issues and concerns associated with the proposed interim operations. Following this meeting, the EA was postponed while Reclamation considered initial scoping comments and worked with USACE, Water District 1, and Mitigation Inc. to complete a "Ririe Reservoir Winter Release Test Plan (Plan)." The purpose of the Plan was to test/study the capacity of Willow Creek and the Ririe outlet channel to evacuate flood control space during winter conditions without an increase in flood risk. The test was conducted in February 2013. Based on the information gained from the test, Reclamation has revised the alternatives to be evaluated in the EA and is conducting a public scoping on these revised alternatives.

The EA will evaluate the impacts of the proposed action on human environments. To properly identify issues and concerns, an open house is scheduled for December 17, 2013, at The Hotel on the Falls, 475 River Parkway in Idaho Falls, Idaho. The meeting will begin at 6:00 p.m. and conclude at 8:00 p.m. Anyone needing sign language interpretation or other accessible accommodations should contact Mr. Don Bowden at 208-678-0461, extension 13, by December 6, 2013. It is anticipated that the Draft EA will be distributed for review and comment in the spring of 2014.

Please send your written comments by January 17, 2014, to: Mr. Rich Jackson, Natural Resource Specialist, Bureau of Reclamation, Upper Snake Field Office, 470 22nd Street, Heyburn Idaho 83336 or via email at ririeea@usbr.gov.

Reclamation is also updating the mailing list for distribution of the Draft EA. If you wish to receive either a CD or hard copy of the Draft EA, please complete and return the enclosed form to Mr. Rich Jackson at the address listed above, or notify him by phone at 208-678-0461, extension 38. For more information, please go to www.usbr.gov/pn/programs/ea/idaho/ririe/index.html.

Sincerely,

Jerrold D. Gregg
Area Manager

Enclosure – 2

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

IN REPLY REFER TO:

USF-6300
ADM-11.10

NOV 2 2 2013

Honorable Dennis Smith, Sr.
Chairman
Shoshone-Paiute Tribes
P.O. Box 219
Owyhee, NV 89832

Subject: Invitation to an Open House and Request for Comments Regarding Proposed Interim Winter Operations at Ririe Dam and Reservoir, Ririe Project (Project), Bonneville County, Idaho

Dear Chairman:

The Bureau of Reclamation intends to prepare an Environmental Assessment (EA) as required under the National Environmental Policy Act on Proposed Interim Winter Operations (proposed action) to reduce Ririe Reservoir winter drawdown for a 10-year interim period to improve refill reliability and increase water availability for irrigation without an increase to downstream flood risk. Reclamation is requesting public comment to help identify issues and concerns associated with the proposed action.

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Please send your written comments by January 17, 2014, to: Mr. Rich Jackson, Natural Resource Specialist, Bureau of Reclamation, Upper Snake Field Office, 470 22nd Street, Heyburn Idaho 83336 or via email at ririeea@usbr.gov.

Reclamation is also updating the mailing list for distribution of the Draft EA. If you wish to receive either a CD or hard copy of the Draft EA, please complete and return the enclosed form to Mr. Rich Jackson at the address listed above, or notify him by phone at 208-678-0461, extension 38. For more information, please go to www.usbr.gov/pn/programs/ea/idaho/ririe/index.html.

Sincerely,

Jerrold D. Gregg
Area Manager

Enclosure – 2

APPENDIX B
AGENCY CORRESPONDENCE

IDAHO DEPARTMENT OF FISH AND GAME
UPPER SNAKE REGION
4279 Commerce Circle
Idaho Falls, Idaho 83401

C.L. "Butch" Otter / Governor
Cal Groen / Director

February 8, 2011

Mr. Robert L. "Hap" Boyer
BOR, Upper Snake Field Office
1359 Hansen Avenue
Burley, ID 83318-1821

RE: **Proposed Interim Operations of Ririe Reservoir and Dam-Request for Comments**

Dear Mr. Boyer:

Idaho Department of Fish and Game (Department) has received a request from the Bureau of Reclamation (BOR) and US Army Corps of Engineers to identify issues and concerns regarding a three to five year study analyzing flood control storage and winter release scenarios on Ririe Reservoir and Dam located in Bonneville County, Idaho. It is our understanding that BOR will prepare an Environmental Assessment (EA) under the National Environmental Policy Act in order to implement the study. The Department has discussed the Proposed Interim Operations study with BOR and Idaho Department of Water Resources staff. The Department recognizes that results of this study may be used to modify future operations of Ririe Reservoir to store additional winter flows for later use during spring and summer.

All wildlife and fisheries in Idaho are publicly-owned resources, whether on private or public land; therefore, the Department is entrusted with statutory authority to preserve, protect, perpetuate, and manage wildlife and fisheries resources in the State of Idaho (Idaho Code Section 36-103(a)). Our interest in the Proposed Interim Operations of Ririe Reservoir and Dam is to identify potential wildlife and fisheries resource issues and concerns for inclusion of the Draft EA anticipated to be produced in the late spring of 2011. We offer the following comments regarding the proposed flood storage alternatives being considered.

Wildlife and Fisheries Resources:
We recommend the Draft EA identify how the Proposed Interim Operations study may potentially affect the following: (1) deer and elk migration across the reservoir (when frozen); (2) deer and elk wintering habitats; (3) waterfowl and shorebirds above and below the reservoir; (4) fish populations in Ririe Reservoir including native and introduced species, (including walleye); (5) fish populations in Willow Creek below Ririe Dam.

Recreational Fishery:
The Department would like to investigate a recreational trout fishery (e.g. year round or put and take seasonal fishery) in Willow Creek below Ririe Dam. How would the Proposed Interim

Operations study impact or enhance that opportunity? The Department recommends BOR address the recreational fishery opportunity in Willow Creek below Ririe Dam in the Draft EA or in a separate letter to this Department. Ririe Reservoir is a significant fishery for the Upper Snake Region; it is both an open water and ice fishery. The Department recommends the Draft EA examine the potential effects of the Proposed Interim Operations study on the following: (1) recreational boating and fishing when Ririe Reservoir is ice free; (2) the potential for Ririe Reservoir to freeze or not freeze with varying fall and winter reservoir levels; (3) general ice conditions and ice fishing safety.

Fisheries Habitat:

We recommend the Draft EA identify how the Proposed Interim Operations study would potentially affect fisheries habitat including the following: (1) sedimentation and bank stability changes along Ririe Reservoir shoreline and Willow Creek channel within the reservoir and below Ririe Dam; (2) near-shore fish habitat in winter; (3) additional and altered flow quantity and timing in the Snake River below Ririe Dam.

The Department appreciates the opportunity to identify potential wildlife and fisheries issues and concerns associated with Proposed Interim Operations of Ririe Reservoir and Dam. My staff is available to further discuss our issues and concerns while BOR develops the Draft EA. If you have questions or require further assistance, please contact our Environmental Staff Biologist Tom Bassista at 208.525.7290.

Sincerely,

for Steve Schmidt
Regional Supervisor

SLS:TPB:jms

cc: Cindy Robertson (IDFG)
Walt Poole (IDFG)
Dan Garren (IDFG)
Terry Thomas (IDFG)
Daryl Mients (IDFG)
Lyle Swank (IDWR)

IDAHO DEPARTMENT OF FISH AND GAME
UPPER SNAKE REGION
4279 Commerce Circle
Idaho Falls, Idaho 83401

C.L. "Butch" Otter / Governor
Virgil Moore / Director

WORKING COPY

January 16, 2014

Rich Jackson
Bureau of Reclamation
470 22nd Street
Heyburn, Idaho 83336

RE: Proposed Interim Winter Operations of Ririe Dam and Reservoir, Ririe Project

Dear Rich:

Idaho Department of Fish and Game (Department) received a request from Bureau of Reclamation (BOR) to identify issues and concerns associated with a Proposed Interim Winter Operations (proposed action) to reduce Ririe Reservoir winter drawdown for a ten year interim period. The purpose of the proposed action is to improve refill reliability and increase water availability for irrigation without an increase to flood risk. We understand BOR will prepare an Environmental Assessment (EA) as required under the National Environmental Policy Act in order to implement the proposed action. Upper Snake Regional staff discussed the proposed action with BOR, and we are very familiar with the fish and wildlife resources within the project area.

It is the role and responsibility of the Department in fulfilling its mission of protecting, preserving, and managing fish and wildlife resources to provide technical information regarding the potential effects of the proposed action on these resources and assess how any adverse effects can be avoided, minimized, or mitigated. Without knowing the exact proposed reservoir inundation areas associated with the proposed action, it is difficult for the Department to fully assess potential effects. The Department does not support or oppose the proposed action. However, the Department is providing comments to identify potential issues related to fish and wildlife resources and assist BOR with analyzing effects to important fisheries resources that we recommend be included in the EA.

To evaluate potential effects to fish and wildlife resources, we recommend the EA focuses on changes in environmental conditions (e.g. changes in shoreline and tributary inundation) associated with increased winter (November 01-March 01) reservoir levels and assess how those changes may impact or improve fish and wildlife habitats and/or populations. The proposed action consists of five alternatives including a no-action (current operations) alternative (Alternative 1). The other four alternatives (Alternatives 2-5) would essentially store additional water in Ririe Reservoir with varying increases in water quantities during winter months. The Department encourages BOR to review proposed reservoir inundation maps with our staff at your earliest convenience.

The Department identifies the land surrounding Ririe Reservoir as mule deer and elk winter range. We have noted that during extremely cold winters, elk have migrated over the frozen Ririe Reservoir and onto private lands causing depredation issues for landowners and the Department. We also note that numerous bird species including waterfowl, shorebirds, and bald and golden eagles utilize Ririe Reservoir. We recommend analyzing potential wildlife impacts in the EA.

Ririe Reservoir has developed into a popular fishery, and it supports one of the most widely accessible and used reservoir fisheries in Upper Snake Region. In 2010, angler use was approximately 68,000 hours with a catch rate of 0.5 fish per hour (IDFG 2013). Additionally, Ririe Reservoir supports a popular ice-fishery, which contributed

approximately thirty percent of the fishing effort in 2010 (IDFG 2013). We recommend that BOR work closely with the Department during development of the EA to assess potential effects of increasing winter reservoir levels on trout, kokanee, smallmouth bass, perch, and recent illegally introduced walleye. Since walleye are using tributary streams to spawn during early spring, it may be possible that spawning success could increase with higher winter reservoir levels. Higher reservoir levels mean less filling in the spring when walleye are spawning. Currently, the flooding of nearby riffles during spring runoff may help to suppress walleye populations. Less opportunity to flood spawning areas may increase walleye survival and help this undesirable fish to increase in the reservoir. We also recommend that BOR investigates the possibility of ice forming later in the winter on Ririe Reservoir. We are concerned that if more water is stored in the winter, it may take longer for the reservoir to safely freeze over. Under existing conditions, Ririe Reservoir is typically the last body of water to ice-over in the Upper Snake Region. We are concerned that additional delay in ice cover may further delay or eliminate the ice-fishery.

Under the current operation and proposed action, Ririe Dam is managed to have no water discharge from the Dam from approximately November 01 to March 01 unless a winter release is needed to increase flood control space in the reservoir. Consequently, a fishery below Ririe Dam is non-existent during those months. As we discussed with BOR staff, the Department is interested in examining the feasibility of a year-round fishery below Ririe Dam that would depend on winter flow releases. In light of flooding and icing issues in the multiple channels located downstream of Ririe Dam, the Department views that a year-round fishery could be a benefit to fishery and wildlife resources and provide additional angling opportunities within close proximity to Idaho Falls and surrounding towns. The Department recommends that the EA clearly explain the reasons for managing a no water discharge during winter months. Further, we encourage BOR to engage with the Department to determine if a feasibility study to provide a year-long fishery below Ririe Dam is acceptable.

The Department appreciates the opportunity to identify potential fisheries and wildlife issues and concerns associated with the Proposed Interim Winter Operations. Our staff is available to further discuss our issues and concerns while BOR is developing the Draft EA. Additionally, we would like to have the opportunity to review the draft EA and provide additional comments if needed. If you have questions or require further assistance, please contact our Environmental Staff Biologist, Tom Bassista, at 208.525.7290.

Sincerely,

Steve Schmidt
Regional Supervisor

SLS:TPB:jms

cc: Sharon Kiefer (IDFG-Director's Office)
Dan Garren (IDFG-Upper Snake Region)
Terry Thomas (IDFG-Upper Snake Region)
Lyle Swank (IDWR-Eastern Regional Office)

Literature Cited

Idaho Department of Fish and Game (IDFG). 2013. Idaho Department of Fish and Game 2013 Fisheries Management Plan 2013-2018. Idaho Department of Fish and Game, Boise, ID, USA. http://fishandgame.idaho.gov/public/fish/planfisheries.pdf

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA, WA 99362-1876

January 16, 2014

Mr. Rich Jackson
Natural Resource Specialist, Bureau of Reclamation
Upper Snake Field Office
470 22nd Street
Heyburn, ID 83336

Dear Mr. Jackson:

The Corps has reviewed the NEPA scoping documents related to the Proposed Interim Winter Operations at Ririe Dam and Reservoir. The Corps is responsible for flood control operations following Section 7 of the Flood Control Act of 1944. This project was authorized in 1967 by the Flood Control Act of October 23, 1962, 76 Stat. 1193 of Public Law 87-874 for the purposes of flood, irrigation, water supply, and recreation. The design for this project included a fixed 50,000 acre-feet winter flood storage space requirement that was defined by the Winter Standard Project Flood at Ririe Reservoir, *Ririe Dam and Reservoir Willow Creek, Idaho, Design Memorandum No. 1.*

We have attached to this letter a summary process schematic and written description that outlines the Corps process for alternatives that would change flood risk management space or winter operations with no change in flood risk. The Corps has provided Reclamation with a winter flood frequency curve that the Corps updated in February 2011. This is attached to ensure current information is available for any NEPA analyses.

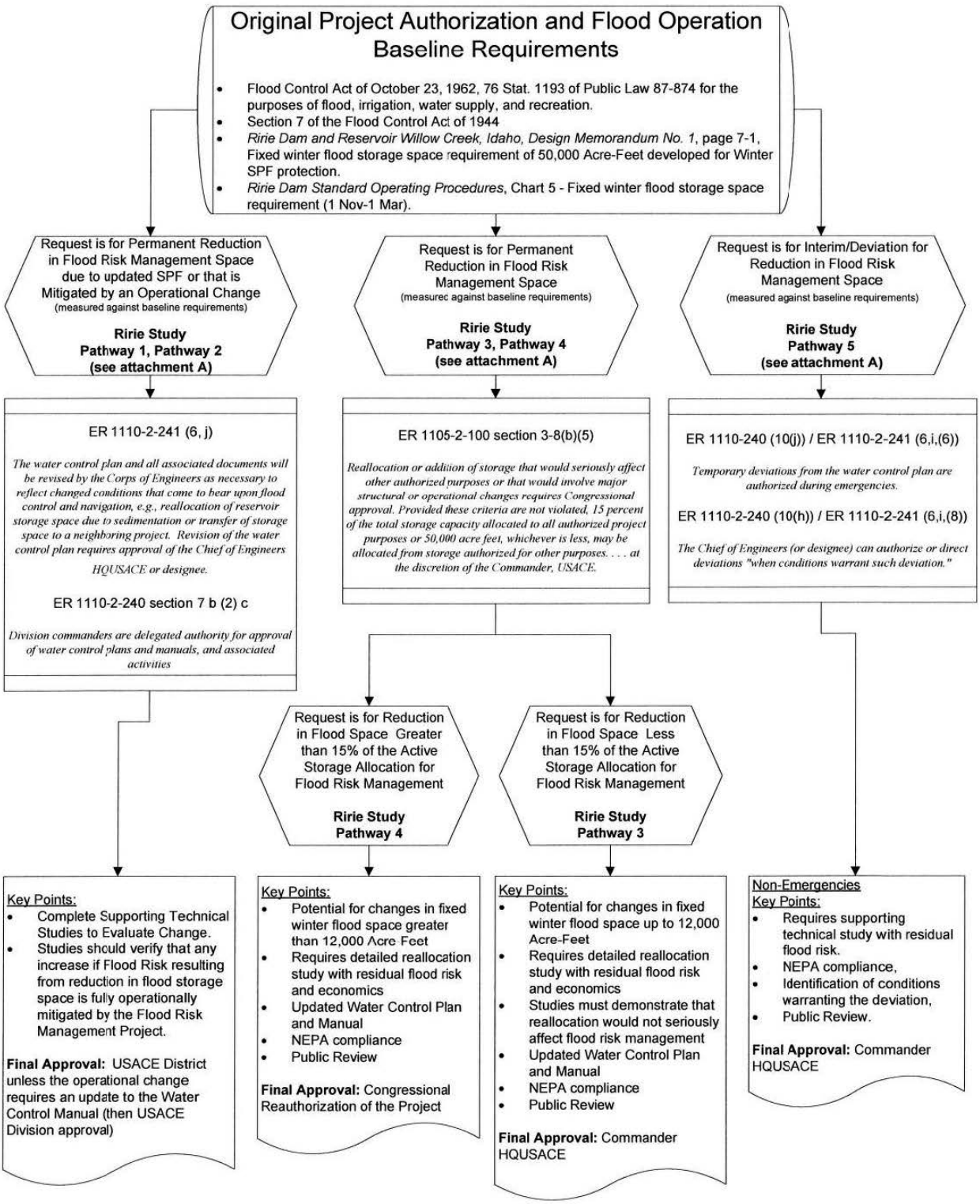
The Corps Walla Walla District looks forward to working with Reclamation to identify the appropriate analyses and datasets that will meet the requirements of the chosen process pathway.

Sincerely,

Brian D. Miller, P.E., PMP
Chief, Engineering and Construction Division

Enclosures

Ririe Flood Operations Study
Pathways for Reducing Ririe Reservoir Flood Risk Management Space
(CENWW-EC-H 1/14/2014)



US Army
Corps of Engineers
Walla Walla District

Ririe Flood Operations Study

Pathways for Reducing
Ririe Reservoir Flood Risk Management Space

Attachment A

January 14, 2014

STUDY PATHWAYS: The Corps outlined and discussed with Reclamation and Water District 1 the pathways available for revising flood operations at the Ririe Project. Five pathways were initially identified listed in increasing level of technical analysis; (1) Revising the Winter Standard Project Flood, (2) Operational changes for winter releases, (3) Reallocation Study with HQUSACE Approval, (4) Reallocation and Reauthorization study with Congressional Approval, and (5) Request for Interim Operations/Deviation. Each pathway is described in more detail as follows.

Pathway 1: Revising the Winter Standard Project Flood and the Water Control Plan

Description: ER 1110-2-241 (6, j) provides guidance for revisions to the Water Control Plan:

> *The water control plan and all associated documents will be revised by the Corps of Engineers as necessary to reflect changed conditions that come to bear upon flood control and navigation, e.g., reallocation of reservoir storage space due to sedimentation or transfer of storage space to a neighboring project. Revision of the water control plan requires approval of the Chief of Engineers HQUSACE or designee.*

The Winter Standard Project Flood is the governing space requirement for winter flood risk management space at Ririe Dam. The winter standard project flood was developed in Corps Design Documents dated 1965. Reanalysis of this storm event would provide necessary information to change the winter draft requirement.

Pathway 2: Operational Changes - Reduction in Flood Space Requirement due to Winter Release Capability (5,000 acre-feet)

Description: The capability to release water from Ririe Reservoir during the winter (1 November – 1 March) time period would allow for relaxation of the 50,000 acre-foot fixed space requirement to the extent that water could be evacuated from the time that a major flood event could be forecasted. Prior studies have indicated that the amount that could be released in anticipation of a major flood event would be approximately 5,000 acre-feet. Prior attempts at winter releases from Ririe Reservoir (1980's and 2011) indicate that this could be challenging. Studies would be required to determine how releases could be made successfully, in addition to field testing. This pathway, if testing indicated it could be successfully implemented, would result in a change in the winter operations with no change in flood risk protection. This

pathway, if successfully tested, would result in a win-win situation, granting some benefits to the irrigators while mitigating the loss of flood risk reduction space in the reservoir with winter project releases.

Pathway 3: Reallocation Study - Reduction in Flood Space Requirement Less than 15 percent (12,000 acre-feet) of Active Storage Allocation

Description: ER 1105-2-100 section 3-8(b)(5) provides guidance for this pathway:

> *Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. . . . at the discretion of the Commander, USACE.*

In order to reduce the requirement for flood control space in Ririe Reservoir for changes of less than fifteen percent, or approximately 12,000 acre feet, of project active capacity a reallocation study would be required for the Commander, USACE.

A reallocation study would include engineering (hydrology and hydraulic), economic, and environmental. The study would have to demonstrate that the reduction in winter flood risk management space would not seriously affect flood risk management. The studies would result in modifications to the Water Control Plan and Manual, NEPA compliance, and possibly cost sharing agreements for operations and maintenance. Section 5 of WRDA 1988 requires an opportunity for public review and comment before a change is made to reservoir operations involving reallocation of storage. The Corps also requires a public meeting when modifying a Water Control Plan.

Modeling of Ririe Reservoir operations would be required to compute the change in risk of winter flooding by the Winter Standard Project Flood and any residual impacts to spring flooding due to reduced required winter flood control space. This would include revision of existing rule curves and water control plan to allow for early evacuation of water in the spring in order to meet flood spring control space requirements. If it can be shown that this will not induce out of bank flooding for an acceptable level of flood risk, as determined by a Corps approved winter flood frequency curve, then limited environmental impacts and associated economic and NEPA review would be required. It is not anticipated that this level of flood risk change would trigger the community being placed in a shaded flood hazard area in the National Flood Insurance Program. This in turn reduces study expenses related to generating detailed flood risk mapping and economic analysis required by Federal guidelines, as well as the associated economic impacts to the City of Idaho Falls due to requirements for flood insurance for federally backed mortgages. Reviews by the Walla District Corps of Engineers including an Agency Technical Review as well as one by the Northwest Division of the Corps of Engineers would be required. The results of the study recommendations would be then forwarded to the Chief of Engineers at HQUSACE for a final decision.

Pathway 4: Reallocation and Reauthorization - Reduction in Flood Space Requirement Greater than 15 Percent (12,000 acre-feet) of Active Storage Allocations

Description: ER 1105-2-100 section 3-8(b)(5) provides guidance for this pathway:

> *Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. . . . at the discretion of the Commander, USACE.*

In order to reduce the requirement for flood control space in Ririe Reservoir for changes of greater than fifteen percent, or greater than 12,000 acre feet, of project active capacity, increased study efforts beyond Pathway 3 would need to be completed to address the community impacts related to reduced flood risk reduction benefits, including detailed mapping related to the community being mapped as a shaded flood hazard area in the National Flood Insurance Program. In addition, due to flows being out of bank at lower frequency levels it is likely that increased environmental studies would be required. Reviews by the Walla Walla District Corps of Engineers including an Agency Technical Review as well as one by the Northwest Division of the Corps of Engineers would be required. The study would be then forwarded to Headquarters U.S. Army Corps of Engineers for review before sending to Congress for a final decision on Congressional Reauthorization of the project.

Pathway 5: Deviations (Interim operations) – Reduction in Flood Risk Management Space

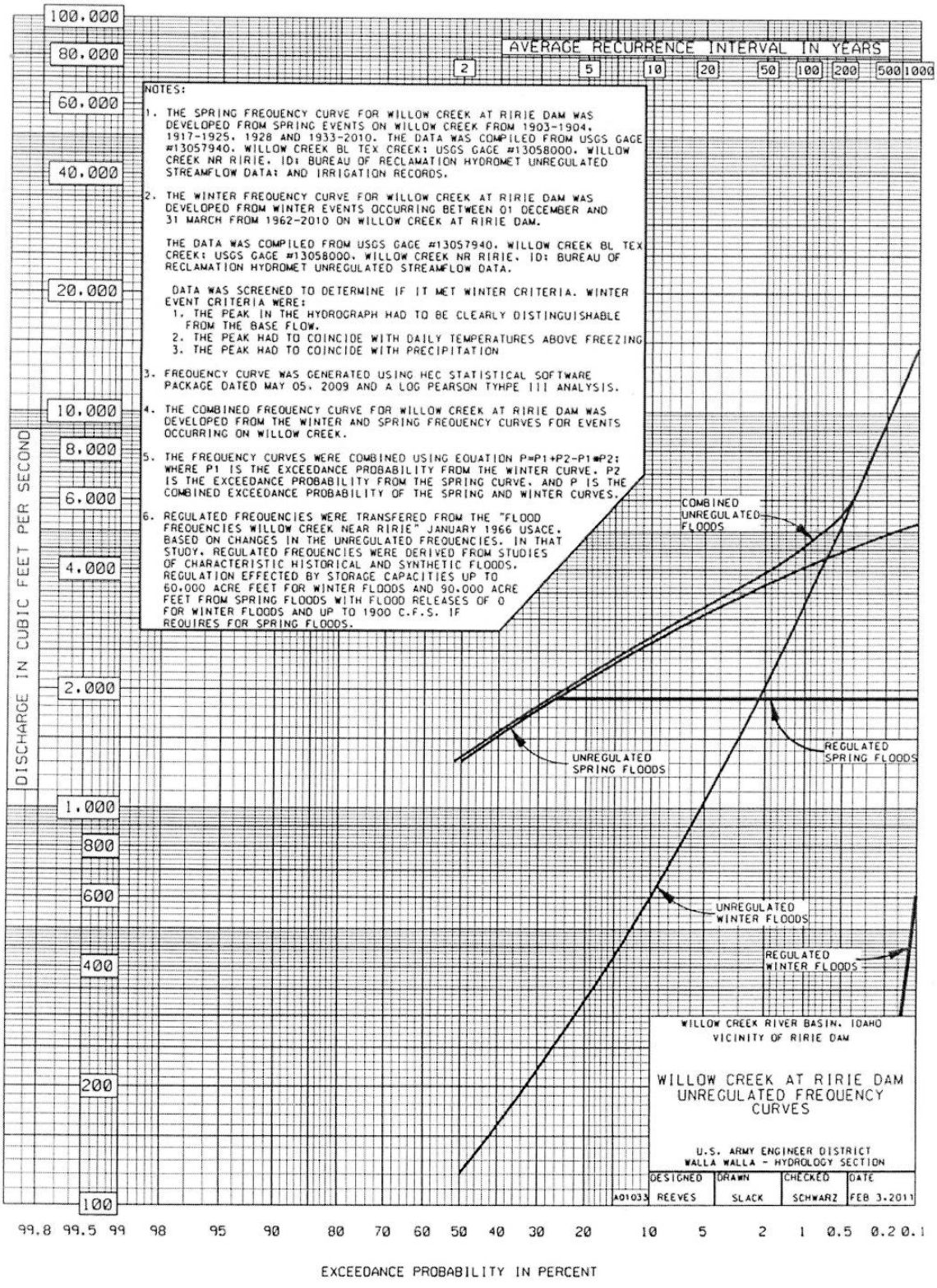
Description: ER 1110-240 (10(j)) / ER 1110-2-241 (6,i,(6))

> *Temporary deviations from the water control plan are authorized during emergencies.*

ER 1110-2-240 (10(h)) / ER 1110-2-241 (6,i,(8))

> *The Chief of Engineers (or designee) can authorize or direct deviations "when conditions warrant such deviation."*

The Reclamation Ririe study does not meet the criterion of being an emergency. The Corps other option for interim operations is with approval from the Chief of Engineers. The required technical study to accompany such a request would be near the level of analysis required for pathways (3) and (4).


AVERAGE RECURRENCE INTERVAL IN YEARS
2
5
10
20
50
100
200
500
1000
DISCHARGE IN CUBIC FEET PER SECOND
100,000
80,000
60,000
40,000
20,000
10,000
8,000
6,000
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2,000
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800
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400
200
100
99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1
EXCEEDANCE PROBABILITY IN PERCENT
NOTES:
1. THE SPRING FREQUENCY CURVE FOR WILLOW CREEK AT RIRIE DAM WAS DEVELOPED FROM SPRING EVENTS ON WILLOW CREEK FROM 1903-1904, 1917-1925, 1928 AND 1933-2010. THE DATA WAS COMPILED FROM USGS GAGE #13057940, WILLOW CREEK BL TEX CREEK; USGS GAGE #13058000, WILLOW CREEK NR RIRIE, ID; BUREAU OF RECLAMATION HYDROMET UNREGULATED STREAMFLOW DATA; AND IRRIGATION RECORDS.
2. THE WINTER FREQUENCY CURVE FOR WILLOW CREEK AT RIRIE DAM WAS DEVELOPED FROM WINTER EVENTS OCCURRING BETWEEN 01 DECEMBER AND 31 MARCH FROM 1962-2010 ON WILLOW CREEK AT RIRIE DAM.
THE DATA WAS COMPILED FROM USGS GAGE #13057940, WILLOW CREEK BL TEX CREEK; USGS GAGE #13058000, WILLOW CREEK NR RIRIE, ID; BUREAU OF RECLAMATION HYDROMET UNREGULATED STREAMFLOW DATA.
DATA WAS SCREENED TO DETERMINE IF IT MET WINTER CRITERIA. WINTER EVENT CRITERIA WERE:
1. THE PEAK IN THE HYDROGRAPH HAD TO BE CLEARLY DISTINGUISHABLE FROM THE BASE FLOW.
2. THE PEAK HAD TO COINCIDE WITH DAILY TEMPERATURES ABOVE FREEZING
3. THE PEAK HAD TO COINCIDE WITH PRECIPITATION
3. FREQUENCY CURVE WAS GENERATED USING HEC STATISTICAL SOFTWARE PACKAGE DATED MAY 05, 2009 AND A LOG PEARSON TYHPE III ANALYSIS.
4. THE COMBINED FREQUENCY CURVE FOR WILLOW CREEK AT RIRIE DAM WAS DEVELOPED FROM THE WINTER AND SPRING FREQUENCY CURVES FOR EVENTS OCCURRING ON WILLOW CREEK.
5. THE FREQUENCY CURVES WERE COMBINED USING EQUATION P=P1+P2-P1*P2; WHERE P1 IS THE EXCEEDANCE PROBABILITY FROM THE WINTER CURVE, P2 IS THE EXCEEDANCE PROBABILITY FROM THE SPRING CURVE, AND P IS THE COMBINED EXCEEDANCE PROBABILITY OF THE SPRING AND WINTER CURVES.
6. REGULATED FREQUENCIES WERE TRANSFERED FROM THE "FLOOD FREQUENCIES WILLOW CREEK NEAR RIRIE" JANUARY 1966 USACE, BASED ON CHANGES IN THE UNREGULATED FREQUENCIES. IN THAT STUDY, REGULATED FREQUENCIES WERE DERIVED FROM STUDIES OF CHARACTERISTIC HISTORICAL AND SYNTHETIC FLOODS. REGULATION EFFECTED BY STORAGE CAPACITIES UP TO 60,000 ACRE FEET FOR WINTER FLOODS AND 90,000 ACRE FEET FROM SPRING FLOODS WITH FLOOD RELEASES OF 0 FOR WINTER FLOODS AND UP TO 1900 C.F.S. IF REQUIRES FOR SPRING FLOODS.
COMBINED UNREGULATED FLOODS
UNREGULATED SPRING FLOODS
REGULATED SPRING FLOODS
UNREGULATED WINTER FLOODS
REGULATED WINTER FLOODS
WILLOW CREEK RIVER BASIN, IDAHO
VICINITY OF RIRIE DAM
WILLOW CREEK AT RIRIE DAM
UNREGULATED FREQUENCY CURVES
U.S. ARMY ENGINEER DISTRICT
WALLA WALLA - HYDROLOGY SECTION
DESIGNED REEVES
DRAWN SLACK
CHECKED SCHWARZ
DATE FEB 3,2011
A01033

CHART 2

DEPARTMENT OF THE ARMY
WALLA WALLA DISTRICT, CORPS OF ENGINEERS
201 NORTH THIRD AVENUE
WALLA WALLA WA 99362-1876

March 21, 2014

Mr. Jerrold Gregg
U.S. Bureau of Reclamation
Snake River Area Manager
230 Collins Road
Boise, Idaho 83702

Dear Mr. Gregg:

This correspondence is to formally update NEPA responses the Corps provided your agency January 16, 2014, related to *Proposed Interim Winter Operations at Ririe Dam and Reservoir*. After further review of the winter release operations and discussions with your staff, it was recognized that releases during the inflow hydrograph of the design winter storm were not included with releases prior to the inflow hydrograph when computing the total water volume migrated by allowing winter releases from Ririe Reservoir. Calculations indicate that 5,000 acre-feet of space can be mitigated by releases prior to the design storm inflow hydrograph, and another 3,000 acre-feet during the inflow rising limb. The total mitigation afforded by winter releases should be 8,000 acre-feet.

We have attached to this letter a summary process schematic and updated written description that outlines the Corps process for alternatives that would change flood risk management space or winter operations with no change in flood risk. The Corps has provided Reclamation with a winter flood frequency curve that the Corps updated in February 2011. This is attached to ensure current information is available for any NEPA analyses.

My point of contact for this matter is Mr. Tracy Schwarz (509-527-7522).

Sincerely,

Brian D. Miller, P.E., PMP
Chief, Engineering and Construction Division

Enclosure

Ririe Flood Operations Study
Pathways for Reducing Ririe Reservoir Flood Risk Management Space
(CENWW-EC-H 1/14/2014)

Original Project Authorization and Flood Operation Baseline Requirements

- Flood Control Act of October 23, 1962, 76 Stat. 1193 of Public Law 87-874 for the purposes of flood, irrigation, water supply, and recreation.
- Section 7 of the Flood Control Act of 1944
- *Ririe Dam and Reservoir Willow Creek, Idaho, Design Memorandum No. 1*, page 7-1, Fixed winter flood storage space requirement of 50,000 Acre-Feet developed for Winter SPF protection.
- *Ririe Dam Standard Operating Procedures*, Chart 5 - Fixed winter flood storage space requirement (1 Nov-1 Mar).

Request is for Permanent Reduction in Flood Risk Management Space due to updated SPF or that is Mitigated by an Operational Change
(measured against baseline requirements)

Ririe Study
Pathway 1, Pathway 2
(see attachment A)

ER 1110-2-241 (6, j)

The water control plan and all associated documents will be revised by the Corps of Engineers as necessary to reflect changed conditions that come to bear upon flood control and navigation, e.g., reallocation of reservoir storage space due to sedimentation or transfer of storage space to a neighboring project. Revision of the water control plan requires approval of the Chief of Engineers HQUSACE or designee.

ER 1110-2-240 section 7 b (2) c

Division commanders are delegated authority for approval of water control plans and manuals, and associated activities.

Request is for Permanent Reduction in Flood Risk Management Space
(measured against baseline requirements)

Ririe Study
Pathway 3, Pathway 4
(see attachment A)

ER 1105-2-100 section 3-8(b)(5)

Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. . . at the discretion of the Commander, USACE.

Request is for Interim/Deviation for Reduction in Flood Risk Management Space
(measured against baseline requirements)

Ririe Study
Pathway 5
(see attachment A)

ER 1110-240 (10(j)) / ER 1110-2-241 (6,i,(6))

Temporary deviations from the water control plan are authorized during emergencies.

ER 1110-2-240 (10(h)) / ER 1110-2-241 (6,i,(8))

The Chief of Engineers (or designee) can authorize or direct deviations "when conditions warrant such deviation."

Request is for Reduction in Flood Space Greater than 15% of the Active Storage Allocation for Flood Risk Management

Ririe Study
Pathway 4

Request is for Reduction in Flood Space Less than 15% of the Active Storage Allocation for Flood Risk Management

Ririe Study
Pathway 3

Key Points:
- Complete Supporting Technical Studies to Evaluate Change.
- Studies should verify that any increase if Flood Risk resulting from reduction in flood storage space is fully operationally mitigated by the Flood Risk Management Project

Final Approval: USACE District unless the operational change requires an update to the Water Control Manual (then USACE Division approval)

Key Points:
- Potential for changes in fixed winter flood space greater than 12,000 Acre-Feet
- Requires detailed reallocation study with residual flood risk and economics
- Updated Water Control Plan and Manual
- NEPA compliance
- Public Review

Final Approval: Congressional Reauthorization of the Project

Key Points:
- Potential for changes in fixed winter flood space up to 12,000 Acre-Feet
- Requires detailed reallocation study with residual flood risk and economics
- Studies must demonstrate that reallocation would not seriously affect flood risk management
- Updated Water Control Plan and Manual
- NEPA compliance
- Public Review

Final Approval: Commander HQUSACE

Non-Emergencies
Key Points:
- Requires supporting technical study with residual flood risk
- NEPA compliance.
- Identification of conditions warranting the deviation.
- Public Review

Final Approval: Commander HQUSACE

US Army
Corps of Engineers
Walla Walla District

Ririe Flood Operations Study

Pathways for Reducing
Ririe Reservoir Flood Risk Management Space

Attachment A

Rev. March 19, 2014

STUDY PATHWAYS: The Corps outlined and discussed with Reclamation and Water District 1 the pathways available for revising flood operations at the Ririe Project. Five pathways were initially identified listed in increasing level of technical analysis; (1) Revising the Winter Standard Project Flood, (2) Operational changes for winter releases, (3) Reallocation Study with HQUSACE Approval, (4) Reallocation and Reauthorization study with Congressional Approval, and (5) Request for Interim Operations/Deviation. Each pathway is described in more detail as follows.

Pathway 1: Revising the Winter Standard Project Flood and the Water Control Plan

Description: ER 1110-2-241 (6, j) provides guidance for revisions to the Water Control Plan:

> *The water control plan and all associated documents will be revised by the Corps of Engineers as necessary to reflect changed conditions that come to bear upon flood control and navigation, e.g., reallocation of reservoir storage space due to sedimentation or transfer of storage space to a neighboring project. Revision of the water control plan requires approval of the Chief of Engineers HQUSACE or designee.*

The Winter Standard Project Flood is the governing space requirement for winter flood risk management space at Ririe Dam. The winter standard project flood was developed in Corps Design Documents dated 1965. Reanalysis of this storm event would provide necessary information to change the winter draft requirement.

Pathway 2: Operational Changes - Reduction in Flood Space Requirement due to Winter Release Capability (approximately 8,000 acre-feet)

Description: The capability to release water from Ririe Reservoir during the winter (1 November – 1 March) time period would allow for relaxation of the 50,000 acre-foot fixed space requirement to the extent that water could be evacuated from the time that a major flood event could be forecasted. Prior field studies and subsequent analysis have indicated that the amount that could be released in anticipation of and during a major flood event would be approximately 8,000 acre-feet. Prior attempts at winter releases from Ririe Reservoir (1980's and 2011) indicate that this could be challenging. Studies would be required to determine how releases could be made successfully, in addition to field testing. This pathway, if testing indicated it could be successfully implemented, would result in a change in the winter

operations with no change in flood risk protection. This pathway, if successfully tested, would result in a win-win situation, granting some benefits to the irrigators while mitigating the loss of flood risk reduction space in the reservoir with winter project releases.

Pathway 3: Reallocation Study - Reduction in Flood Space Requirement Less than 15 percent (12,000 acre-feet) of Active Storage Allocation

Description: ER 1105-2-100 section 3-8(b)(5) provides guidance for this pathway:

> *Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. . . . at the discretion of the Commander, USACE.*

In order to reduce the requirement for flood control space in Ririe Reservoir for changes of less than fifteen percent, or approximately 12,000 acre feet, of project active capacity a reallocation study would be required for the Commander, USACE.

A reallocation study would include engineering (hydrology and hydraulic), economic, and environmental. The study would have to demonstrate that the reduction in winter flood risk management space would not seriously affect flood risk management. The studies would result in modifications to the Water Control Plan and Manual, NEPA compliance, and possibly cost sharing agreements for operations and maintenance. Section 5 of WRDA 1988 requires an opportunity for public review and comment before a change is made to reservoir operations involving reallocation of storage. The Corps also requires a public meeting when modifying a Water Control Plan.

Modeling of Ririe Reservoir operations would be required to compute the change in risk of winter flooding by the Winter Standard Project Flood and any residual impacts to spring flooding due to reduced required winter flood control space. This would include revision of existing rule curves and water control plan to allow for early evacuation of water in the spring in order to meet flood spring control space requirements. If it can be shown that this will not induce out of bank flooding for an acceptable level of flood risk, as determined by a Corps approved winter flood frequency curve, then limited environmental impacts and associated economic and NEPA review would be required. It is not anticipated that this level of flood risk change would trigger the community being placed in a shaded flood hazard area in the National Flood Insurance Program. This in turn reduces study expenses related to generating detailed flood risk mapping and economic analysis required by Federal guidelines, as well as the associated economic impacts to the City of Idaho Falls due to requirements for flood insurance for federally backed mortgages. Reviews by the Walla District Corps of Engineers including an Agency Technical Review as well as one by the Northwest Division of the Corps of Engineers would be required. The results of the study recommendations would be then forwarded to the Chief of Engineers at HQUSACE for a final decision.

Pathway 4: Reallocation and Reauthorization - Reduction in Flood Space Requirement Greater than 15 Percent (12,000 acre-feet) of Active Storage Allocations

Description: ER 1105-2-100 section 3-8(b)(5) provides guidance for this pathway:

> *Reallocation or addition of storage that would seriously affect other authorized purposes or that would involve major structural or operational changes requires Congressional approval. Provided these criteria are not violated, 15 percent of the total storage capacity allocated to all authorized project purposes or 50,000 acre feet, whichever is less, may be allocated from storage authorized for other purposes. . . . at the discretion of the Commander, USACE.*

In order to reduce the requirement for flood control space in Ririe Reservoir for changes of greater than fifteen percent, or greater than 12,000 acre feet, of project active capacity, increased study efforts beyond Pathway 3 would need to be completed to address the community impacts related to reduced flood risk reduction benefits, including detailed mapping related to the community being mapped as a shaded flood hazard area in the National Flood Insurance Program. In addition, due to flows being out of bank at lower frequency levels it is likely that increased environmental studies would be required. Reviews by the Walla Walla District Corps of Engineers including an Agency Technical Review as well as one by the Northwest Division of the Corps of Engineers would be required. The study would be then forwarded to Headquarters U.S. Army Corps of Engineers for review before sending to Congress for a final decision on Congressional Reauthorization of the project.

Pathway 5: Deviations (Interim operations) – Reduction in Flood Risk Management Space

Description: ER 1110-240 (10(j)) / ER 1110-2-241 (6,i,(6))

> *Temporary deviations from the water control plan are authorized during emergencies.*

ER 1110-2-240 (10(h)) / ER 1110-2-241 (6,i,(8))

> *The Chief of Engineers (or designee) can authorize or direct deviations "when conditions warrant such deviation."*

The Reclamation Ririe study does not meet the criterion of being an emergency. The Corps other option for interim operations is with approval from the Chief of Engineers. The required technical study to accompany such a request would be near the level of analysis required for pathways (3) and (4).

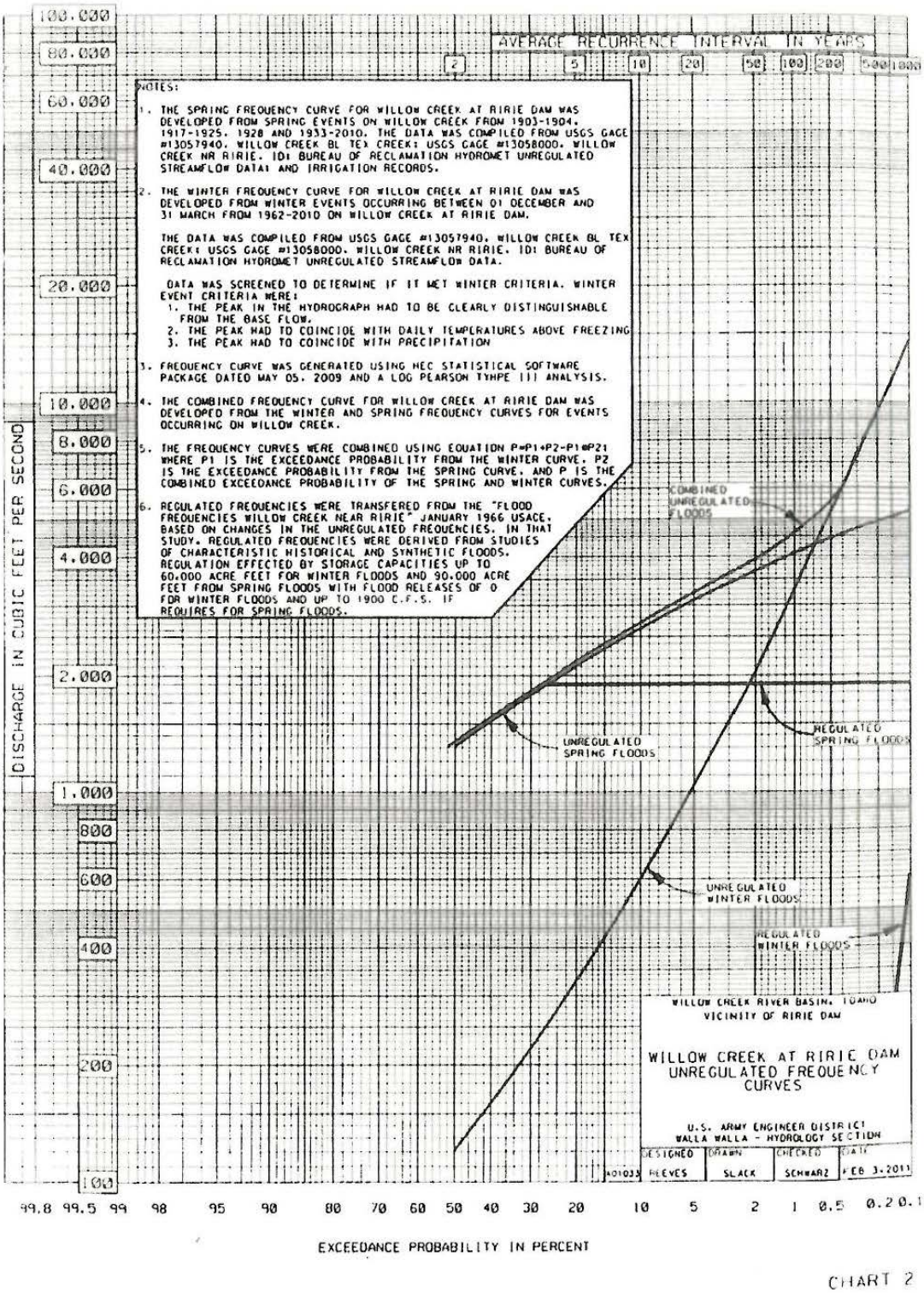
AVERAGE RECURRENCE INTERVAL IN YEARS
2
5
10
20
50
100
200
500
1000
DISCHARGE IN CUBIC FEET PER SECOND
100,000
80,000
60,000
40,000
20,000
10,000
8,000
6,000
4,000
2,000
1,000
800
600
400
200
100
NOTES:
1. THE SPRING FREQUENCY CURVE FOR WILLOW CREEK AT RIRIE DAM WAS DEVELOPED FROM SPRING EVENTS ON WILLOW CREEK FROM 1903-1904, 1917-1925, 1928 AND 1933-2010. THE DATA WAS COMPILED FROM USGS GAGE #13057940, WILLOW CREEK BL TEX CREEK; USGS GAGE #13058000, WILLOW CREEK NR RIRIE, ID; BUREAU OF RECLAMATION HYDROMET UNREGULATED STREAMFLOW DATA; AND IRRIGATION RECORDS.
2. THE WINTER FREQUENCY CURVE FOR WILLOW CREEK AT RIRIE DAM WAS DEVELOPED FROM WINTER EVENTS OCCURRING BETWEEN 01 DECEMBER AND 31 MARCH FROM 1962-2010 ON WILLOW CREEK AT RIRIE DAM.
THE DATA WAS COMPILED FROM USGS GAGE #13057940, WILLOW CREEK BL TEX CREEK; USGS GAGE #13058000, WILLOW CREEK NR RIRIE, ID; BUREAU OF RECLAMATION HYDROMET UNREGULATED STREAMFLOW DATA.
DATA WAS SCREENED TO DETERMINE IF IT MET WINTER CRITERIA. WINTER EVENT CRITERIA WERE:
1. THE PEAK IN THE HYDROGRAPH HAD TO BE CLEARLY DISTINGUISHABLE FROM THE BASE FLOW.
2. THE PEAK HAD TO COINCIDE WITH DAILY TEMPERATURES ABOVE FREEZING
3. THE PEAK HAD TO COINCIDE WITH PRECIPITATION
3. FREQUENCY CURVE WAS GENERATED USING HEC STATISTICAL SOFTWARE PACKAGE DATED MAY 05, 2009 AND A LOG PEARSON TYPE III ANALYSIS.
4. THE COMBINED FREQUENCY CURVE FOR WILLOW CREEK AT RIRIE DAM WAS DEVELOPED FROM THE WINTER AND SPRING FREQUENCY CURVES FOR EVENTS OCCURRING ON WILLOW CREEK.
5. THE FREQUENCY CURVES WERE COMBINED USING EQUATION P=P1+P2-P1*P21 WHERE P1 IS THE EXCEEDANCE PROBABILITY FROM THE WINTER CURVE, P2 IS THE EXCEEDANCE PROBABILITY FROM THE SPRING CURVE, AND P IS THE COMBINED EXCEEDANCE PROBABILITY OF THE SPRING AND WINTER CURVES.
6. REGULATED FREQUENCIES WERE TRANSFERED FROM THE "FLOOD FREQUENCIES WILLOW CREEK NEAR RIRIE" JANUARY 1966 USACE, BASED ON CHANGES IN THE UNREGULATED FREQUENCIES. IN THAT STUDY, REGULATED FREQUENCIES WERE DERIVED FROM STUDIES OF CHARACTERISTIC HISTORICAL AND SYNTHETIC FLOODS. REGULATION EFFECTED BY STORAGE CAPACITIES UP TO 60,000 ACRE FEET FOR WINTER FLOODS AND 90,000 ACRE FEET FROM SPRING FLOODS WITH FLOOD RELEASES OF 0 FOR WINTER FLOODS AND UP TO 1900 C.F.S. IF REQUIRES FOR SPRING FLOODS.
COMBINED UNREGULATED FLOODS
UNREGULATED SPRING FLOODS
REGULATED SPRING FLOODS
UNREGULATED WINTER FLOODS
REGULATED WINTER FLOODS
99.8 99.5 99 98 95 90 80 70 60 50 40 30 20 10 5 2 1 0.5 0.2 0.1
EXCEEDANCE PROBABILITY IN PERCENT
WILLOW CREEK RIVER BASIN, IDAHO
VICINITY OF RIRIE DAM
WILLOW CREEK AT RIRIE DAM
UNREGULATED FREQUENCY CURVES
U.S. ARMY ENGINEER DISTRICT
WALLA WALLA - HYDROLOGY SECTION
DESIGNED REEVES
DRAWN SLACK
CHECKED SCHWARZ
DATE FEB 3, 2011
A01035

CHART 2

APPENDIX C
TRIBAL CORRESPONDENCE

United States Department of the Interior

BUREAU OF RECLAMATION
Pacific Northwest Region
Snake River Area Office
230 Collins Road
Boise, ID 83702-4520

JUN 30 2014

IN REPLY REFER TO:
MSF-6135
LND-1.10

Honorable Nathan Small
Chairman
Fort Hall Business Council
P.O. Box 306
Fort Hall, ID 83203-0306

Subject: Request for Information Regarding Potential Areas of Traditional Religious and Cultural Importance around Ririe Reservoir, Ririe Project

Dear Chairman:

In a letter dated November 22, 2013, Reclamation provided notification that the agency was intending to prepare an Environmental Assessment (EA) on Proposed Interim Winter Operations at Ririe Reservoir in southeastern Idaho (Figure 1). The action alternative is proposed to reduce winter drawdown in that reservoir for a 10-year interim period to improve refill reliability and increase water availability for irrigation without an increase to downstream flood risk.

As required at 36 CFR Part 800.2(c)(ii)(A), Reclamation is contacting you to ensure that consultation in the section 106 process provides your Tribe a reasonable opportunity to 1) identify any concerns about traditional religious and cultural importance, 2) articulate any views on the undertaking's effects on such properties, and 3) participate in the resolution of adverse effects, if there are determined to be such.

A records review has revealed that no known eligible historic properties (i.e. archeological or historic-era sites) within the Area of Potential Effect (full pool) will be adversely affected by the proposed project activities. Sites located above the high water line will remain above the high water line, and inundated sites will remain inundated. Reclamation respectfully requests that you contact Reclamation if any areas of traditional religious and/or cultural importance exist around Ririe Reservoir for which there may be concern if this project moves forward. As the scoping efforts for the EA have specified, there will be no construction activities involved and only a change in winter operations of the reservoir.

Please provide comments or direct any questions to Ms. Allyn Meuleman, Snake River Area Office Native American Affairs Coordinator, at 208-383-2258 or gmeuleman@usbr.gov.

Sincerely,

Christopher Beardsley
Deputy Area Manager

Enclosures – 1

cc: Honorable Jason S. Walker
Chairman, Tribal Council
707 N Main Street
Birgham, UT 84302
Burns, OR 97720-9303

Honorable Lindsey Manning
Chairperson
Shoshone-Paiute Tribal Council
P.O. Box 219
Owyhee, NV 89832

Honorable Charlotte Rodrique
Chairperson
Burns-Paiute General Council
HC-71, 100 Pasigo St.
Burns, OR 97720-9303

Honorable Silas C. Whitman
Chairman
Nez Perce Tribal Executive Committee
P.O.Box 305
Lapwai, ID 83540

United States Department of the Interior

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Pacific Northwest Region
Snake River Area Office
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Boise, ID 83702-4520

JUN 30 2014

IN REPLY REFER TO:
MSF-6135
LND-1.10

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Chairman
Nez Perce Tribal Executive Committee
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Lapwai, ID 83540

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MSF-6135
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JUN 30 2014

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LND-1.10

JUN 30 2014

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Fort Hall, ID 83203-0306

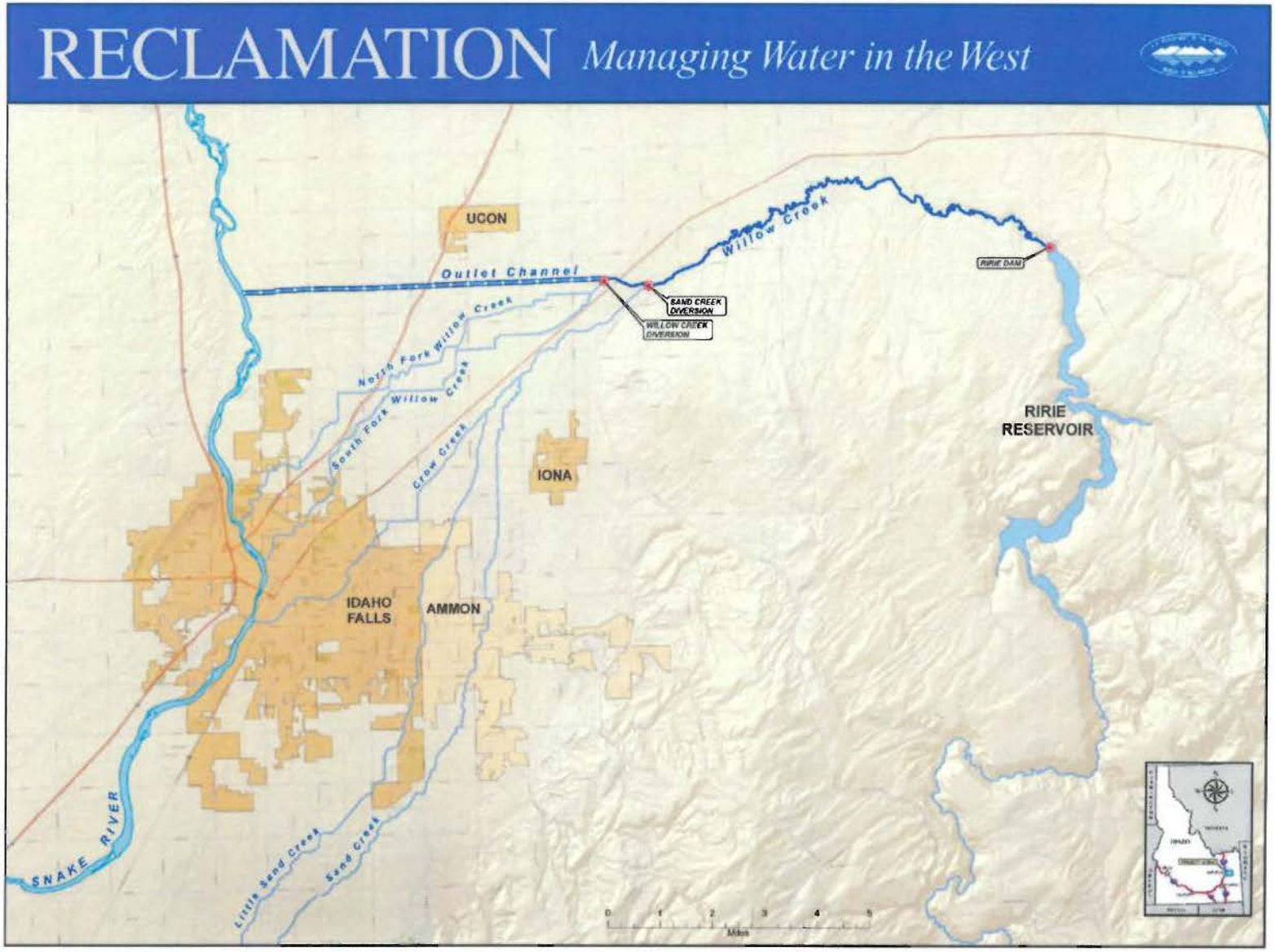

Figure 1. Location of Ririe Reservoir in southeastern Idaho, with full pool level representing the Area of Potential Effect for the proposed change in winter operations.

APPENDIX D
EA DISTRIBUTION LIST

Federal Agencies and Elected Officials

Honorable Mike Crapo
United States Senator
Attn: Mr. Don Dixon
Idaho Falls Office
410 Memorial Drive, Suite 204
Idaho Falls ID 83402

Honorable Mike Simpson
Member U.S. House of Representatives
Attn: Colleen Erickson
410 Memorial Drive, Suite 203
Idaho Falls ID 83402

Honorable Jim Risch
United States Senator
Attn: Amy Taylor
901 Pier View Drive, Suite 202A
Idaho Falls ID 83402

Mr. Rob Brochu
Environmental Resources Specialist
U.S. Army Corps of Engineers
900 N Skyline Drive, Suite A
Idaho Falls ID 83402

Mr. Brent Bishchoff
District Manager
Bonneville Power Administration
Idaho Falls Regional Office
1350 Lindsey Blvd.
Idaho Falls ID 83402

Mr. Dean Fox
Acting Superintendent
Bureau of Indian Affairs
PO Box 200
Fort Hall ID 83202-0220

Bureau of Indian Affairs
Fort Hall Agency Fort Hall Irrigation District
PO Box 220
Fort Hall ID 83203

Mr. Cory Loveland
Service Hydrologist
National Weather Service
1945 Beechcraft Avenue
Pocatello ID 83204-7446

Mr. Jim Werntz
Environmental Protection Agency
Idaho Operations Office
950 Bannock Street
Boise ID 83702

Mr. Brian Kelly
State Supervisor
U.S. Fish and Wildlife Service
Snake River Fish and Wildlife Office
1387 S Vinnell Way, Suite 368
Boise ID 83709

Ms. Tracy Casselman
Project Leader
U.S. Fish and Wildlife Service
Southeast Idaho Refuge Complex
4425 Burley Drive, Suite A
Chubbuck ID 83202

Mr. Joe Kraayenbrink
District Manager
Bureau of Land Management
Idaho Falls District
1405 Hollipark Drive
Idaho Falls ID 83401

Ms. Wendy Reynold
Field Manager
Bureau of Land Management
Idaho Falls District
1405 Hollipark Drive
Idaho Falls ID 83401

Mr. Mike Webster
Field Representative
Governor's Office
1515 East Lincoln Road
Idaho Falls ID 83401

Mr. Vernon Preston
Warning Coordination Meteorologist
National Weather Service
Pocatello Weather Forecast Office
1945 Beachcraft Avenue
Pocatello ID 83204

U.S. Fish and Wildlife Service
Special Agent Office
1820 East 17th Street, Suite 115
Idaho Falls ID 83404-6472

Mr. David Kampwerth
Assistant Field Supervisor
U.S. Fish and Wildlife Service
Eastern Idaho Field Office
4425 Burley Drive, Suite A
Chubbuck ID 83202

Mr. Mike Francis
Chief Environmental Compliance
U.S. Army Corps of Engineers
Walla Walla District Headquarters
201 North 3rd Avenue
Walla Walla WA 99362-1876

Mr. Tracy Schwarz
Section Chief
U.S. Army Corps of Engineers
Walla Walla District Headquarters
201 North 3rd Avenue
Walla Walla WA 99362-1876

Ms. Ellen Berggren
Project Manager
U.S. Army Corps of Engineers
Boise Outreach Office
720 Park Blvd., Suite 255
Boise ID 83712

Mr. Randy Thompson
Acting Superintendent
Fort Hall Agency BIA
PO Box 220
Fort Hall ID 83202-0220

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APPENDIX E
RECLAMATION'S RESPONSES TO COMMENTS

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
USACE	5	10	1.2.6	The Corps did not direct Reclamation to release water on February 7, 2011. Attachment A is the subject Corps letter to the USBR dated January 4, 2011. The letter proposes that the USBR release water, but did not direct such activity. Per the SOP it is Reclamations decision if it is safe to evacuate water. This fact was noted in the letter. Recommend text: "On January 4, 2011 Reclamation was supported by the Corps to release water from Ririe Dam…"	Reclamation revised the Final EA to state, "On February 7, 2011 Reclamation received a letter from the Corps proposing that Reclamation release water from Ririe Dam down floodway outlet channel to evacuate flood control space (Corps 2011a)."
USACE	5	10	1.2.6	Corps letter was January 4, 2011, not February 7, 2011. It is cited correctly in the references.	Reclamation revised the Final EA to reflect the January 4, 2011 date, and will remove the February 7, 2011 date.
USACE	10	23-25	1.7.3.	This statement in Section 1.7.3 lines 23-25 can be found in the Ririe SOP. This statement indicates that we cannot release water from the reservoir during a large winter storm as the conveyance channels are filled with local runoff downstream the Dam. The EA report needs to address this in Section 3.2.1. Section 3.2.1 should include statements and analysis demonstrating that all conveyance systems below the project are not needed for local runoff during the period of evacuation for a large winter storm or SPF type event and that the balance of the channel capacity is available for winter releases when a large event is forecasted upstream Ririe Dam.	Sand and Willow Creek channels below the bifurcation are not used to recover flood control space in anticipation of a storm. These channels collect much of the local runoff and have the most potential for damage resulting from flood flows. Only Willow Creek above the bifurcation and the Ririe Outlet Channel are used for evacuation. Travel time for flow changes from Ririe Dam to the Bifurcation is not more than the time required for precipitation to accumulate and develop overland flow to the channels so operations can be timed to keep a consistent flow in the Outlet during the transition from flood preparation to flood operation. Local flows intercepted by the Outlet constitute a small portion of total flood flows. Observed local flooding along the outlet has been the result of plugged inlets and ponding in the Outlet caused by accumulated snow.

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
					Evacuation flows and channel clearing efforts will result in improve collection of these local inflows and reduce flooding along the channel.
USACE	20	27	2.1	Figure 2-1 is an effective comparison of the Water Control Manual, No Action Alternative, and Alternative 1. This statement referenced the SOP 50,000 acre-feet fixed space requirement. Need to make clear how this ties into the USBR No-Action alternative with 55,000 acre-feet.	In Section 1.6.3 Operations, Winter, in the last paragraph identifies that "Since 1981, winter flows have been suspended to avoid ice problems in Willow Creek below Ririe Dam. Once winter flows were suspended, an additional 5,000 acre-feet of fall drawdown has been provided each year to reduce encroachment into the required winter flood control space." That information, in conjunction with Section 2.3.1 succinctly ties winter flood control space criteria identified in the No-action alternate (55,000 acre-feet) to what is identified in the Water Control Manual (50,000 acre-feet).
USACE	24	14-15	2.5	Reclamation is responsible for O&M of the flood control project. The Corps would participate in discussions; however the MOA for channel cleaning, and to decide to store additional water before the storage season, would be between Reclamation and Mitigation Inc. This needs to be changed in all locations in the document where it is referenced.	Reclamation changed statements on flood control O&M within the Draft EA to reflect that: Reclamation is responsible for channel cleaning for flood control; Reclamation and Mitigation Inc. would enter into a MOA to specify duties and roles for channel cleaning; and Reclamation would coordinate with the Corps on the channel cleaning specifics.
USACE	24		2.5	Reclamation will need to provide the Corps a standing statement related to the Ririe SOP (page 5-11) stating that Reclamation has determined that Releases up to 900 cfs can be made at any time during Cold Weather Operations.	Reclamation will work with the Corps to establish parameters for winter water releases up to 900 cfs using results from the 2013 Ririe Reservoir Winter Release Test and CRREL Review of Ririe Reservoir Winter Release Test Plan (2012).

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
USACE	39	21	3.2.2	Figure 2-1, page 25, is an effective comparison of the Water Control Manual, No Action Alternative, and Alternative 1. Need to explain in the text on page 39 that the No Action Alternative's extra 5 KAF is a hedge on the Water Control Manual space requirement due to restricted winter release. A hedge also may be desired on Alternative 1 to evade an immediate release of inflow on November 2.	Reclamation adjusted the sentence on page 39, line 29 to state, "Water would be delivered for irrigation in the summer or evacuated (with an additional 5,000 acre-feet) in the fall to achieve the flood control required by the operating rules for flood control, 1976, just as in past years" to better explain the extra 5,000 acre-feet of water in the No Action alternative.
USACE	40	23-24	3.2.2	This alternative does not limit the amount of release to 8,000 acre-feet to reserve the 42,000 acre-feet of space. There is no limit on the amount of release required to reserve the 42,000 acre-feet of space. Revise sentence to read "…operation plan that includes winter releases of 8,000 acre-feet to reserve 50,000 acre-feet of space in anticipation of/during…"	Reclamation revised sentence on page 40, line 23-24 to state "…operation plan that includes winter releases of 8,000 acre-feet to reserve 50,000 acre-feet of space in anticipation of/during…"
USACE	44	1-4	3.2.2	It is not easily discernible what is meant by "The decision to store additional water would occur … could possibly negate the need for winter releases". Does that mean that this alternative can be invoked at the beginning of each year? If so, need to state that clearly.	Reclamation added the sentence on page 44, line 3 that states "If it is determined prior to November 1, that Alternative 1 is not implemented in a given year; the No Action alternative would be implemented, and could negate the need for possible winter releases."
USACE	Throughout EA			Upon further legal review, for operational changes that do not require an update to the Water Control Manual (Ririe-SOP), the USACE District would coordinate with the USBR on the operational change such as proposed in Alternative 1, not provide approval/non-approval. This change is needed	Upon further consideration, Reclamation agrees with the Corps' statement that the operational change identified in Alternative 1 is under Reclamation's operational discretion and does not need approval from the Corps.

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
				throughout the document. Attachment B is an updated pathways document that reflects this change from USACE for Pathway 2.	
Mitigation Inc. #1				Mitigation, Inc., along with many other water users and municipalities, would like to see a more concerted effort toward updating the Ririe Reservoir winter flood control rule curves.	The purpose of the proposed action is to improve Ririe Reservoir refill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk, not to adjust winter flood control curves. Updating the Ririe Reservoir winter flood control rule curves is outside the scope of this project.
Mitigation Inc. #2				The Draft EA analysis of channel cleaning costs against additional storage revenues considers only the time period from 1994 through 2012. A time interval dating from the 1970's to present would give a more accurate prediction of the potential storage increases, especially when the years 1987 through 1992 are examined.	A financial analysis was conducted to compare the estimated rental pool revenues generated from additional storage in Ririe Reservoir and other upper Snake River system reservoirs to the additional costs required for channel cleaning. The financial analysis uses a 10-year analysis period to be consistent with the 10-year interim operations period discussed in Section 3.2. In Section 3.2.1 Hydrology, Affected Environment, Information Used in the Analyses, states "From water year 1979 to 1993, Ririe Reservoir was drawn to a maximum elevation of 5082.2 feet at the beginning of winter, which required releasing all inflow as it occurred. This caused periodic problems with channel icing downstream. The Ririe Reservoir Water Control Manual (Corps 2011b) states that if minimum winter flows "are not maintained, i.e., equal to at

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
					least inflow, additional space will be required to store winter inflow." Additionally, the Fort Hall Settlement was enacted in 1990 and Reclamation's subsequent contract with Mitigation Inc. for storage in Ririe Reservoir was signed on March 31, 1994. This contract covers the entire irrigation capacity of Ririe Reservoir and resulted in a structured demand for Ririe Reservoir water. As a result of winter ice problems and in order to manage more efficiently with the Mitigation, Inc. contract in place, the initial winter storage was limited to a maximum of 5077.1 acre-feet (5,000 acre-feet below 5082.2 feet) beginning in 1994. This resulted in winter releases being eliminated in most years. This operation was consistent with current operations, so data used in the analyses was limited to the period beginning in water year 1994. Reclamation and Corps' winter release test was conducted in water year 2013. As part of the test, winter operations at Ririe Reservoir were similar to Alternative 1, rather than the No Action alternative. Therefore, water year 2013 was not included in the analysis comparing the Alternatives. Water years 1994-2012 comprise the period used for analysis in this EA."
Mitigation Inc. #3				The Draft EA does not resolve the concerns of the water users who were supposed to have been mitigated for an inadequate water supply as a residual result of the 1990 Fort	The purpose of action is to improve Ririe Reservoir refill reliability and increase water availability for irrigation and other water demands in southern Idaho without

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
				Hall Water Rights Agreement, and it fails to properly provide the proper balance between valuable storage water supplies and flood control. Furthermore, it does not sufficiently resolve the Ririe Dam Standard Operating Procedures listed in 5-02a.	increasing downstream flood risk. Addressing the water supply inadequacies of the 1990 Fort Hall Water Rights Agreement is outside the scope of this project. Although no flood approaching the Standard Project Flood (SPF) or even the February, 1962 storm has been observed on Willow Creek over the last 50 years, experience nationwide has shown that extreme events do occur. The Corps has provided an update to their frequency curves, dated February 3, 2011, and does not believe that a change in Chart 5 (Operating Curves for Flood Control) is deemed necessary. Evacuation in anticipation of a forecast storm is an effort toward a better regulation technique.
Idaho Ground Water Appropriators, Inc.				IGWA is greatly disappointed with the draft EA and opposes the Bureau of Reclamation's EA. It seems that Reclamation Phase One 2010 study shows that 50,000 acre-feet of water does not need to be evacuated from the Ririe Reservoir fall flood control release during some years and the overall average of 30,000 acre-feet would be enough. IGWA doesn't believe that an additional $1M or $2M does not need to be spent on additional studies because the odds of a flood occurrence happening once in 500,000 years doesn't seem to IGWA a viable use of additional funds.	The purpose of the proposed action is to improve Ririe Reservoir refill reliability and increase water availability for irrigation and other water demands in southern Idaho without increasing downstream flood risk. The amount of additional winter water storage that would not increase flood risk is defined as the quantity of winter flood space (8,000 acre-feet) that can encroach upon the fixed 50,000 acre-feet flood control space, and be mitigated with the amount of water that can be evacuated over a 5-day period from the time of a forecasted major flood event. Any alternatives that allow inflows to potentially exceed the volume of water (8,000 acre-feet) that could be evacuated over a 5-day period from the

Entity	EA Page	Line #	Section #	Comment	Reclamation's Response
					time of a forecast major flood event would increase flood risk. The 30,000 acre-feet of water would clearly exceed this volume of winter flood control space, and is outside the scope of this project.

Comments Received on the Draft EA

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Dear Mr. Gregg:

Thank you for the opportunity to review the draft Environmental Assessment (EA) for the Ririe Winter Storage Study (Study). I appreciate your coordination with my staff during your preparation of the EA and Study and I commend the U.S. Bureau of Reclamation's (Reclamation) development of a study that could result in more water at a lower cost to the people of Idaho without increasing flood risk to Idaho Falls and other downstream communities.

I would like to emphasize the preferred alternative in the EA is within the current operation agreements between the U.S. Army Corps of Engineers, Walla Walla District (District) and Reclamation. The District is not required to approve the proposed winter operation (i.e. we are not a cooperating agency for this EA and Study) and it will only require routine coordination with my staff to implement on an annual basis. Further, I understand that any subsequent agreements for implementation will be between Reclamation and Mitigation, Inc. The District's comments on the EA and Study are enclosed.

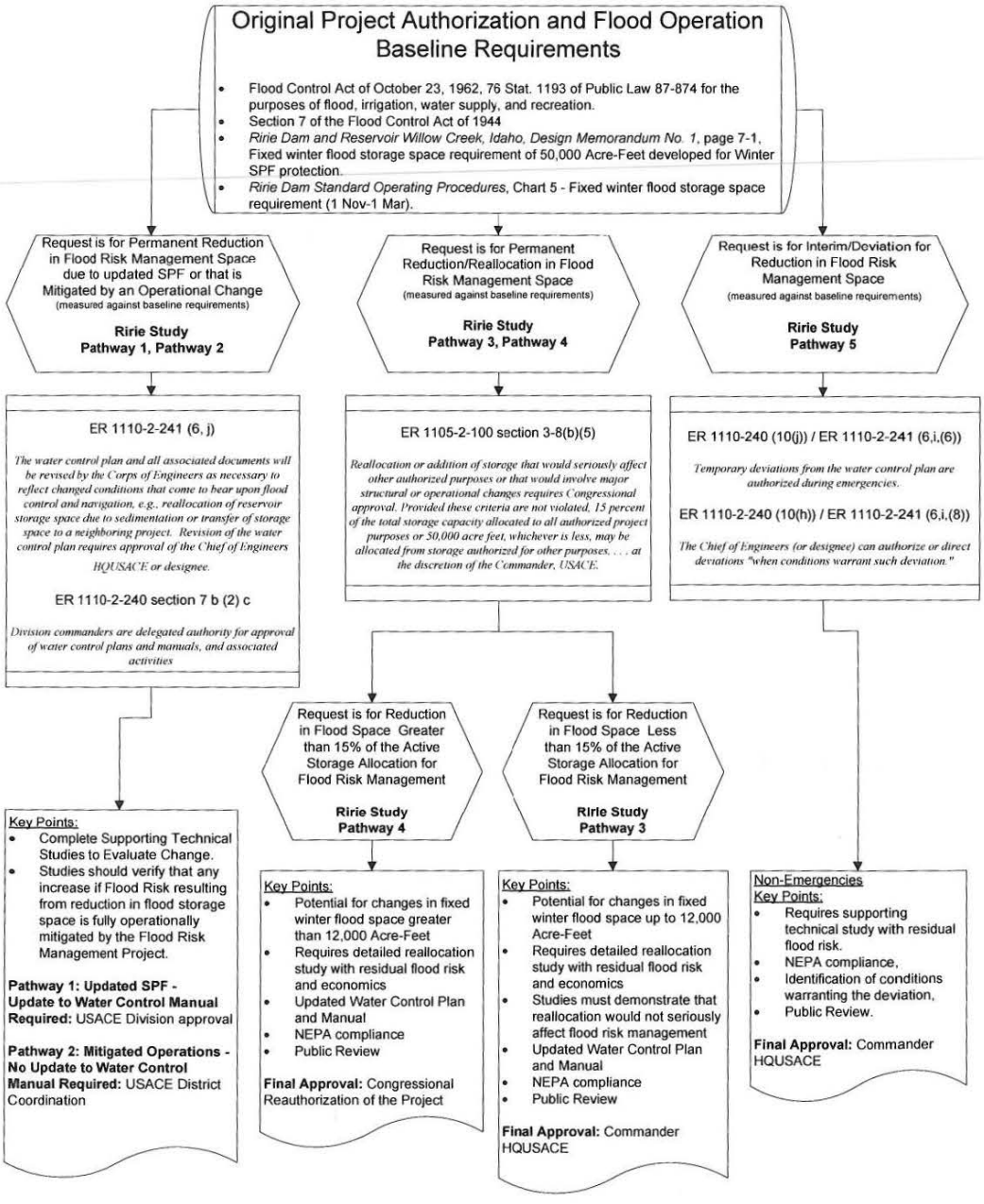
If clarifications are needed or other questions arise that the District can assist with, please contact Mr. Lynn Reese at Lynn.A.Reese@usace.army.mil or 509-527-7531. I look forward to hearing of your final decision.

Sincerely,

Timothy R. Vail
Lieutenant Colonel, Corps of Engineers
District Commander

Enclosure

Ririe Flood Operations Study
Pathways for Reducing Ririe Reservoir Flood Risk Management Space
(CENWW-EC-H 8/22/2014)



Comment Table
Ririe Winter Storage Study Draft EA (August 2014)
Draft Review
USACE, Walla Walla District (8/22/2014)

Resource Specialist #	EA Page #	Line #	Section #	Paragraph #, Figure #, or Table #	Comment	Revision
	5	10	1.2.6	2	The Corps did not direct Reclamation to release water on February 7, 2011. The letter proposes that the USBR release water, but did not direct such activity. Per the SOP it is Reclamations decision if it is safe to evacuate water. This fact was noted in the letter. Recommend text: "On January 4, 2011 Reclamation was supported by the Corps to release water from Ririe Dam ...."	
	5	10	1.2.6	2	Corps letter was January 4, 2011, not February 7, 2011. It is cited correctly in the references.	
	39	21	3.2.2		Figure 2-1, page 25, is an effective comparison of the Water Control Manual, No Action Alternative, and Alternative 1. Need to explain in the text on page 39 that the No Action Alternative's extra 5 KAF is a hedge on the Water Control Manual space requirement due to restricted winter release. A hedge also may be desired on Alternative 1 to evade an immediate release of inflow on November 2.	
	44	1-4	3.2.2		It is not easily discernible what is meant by "The decision to store additional water would occur ... could possibly negate the need for winter releases". Does that mean that this alternative can be invoked at the beginning of each year? If so, need to state that clearly.	
	20	27	2.1		Figure 2-1 is an effective comparison of the Water Control Manual, No Action Alternative, and Alternative 1. This statement referenced the SOP 50,000 acre-feet fixed space requirement. Need to make clear how this ties into the USBR No-Action alternative with 55,000 acre-feet.	

Comment Table
Ririe Winter Storage Study Draft EA (August 2014)
Draft Review
USACE, Walla Walla District (8/22/2014)

Resource Specialist #	EA Page #	Line #	Section #	Paragraph #, Figure #, or Table #	Comment	Revision
	10	23-25	1.7.3		This statement in section 1.7.3 lines 23-25 can be found in the Ririe SOP. This statement indicates that we cannot release water from the reservoir during a large winter storm as the conveyance channels are filled with local runoff downstream the Dam. The EA report needs to address this in Section 3.2.1. Section 3.2.1 should include statements and analysis demonstrating that all conveyance systems below the project are not needed for local runoff during the period of evacuation for a large winter storm or SPF type event, and that the balance of the channel capacity is available for winter releases when a large event is forecasted upstream Ririe Dam.	
	40	23-24	3.2.2		This alternative does not limit the amount of release to 8,000 acre-feet to reserve the 42,000 acre-feet of space. There is no limit on the amount of release required to reserve the 42,000 acre-feet of space. Revise sentence to read "...operation plan that includes winter releases of 8,000 acre-feet to reserve 50,000 acre-feet of space in anticipation of/during..."	
	24	14-15	2.5		Reclamation is responsible for O&M of the flood control project. The Corps would participate in discussions; however the MOA for channel cleaning, and to decide to store additional water before the storage season, would be between Reclamation and Mitigation Inc. This needs to be changed in all locations in the document where it is referenced.	
	24		2.5		At the beginning of each water year, Reclamation will inform the Corps of their intent to release or not release water during winter.	
	Throughout Document				For operational changes that do not require an update to the Water Control Manual (Ririe-SOP), the USACE District would coordinate with the USBR on the operational change such as proposed in Alternative 1, not provide approval/non-approval. Therefore, all references to the need for Corps' approval as it relates to the proposed alternative 1 should be deleted wherever it appears throughout the document. Attached is an updated pathways document that reflects this change from USACE for Pathway 2.	

MITIGATION, INC.
PO BOX 1892
IDAHO FALLS, ID 83403

October 3, 2014

Mr. Richard Jackson
U.S. Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, ID 83702

Dear Mr. Jackson:

In 2010, the United States Bureau of Reclamation completed the *Phase I Study of Proposed Modifications of Flood Control Operations, Ririe Dam and Reservoir, Ririe Project, Bonneville County, Idaho.* The study clearly provided data that confirmed what Mitigation, Inc. and many other local water managers and users had suspected for many years, the current Ririe Reservoir winter flood control rule curves were excessive with regard to flood protection, inadequate for contracted storage space to fulfill the objectives of the *1990 Fort Hall Water Right Agreement* and in need of "significant" modification. The following is verbatim from the pages iii and iv of the Executive Summary of the study:

> *Early Corps studies of the winter flood space were based primarily on a large flood in February 1962 and a hypothetical Standard Project Flood (SPF) created by combining the historic conditions present in the 1962 flood with high precipitation experienced in February 1963. Upon review, the Corps acknowledged the plan of operation for Ririe Dam "is conservative with respect to flood control. As additional data becomes available, it may become possible to accord more consideration to other project functions without significantly jeopardizing flood control" (USCOE 1966).*
>
> *Design Memorandum 1 (DM1) completed by the Corps in 1966 determined that a flood control space requirement for Ririe Dam and Reservoir could safely capture the 47,600 acre-feet SPF (USCOE 1966). No frequency is normally assigned to a SPF, but after the SPF was developed, it was found that its exceedance probability fell between 0.12 and 0.29, resulting in a 345- to 833-year recurrence interval. In 1966, this level of flood protection would certainly be a reasonable goal for developing a flood control plan. A modern flood frequency analysis conducted by Reclamation's Technical Service Center in Denver, Colorado (TSC) found that the 47,600 acre-foot volume of the winter SPF can be associated with a 7-day volume of a storm with an exceedance probability in excess of 0.0001, a recurrence interval in excess of 10,000 years (Appendix A). The current flood frequency analysis showed that basing the winter flood control space on the winter SPF calculated in 1966 overestimated the amount of space needed to store a flood event that fell within the 345- to 833-year level of protection.*

TSC developed a range of flood frequency hydrographs scaled to the PMF ranging from 100- to 1,000,000-year return periods. In calculating these high frequency hydrographs, TSC used observed data, synthesized data, and paleohydrologic determinations. They also used many conservative assumptions with respect to flood control. The estimated 7-day volume based on the frequency analysis suggests that in order to provide the same level of flood protection calculated by the Corps in 1966, a winter space requirement of 18,080 to 21,170 acre-feet would be necessary today. Approximately 24,000 acre-feet of space is necessary to capture winter floods with a return period of 1 in 1,000 years. This assumes no reservoir releases during the flood event and no extra space for contingencies.

The 2010 study goes on to assign a return interval to specific winter flood volumes for Ririe Reservoir. The results were summarized in the Table 3 which can be found on page 12 of the Study:

Table 3. Recommended peak flood frequency flows and volumes scaled to the PMF.

Return Period (years)	Peak Discharge (cfs)	7-Day Volume (acre-feet)
100	4,050	15,820
200	4,690	18,080
500	5,560	21,170
1,000	6,250	23,630
2,000	6,950	26,120
5,000	7,910	29,550
10,000	8,650	32,200
20,000	9,410	34,940
50,000	10,440	38,700
100,000	11,230	41,600
200,000	12,040	44,580
500,000	13,120	48,570
1,000,000	13,950	51,650

This table concludes that the 50,000 acre-foot winter flood control space currently required at Ririe Reservoir is capable of capturing between a 500,000 to 1,000,000 year storm. This would be an event so extreme that no other storage reservoir is required to meet.

The Executive Summary excerpt and Table 3 from the 2010 study sums up the root of the issue with Ririe Reservoir: the design winter flood and winter flood control rule curves are completely inadequate for the known conditions based upon the 2010 USBR study.

The 2010 Study was completed by some of the brightest minds in the country with regards to hydrology and hydraulics at one of the USBR's most prestigious institutions, the Denver Technical Services Center. The Study clearly concluded that the original design storm for the reservoir overestimated the amount of space needed to store a flood event that fell within the originally intended 345- to 833-year level of protection. The design storm has changed, and it is time to change the winter flood control rule curves accordingly.

Following the release of the 2010 Study, it was clear to Mitigation, Inc. that the flood control requirement should be reduced from 50,000 acre-feet to 20,000 acre-feet, a change of 30,000 acre-feet to correlate to the updated 500 year return interval storm. From the 2010 Study, the hydrologic debate should have been ceased and the winter flood control rule curves changed. Instead, the Bureau of Reclamation and United States Army Corps of Engineers have prolonged this process an additional 4 years at an unknown cost to the taxpayers and water users, while the life blood of many water users has continued to be released past the Ririe Dam headgates each fall without a justifiable reason.

As yet another step in the process, the USBR and USACE have recently released a Draft Environmental Assessment Ririe Winter Storage Study. This study fails to address the inadequate and excessive over-designed winter flood. Instead, the Environmental Assessment proposes to modify operations slightly to allow for a minimal increase in winter storage at the expense of requiring Mitigation, Inc. to clean the floodway channel for a storm that, according to the USBR 2010 Study, is likely to only occur once every 500,000 to 1,000,000 years. The USBR and USACE have stated additional study at a cost approaching $1,000,000 to $2,000,000 would be needed to assess the modification of the design flood. It is hard to imagine why additional study would be required for this assessment as this has already been addressed by the 2010 Study. It is presumably safe to say that the designers of the original reservoir did not envision this type of burden on the users of the reservoir when they wrote "*As additional data becomes available, it may become possible to accord more consideration to other project functions without significantly jeopardizing flood control*".

Mitigation, Inc., along with many other water users and municipalities, would like to see a more concerted effort toward updating the Ririe Reservoir winter flood control rule curves. The Flood Control Act of 1944 stipulates that it is the policy of Congress to recognize the interests of the States in water utilization and control. The following is verbatim from Sec. 1 of the Flood Control Act of December 22, 1944 (ch. 665, 58 Stat. 887):

> *"In connection with the exercise of jurisdiction over the rivers of the Nation through the construction of works of improvement, for navigation or flood control, as herein authorized, it is hereby declared to be the policy of the Congress to recognize the interests and rights of the States in determining the development of the watersheds within their borders and likewise their interests and rights in water utilization and control, as herein authorized to preserve and protect to the fullest possible extent established and potential uses, for all purposes, of the waters of the Nation's rivers;"*

Another issue with the Draft Environmental Assessment Ririe Winter Storage Study involves the analysis of channel cleaning costs against additional storage revenues for the proposed Alternative 1. The analysis considers only the time period from 1994 through 2012. A time interval dating from the 1970's to present would give a more accurate prediction of the potential storage increases, especially when the years 1987 through 1992 are examined. A table developed by the USBR for the *Phase 1 Study Findings Oct 25, 2010* show possible storage supply increases for each of these years as well as others:

Phase 1 Study Findings Oct 25, 2010

Ririe Reservoir Maximum Storage and Storage Increase
Acre-feet

	Maximum Storage			Increased Storage	
Year	No Action	Alternative A	Alternative B	Alternative A	Alternative B
1976	90,484	90,484	90,484	0	0
1977	66,567	76,596	89,957	10,029	23,390
1978	90,484	90,484	90,484	0	0
1979	80,011	84,074	90,484	4,063	10,473
1980	86,682	90,315	90,484	3,633	3,802
1981	78,318	84,650	90,339	6,333	12,022
1982	90,484	90,484	90,484	0	0
1983	90,484	90,484	90,484	0	0
1984	90,484	90,484	90,484	0	0
1985	90,484	90,484	90,484	0	0
1986	90,484	90,484	90,484	0	0
1987	73,088	85,710	90,484	12,622	17,396
1988	70,210	77,494	89,178	7,284	18,968
1989	85,242	85,242	90,318	0	5,076
1990	65,719	72,545	89,058	6,827	23,339
1991	70,123	74,937	85,906	4,815	15,784
1992	58,595	65,114	85,113	6,519	26,518
1993	89,945	89,945	90,365	0	0
1994	69,710	78,385	90,484	8,676	20,774
1995	86,797	86,797	90,484	0	0
1996	90,484	90,484	90,484	0	0
1997	90,500	90,500	90,500	0	0
1998	90,484	90,484	90,484	0	0
1999	90,413	90,413	90,484	0	0
2000	78,010	87,465	90,484	9,455	12,474
2001	62,597	69,812	89,149	7,215	26,552
2002	54,019	54,019	75,062	0	0
2003	57,433	57,433	74,152	0	0
2004	57,405	57,405	70,770	0	0
2005	66,022	66,022	76,837	0	0
2006	90,484	90,484	90,484	0	0
2007	72,555	83,094	90,484	10,539	17,929
2008	74,496	78,869	87,527	4,374	13,031
2009	85,373	88,196	90,479	2,824	5,106
Average	78,667	81,761	88,042	3,094	7,430

Mitigation, Inc. appreciates the efforts of the Bureau of Reclamation and the United States Army Corps of Engineers which have gone into the draft Environmental Assessment. This report does show a relatively benign affect on environmental concerns, and some positive benefits toward water supplies used to augment flows for endangered species. However, it has become painfully obvious that a meaningful change at Ririe Reservoir cannot occur without intervention from a higher level. We respectfully oppose the conclusions of the Environmental Assessment and will continue to pursue a significant change at Ririe Reservoir in line with the results of the 2010 Study through other avenues. In the words of Winston Churchill, to improve is to change; to be perfect is to change often.

In conclusion, this report does not resolve the concerns of the water users who were supposed to have been mitigated for an inadequate water supply as a residual result of the *1990 Fort Hall Water Rights Agreement*, and it fails to properly provide the proper balance between valuable storage water supplies and flood control. Furthermore, it does not sufficiently resolve the Ririe Dam Standard Operating Procedures listed in 5-02a.

Sincerely,

Darrel Ker, President
Mitigation, Inc.
P.O. Box 1892
Idaho Falls, ID 83403

IDAHO GROUND WATER APPROPRIATORS, INC.

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Tim Deeg, President
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America Falls, ID 83211
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Craig Evans, Vice President
1523 W 300 N
Blackfoot, ID 83221
P: (208) 684-3614

Randall Budge, Secretary
PO Box 1391
Pocatello, ID 83204
P: (208) 232-6101

Lynn Tominaga, Executive Director
PO Box 2624
Boise, Idaho 83701
P: (208) 381-0294

PO Box 2624, Boise, ID 83701
Phone: 208.381.0294
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GWD Members:
Aberdeen - American Falls GWD
Bingham GWD
Bonneville - Jefferson GWD
Fremont - Madison ID
Jefferson Clark GWD
Madison GWD
Magic Valley GWD
North Snake GWD
Southwest ID

City Members:
City of American Falls
City of Blackfoot
City of Chubbuck
City of Heyburn
City of Jerome
City of Rupert

Business Members:
Anheuser-Busch Agricultural
United Water of Idaho

Mr. Richard Jackson
U.S. Bureau Of Reclamation
Snake River Area Office
230 Collins Road
Boise, Idaho 83702

Re: Proposed Modification of Flood Control Operations, Ririe Dam and Reservoir

Dear Mr. Jackson:

My name is Lynn Tominaga, Executive Director of the Idaho Ground Water Appropriators, Inc. The Idaho Ground Water Appropriators (IGWA) is a statewide association of ground water users comprised of nine ground water districts, two irrigation districts, and a number of municipal, commercial and industrial ground water purveyors. Formed in 1994 to provide ground water users with a common voice and representation on legal, technical, and governmental issues, IGWA's members irrigate over one million acres of agricultural land and provide municipal water supplies to over 100,000 businesses and households.

IGWA is greatly disappointed with the Environmental Assessment (EA) and opposes the Bureau Of Reclamation's EA. It seems that the Bureau of Reclamation Phase One 2010 study shows that 50,000 acre-feet of water does not need to be

evacuated from the Ririe Reservoir fall flood control release during some years and the overall average of 30,000 acre-ft would be enough. IGWA doesn't believe that an additional $1M or $2M does not need to be spent on additional studies because the odds of a flood occurrence happening once in 500,000 years doesn't seem to IGWA a viable use of additional funds.

IGWA will be working with other entities to help resolve concerns of water users in the basin to provide a proper balance between flood control and storage water supplies. IGWA believes that the additional storage water supplies could help in resolving mitigation obligation of ground water users to senior surface water users.

I would like to thank the Bureau Of Reclamation for the opportunity to comment on the environmental assessment. If you have any questions about this letter or IGWA please feel free to contact me at the above mentioned address or phone number.

Sincerely yours,

Lynn Tominaga
Executive Director

BONNEVILLE COUNTY COMMISSIONERS

ROGER S. CHRISTENSEN, CHAIRMAN, DISTRICT #1
DAVE RADFORD, DISTRICT #2
LEE STAKER, DISTRICT #3

Cheryl Matthiesen, Admin. Asst.
Ruby Strong, Admin. Sec.

605 NORTH CAPITAL AVE., SUITE 102
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September 9, 2014

Bureau of Reclamation
Snake River Area Office
230 Collins Road
Boise, Idaho 83702-4520

Attn: Jerrold Gregg, Area Manager

Mr. Gregg:

We have reviewed the Draft Environmental Assessment (EA) regarding the proposed increase in water storage at the Ririe Reservoir. We understand that this proposal would modify current Ririe Dam and Reservoir winter flood control operations by decreasing the winter drawdown in the fall of each year, resulting in more water held in the Reservoir between November 1 and March 1.

The Bonneville County Commissioner's support this movement to improve the refill reliability and availability of irrigation water from Ririe Reservoir and Dam.

Sincerely,
BONNEVILLE COUNTY BOARD OF COMMISSIONERS

Roger S. Christensen, Chairman

Lee Staker, Member

Ririe Comment, BOR SRA <ririeea@usbr.gov>

Ririe Draft EA review

3 messages

Corey Loveland - NOAA Federal <corey.loveland@noaa.gov> Fri, Sep 19, 2014 at 11:14 AM
To: ririeea@usbr.gov
Cc: Vern Preston <vernon.preston@noaa.gov>, Joe Intermill <joe.intermill@noaa.gov>

Mr. Jackson,

Thanks for the opportunity to review the Draft EA for additional winter storage at Ririe Dam. As you know increasing the ability to have additional carryover storage into the irrigation season is very desirable and can be managed within the upper and mid snake reservoir system for optimal use during drier times. With recent persistent hydrologic drought conditions and the unknown future of climate, it is critical that we maximize this opportunity without detriment to water rights, environmental factors, wildlife, fishery and tribal relations.

As my primary concern is the downstream risk to increased flood potential, I am certain that the existing reservoir rule curve can be modified by the Corps to minimize flood risk with intelligent operation of reservoir storage and releases and that other factors as described in the EA can mitigate those potential flooding risks.

As you may know winter snow accumulation (water supply) is very uncertain during the early and mid winter months and being able to assess the situation around March 1 of the year can give time to better assess current and forecast water supply to be able to predict and manage reservoir releases and/or storage for the yearly upcoming irrigation season.

I could not see any issues that the National Weather Service has with this proposal as no adverse effects would occur to downstream stream gages, forecast points, or flood criteria levels and should not have any adverse effect on increasing or decreasing chances of flooding downstream. No impacts to stream/flood forecasting should affect the Northwest River Forecast Center (NWRFC) for their hydrologic modeling just that current Ririe reservoir storage and projected releases should be continued to be communicated to them for their streamflow forecasts.

Please remove Troy Lindquist's name off the distribution list (Appendix D-1) as he is no longer at this office and I am the representative at the National Weather Service in Pocatello.

Thank you again,

--
****
Corey Loveland
Service Hydrologist
NOAA/National Weather Service
Pocatello Weather Forecast Office
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Pocatello, ID 83204-7508
(208) 232-9306
24hr Forecasts: (208) 233-0834
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Like us on Facebook: US National Weather Service Pocatello
Follow us on Twitter: @NWSPocatello
Watch us on YouTube: NWS Pocatello, ID

****

Ririe Comment, BOR SRA <ririeea@usbr.gov> Fri, Sep 26, 2014 at 10:13 AM
To: Jerrold Gregg <jgregg@usbr.gov>, Roland Springer <rspringer@usbr.gov>, Michael Beus <mbeus@usbr.gov>
Cc: Richard Jackson <rjackson@usbr.gov>

[Quoted text hidden]

Ririe Comment, BOR SRA <ririeea@usbr.gov> Wed, Oct 1, 2014 at 9:30 AM
To: Michael Beus <mbeus@usbr.gov>

[Quoted text hidden]

USDA
United States Department of Agriculture

OCT - 6 2014

Mr. Rich Jackson
Natural Resource Specialist
Bureau of Reclamation, Snake River Area Office
230 Collins Road,
Boise ID, 83702
ririeea@usbr.gov

Dear Mr. Jackson,

Thank you for the opportunity to provide comments for the Ririe Dam and Reservoir Environmental Assessment of the winter drawdown to improve refill and increase water availability without increasing downstream flood risk.

Our input focuses on ways to be proactive in data collection monitoring, and improving the understanding of key climate indicators when rapid runoff events may occur. As it seems these events are likely to increase flood risk and limit refill opportunities and understanding them may also assist with yearly water management strategies.

Our suggestions are to use current science and technology to improve streamflow forecasts and the understanding of soil, snow and streamflow in the basin.

- Review the snow data collection network to determine additional sites to automate such as the Bone Snow Course and a lower elevation Agrimet or SCAN site (Soil Climate Analysis Network).
- Install soil moisture and soil temperature sensors to monitor and understand conditions that may lead to rapid runoff events while also collecting soil moisture data to improve streamflow forecasts. Collection of soil temperature data would improve understanding of frozen soils that may lead to winter rain-on-snow runoff events. Attached is a recent paper on improved streamflow forecast techniques in the Boise River basin.
- With increase in climate variability, knowing the amount of snow covered area in a basin can also provide a better understanding when the potential for rapid snowmelt has passed. Development of daily MODIS satellite products of receding snow covered area will provide additional information where SNOTEL sites are not present and increase the understanding when the potential for rapid snowmelt has passed.
- Another useful tool that we use in the Big Wood River snowmelt model is the amount of spring precipitation on consecutive days required to saturate soils and produce runoff. This has been very helpful in providing a precipitation threshold and duration of precipitation events to be concerned about that may result in rapid runoff.

Natural Resources Conservation Service
9173 W. Barnes Dr., Suite C, Boise, ID 83709
Voice: (208) 378-5700 Fax: (208) 378-5735

new variable (principle component). The weights of inter-correlated variables used in the linear combinations are from eigenvectors of the correlation matrix. The output variable, principle component, is an eigenvalue represented by a percentage of a total variance (Garen, 1992). This allows the modeler to use several interrelated variables to produce a robust regression equation. The input variables in the water supply forecast, using the model, are parameters such as snow water equivalent (SWE), antecedent precipitation, and observed streamflow. The statistical measure used to determine the accuracy of the forecast is correlation coefficient, R, (sometimes called the skill of the forecast) between the actual stream flow and the model produced forecasted streamflow values. The closer the R value is to 1, the stronger the correlation between the predicted and measured data and the better the accuracy of the forecast.

Soil Moisture Deficit Index

The soil under the snow pack represents a large reservoir capable of holding large amounts of water in a watershed and the soil moisture is an important factor in forecasting streamflow. Preliminary work (Lea and Harms, 2011) suggests that soil moisture data could significantly improve streamflow forecast. They indicated that the use of the data was provisionally an important parameter in improving water supply forecasts. With the additional years of data and using the full soil moisture deficit of the soil column, there is an improved correlation to streamflow, and the accuracy of streamflow forecasts is also improved. Soil moisture historically has not been used in the water supply forecasts because soil moisture data were not available, and hydraulic properties of the soil were scarce. Monthly precipitation has been used as a surrogate of soil moisture, as well as groundwater well data, when available. Starting in the late 1990s, SNOTEL stations began to include the Stevens Hydra Probe Soil Sensor and now many SNOTEL stations have been equipped with Hydra Probe Soil Sensors. The Hydra Probe soil sensors are installed at standard depths of 5, 10, 20.3, 51 and 102 cm. Sensors at multiple depths capture the distribution and the variation of water content gradient throughout the soil column as it changes throughout the year. At some SNOTEL sites, the deeper probes may not be installed if there is shallow bedrock. The SNOTEL station evaluated here, Bogus Basis, Jackson Peak, and Atlanta Summit, have the four soils sensors at the standard depths but do not have a soil sensors at 102 inches.

The available water held in the soil at a given point in time is the difference between the field capacity, θ_{fc} and the soil moisture at that point in time, θ (m^3m^{-3}). The available water holding capacity of the soil is defined as the soil moisture deficit index, θ_{di}:

$$\theta_{di} = \overline{\theta} - \theta_{fc} \qquad [1]$$

where $\overline{\theta}$ is the average soil moisture throughout the column for a time step. The field capacity, θ_{fc} , is the upper limit of soil moisture where the soil's capillary forces can no longer suspend water. If the soil moisture is above field capacity, the soil is near saturation and water can be pulled downward by gravity or run off. If the soil moisture is below field capacity, the water is held in the soil by capillary forces. In this study, the soil moisture deficit index is a parameter that describes how much more water the soil can retain during the spring melting period and theoretically is positively correlated to stream flow. It will be a negative value if the moisture content is below field capacity, equal to zero at field capacity and a positive number above field capacity.

The purpose of this work is to quantify the improvements to the streamflow forecasts by incorporating the soil moisture deficit index on monthly time steps into the principle component statistical model along with the SWE and precipitation data.

Methods

Site Descriptions

Three SNOTEL sites in Idaho, namely, Bogus Basin, Atlanta Summit, and Jackson Peak were used in this study to forecast the streamflow at the USGS monitoring point on the Boise River near Twin Springs site ID 13185000. Each of these SNOTEL sites contains the standard complements of sensors, such as snow pillows for measuring SWE, a large cumulative "rocket gage" for measuring total precipitation, as well as meteorological sensors to measure parameters such as wind speed and direction, air temperature, relative humidity, and barometric pressure. In addition to the standard sensors, these SNOTEL sites also have four to five Hydra Probe Soil Sensors at 5, 10, 20.3, and 51cm and are among the first soil probes installed in the SNOTEL network. Hourly data are reported and transmitted via Meteor-burst telemetry to telemetry ground receive sites and stored on an NRCS server. The data are available from the NRCS web site http://www.wcc.nrcs.usda.gov/snow/.

Soil Moisture Sensors

The soil sensors used are the Stevens Hydra Probe Soil Sensor. The Hydra Probe is an impedance based dielectric sensor that contains a fractal model that separates out the real from the imaginary dielectric permittivity (Campbell, 1990, Logsdon, 2005). Dielectric permittivity is a complex number containing both a real and imaginary component and is dependent on the frequency, temperature, and the properties of the material. This can be expressed by,

$$\kappa^* = \varepsilon_r - j\varepsilon_i \qquad [2]$$

where K* is complex dialectic permittivity, ε_r is the real dielectric permittivity, ε_i is the imaginary dielectric permittivity and $j = \sqrt{-1}$ (et al. Topp, 1980). The soil moisture is determined from the real component due to the strong rotational dipole moment that water has in relation to soil from 1 to 1000 MHZ. A general calibration based on a dielectric mixing model was used and is expressed in equation [3] (et al. Seyfried, 2005).

$$\theta = A\sqrt{\varepsilon_r} + B \qquad [3]$$

where "A" and "B" are empirical coefficients fitted from 20 different soil samples representing a variety of soil textures and morphologies (et al. Seyfried, 2005).

Regression Modeling

The inputs to the model in monthly time steps from October 1997 to March 2014 are snowpack SWE value on the first of the month and total accumulated monthly precipitation (snow and rain) are used every month. The hourly soil moisture values collected at each depth were averaged across depth for the whole month. The field capacity was physically measured and determined by the volumetric water content at a potential of 333 hPa (1/3 bar). The soils data is exhibited in table [1] and the soil moisture deficit was calculated using equation [1].

Table 1, Soil survey data including the water content at 333 hPa (Lea and Harms 2011)

SNOTEL Site	Horizon	Top depth (cm)	Bottom Depth (cm)	Water content at 333 hPa
Atlanta Summit	A	2.00	5.00	12.79
	Bw1	5.00	23.00	24.24
	Bw2	23.00	36.00	21.44
	C	36.00	58.00	20.45
Bogus	A1	0.00	5.00	21.62
	A2	5.00	18.00	21.11
	A3	18.00	38.00	25.60
	Bw1	38.00	63.00	12.59
	Bw2	63.00	91.00	14.50
	Bw3	91.00	119.00	16.42
Jackson	A	0.00	13.00	28.36
	B1	13.00	25.00	24.53
	B2	25.00	43.00	19.00

Figure 1. Soil moisture deficit index and average soil moisture from October 1997 through March of 2014.

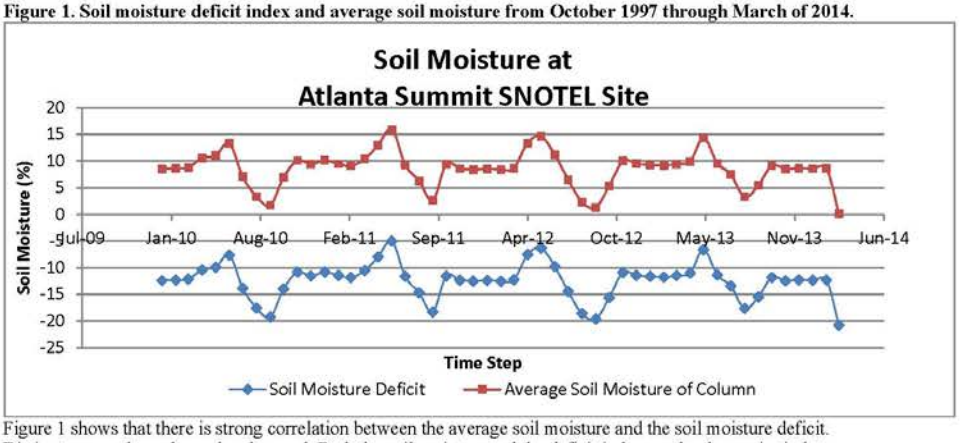


Figure 1 shows that there is strong correlation between the average soil moisture and the soil moisture deficit. Distinct seasonal trends can be observed. Both the soil moisture and the deficit index reach a low point in late summer when the soil is the driest and reach a maximum in spring when the snow begins to melt. The monthly seasonal soil moisture pattern is consistant with seasonal precipitation in this region with higher values in the spring during the melting period and lower values in the summer during the drier parts of the year. Soil moisture deficit index will theoretically be a better predictor of streamflow than the average soil moisture because it takes into consideration the soil textural differences in the ability to hold and retain water.

The average monthly soil moisture deficit was used as a parameter in the regression equation to assess if it could be correlated enough to be used in the water supply forecast. Each station's soil moisture deficit index was an input as a monthly time step and the best fit for the forecast was the soil moisture deficit from the previous summer. This is logical assuming that the winter precipitation and snowpack would melt filling the soil pores combining with the residual soil water from the previous summer before the streamflow runoff would occur.

Results and Discussion

Adding the average monthly soil moisture deficit for each station into the regression model produced the following correlation results:

Table 2. Regression correlation for each station soil moisture deficit to the Boise River at Twin Springs April-July 2013 streamflow.

	Atlanta Summit SNOTEL	Bogus Basin SNOTEL	Jackson Peak SNOTEL	3 Stations
	Previous May-September	Previous Mar-September	Previous Mar-September	
Correlation coefficient(r)	0.361	0.429	0.405	0.484
Years of data	14	13	15	13

When the soil moisture deficits for all stations are combined in a variable in the forecast model, the correlation is 0.484. Using it as the sole predictor in the model of streamflow produces relatively good results that roughly follow the streamflow volumes of high and low years [Figure 2]. When θ_{di} was used in conjunction with the traditional snow and precipitation parameters, the forecast showed significant improvement over the model based on snow and precipitation alone. As shown in Figure 2, the flow simulation is closer to the actual flows for the model that included the soil data with the precipitation parameter than the simulation that include the precipitation parameter alone (Historical Forecast) from 2001 to 2013.

Figure 2. Boise River Flow vs. year. Historical forecast, modeled with soil moisture deficit only, and modeled with snow and soil moisture deficit.

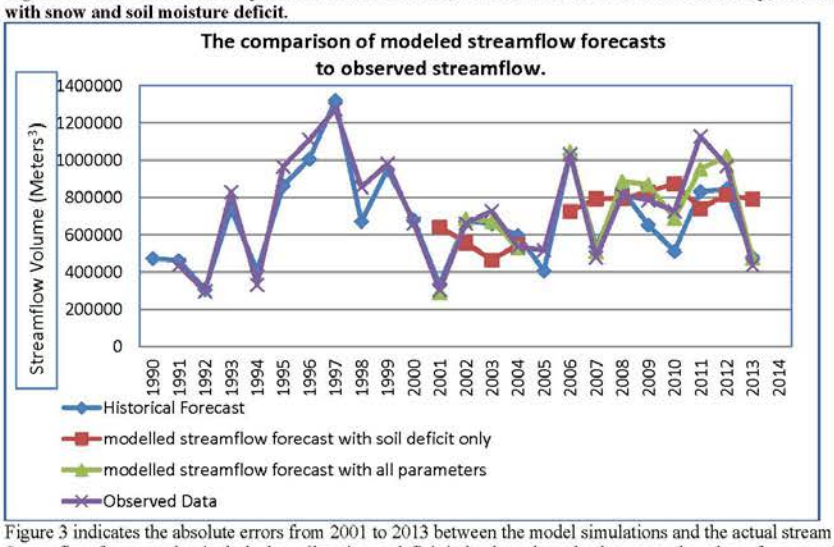
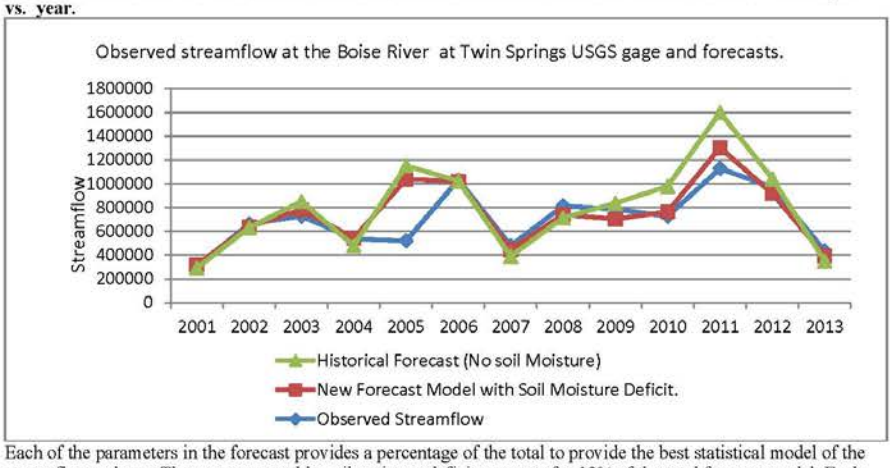


Figure 3 indicates the absolute errors from 2001 to 2013 between the model simulations and the actual stream flow. Streamflow forecasts that include the soil moisture deficit index have less absolute error than those forecasts that is used as a parameter in the forecast.

Figure 3. Historical Forecast, the new model with soil moisture and the observed streamflow, Volume/year vs. year.



Each of the parameters in the forecast provides a percentage of the total to provide the best statistical model of the streamflow volume. The average monthly soil moisture deficit accounts for 13% of the total forecast model. Each

station accounts for a portion of the total (table 3.). All the April 1 snow (SWE) combines to a weighted value of 59%, while the combined weighted march precipitation accounts for 28% of the forecast total.

Table 3. The monthly average soil moisture deficit accounts for a percentage of the total modeled forecast equation for the Boise River at Twin Springs Idaho April-July volume.

	Atlanta Summit SNOTEL	Bogus Basin SNOTEL	Jackson Peak SNOTEL	3 Station total
Percentage of the total forecast accounted for by the soil moisture deficit for each station.	3%	5%	5%	13%

Conclusion

Using soil moisture measurements directly can improve the water supply forecasts to provide a more accurate model and assessment of water supplies. The soil moisture deficit also provides early information before the winter season about the water needed to fill the deficit and its effect on the snowmelt streamflow runoff. As the years of data increase for the soil moisture sensors at the NRCS stations, the data will be able to be used in more models across the West. The NRCS SCAN (Soil Climate Analysis Network) also has soil moisture sensors and that data can be used in other applications across the country.

Disclaimer:

The USDA NRCS does not endorse any source or product in our climate and snowpack measurement system.

References

Campbell, J.E., 1990. Dielectric properties and influence of conductivity in soils at one to fifty Mega Hertz. Soil Science Society of America Journal. 54:332–341

Folliott, P. F., Gottfried, G. J. and Baker, M.B., Jr, 1989. Water yield from forest snowpack management: research findings in Arizona and New Mexico. Water Resources Research. 25: 1999–2007.

Garen, D. ,1992. Improved Techniques in Regression-Based Streamflow Volume Forecasting, ASCE Journal of Water Resources Planning and Management, 118 (6).

Kenny, J.F., Barber, N.L., Hutson, S.S., Linsey, K.S., Lovelace, J.K., and Maupin, M.A., 2009, Estimated use of water in the United States in 2005. U.S. Geological Survey Circular 1344

Lea, J. and Harm, D.,2011.. Developing NRCS SNOTEL and SCAN Soil Moisture Parameters for Water Supply Forecasting Application, Western Snow Conference 2011 Proceedings.

Logsdon, S.D. 2005. Soil dielectric spectra from vector network analyzer data. Soil Science Society of America Journal 69:983–989.

Seyfried, M.S., Grant, L. E., Du, E, and Humes, K., 2005. Dielectric loss and Calibration of the Hydra Probe Soil Water Sensor. Vadose Zone Journal 4:1070-1079.

SNOTEL, US Department of Agriculture, National Resources Conservation Service, http://www.wcc.nrcs.usda.gov/snow/

Topp, G. C.. Davis, J. L, Annan, A. P.,1980. Electromagnetic Determination of Soil Water Content; Measurements in a Coaxial Transmission Lines. Water Resources Research, 16(3): 574-582.

US EIA, State Renewable Electricity Profiles, 2012. US Energy Information Administration http://www.eia.gov/