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Environmental Assessment

P-16 Furey Lane Water Conservation and Reconnect Project

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INTRODUCTION

This Environmental Assessment (EA) was prepared by the Bureau of Land Management, Challis Field Office (BLM CFO) for the P-16 Furey Lane Water Conservation and Reconnect Project (project). This EA discloses the anticipated environmental impacts resulting from granting a Federal Land Policy and Management Act (FLPMA) Rights-of- Way (ROWs) for infrastructure and access associated with the project. BLM has received a ROW application from the Furey Lane/P-16 Irrigation Company (company) for installation of and access to an irrigation point of diversion (POD), ditch, and underground pipeline to convey decreed Pahsimeroi River water rights across BLM administered land to private lands in the vicinity of Furey Lane. Additionally, BLM has also received a ROW application from the Idaho Department of Fish and Game (IDFG) Screen Program for installation and maintenance of the associated fish screen, access road, and bypass pipe, which would be installed as part of the irrigation infrastructure improvements. For purposes of compliance with ESA consultation for this project, the Project Sponsor is Custer Soil and Water Conservation District (CWSCD).

Background Information

This EA was prepared to analyze the impacts to the natural and human environment that may occur from removal and minor relocation of the existing P-16 diversion and abandonment of two associated unscreened conveyance ditches, and construction of improved irrigation headworks, fish screen, and pipeline. The project will relocate and improve the existing diversion structure, and convert an open ditch to a buried pipeline. The project is proposed to improve efficiency of the irrigation system that provides decreed water rights to two private landowners southwest of the town of Patterson, located in the Pahsimeroi Valley in Lemhi County, Idaho. The proponents have requested to upgrade the irrigation infrastructure as a part of ongoing Endangered Species Act (ESA) stream channel and flow restoration activities, which have been occurring in the Pahsimeroi River subbasin since the mid 1990's. The proposed project would upgrade irrigation infrastructure, allowing for lower rates of diversion from the P-16 POD on the Pahsimeroi River and cessation of use of water rights from Big Creek that are conveyed via the Hamilton ditch to the existing P-16 ditch. Additionally, the project would provide a lockable and measurable diversion structure at the P-16 POD, remove an instream fish passage barrier, and eliminate fish entrainment within the irrigation system.

Two landowners currently use Big Creek and Pahsimeroi River water for irrigation of private lands in the vicinity of Furey Lane. Decreed water rights totaling 18.72 cubic feet per second (cfs) are currently diverted from the Pahsimeroi River and conveyed via the P-16 ditch, and decreed water rights totaling 9.54 cfs are diverted from Big Creek and conveyed via the Hamilton ditch to the P-16 ditch. A portion of the Big Creek water is used to irrigate land on the north side of the Pahsimeroi River; the remainder is conveyed back to the Pahsimeroi River where it is re-diverted at the P-15 diversion to irrigate land on the south side of the Pahsimeroi River. This continues as long as Big Creek water is available, typically from spring into summer. When Big Creek flow decreases, the water rights are met solely through 18.72 cfs of Pahsimeroi River water diverted at P-16. Current diversion practices require annual installation of instream push-up dams, using heavy equipment, on both Big Creek and the Pahsimeroi River. For at least a portion of the growing season, these structures divert the entirety of the streamflow into the Hamilton and P-16 ditches, respectively; creating complete barriers to fish passage (Figure 1 and Figure 2).

Figure 1. Push up diversion dam at P-16 in July 2012. Pahsimeroi River channel is in left of photo, P-16 ditch is shown at right (Photo courtesy BOR).

Figure 2. Push-up diversion dam at P-16 in August 2013. Dewatered Pahsimeroi River channel is shown in left side of photo, and P-16 ditch is shown at top center (Photo courtesy Mike Donahoo).

This project would result in a maximum of 8.0 cfs being diverted at the reconstructed P-16 POD, and a cessation of Big Creek water diversion (9.54 cfs) and its associated use of the Hamilton ditch. Of the total 8.0 cfs diverted at P-16, a maximum of 7.2 cfs would be delivered to the proponent's acreage via an improved irrigation system, and 0.8 cfs would be returned to the river via a fish screen bypass pipe, resulting in an approximate minimum water savings of 11.52 cfs over the current authorized use. Additionally, the diversion rate at P-16 would be decreased from 8.0 cfs to 4.6 cfs, beginning each year in July, when one landowner would stop diverting until the start of the next irrigation season. The second landowner would continue to divert 4.6 cfs, including the 0.8 cfs for fish return (using 3.8 cfs for irrigation), through the remainder of the irrigation season. During this period, when the Pahsimeroi River typically experiences its annual lowest flows, the total water savings would be 14.92 cfs.

Currently, the Pahsimeroi River, and the existing irrigation ditches (P-16 and Hamilton) are the primary sources of livestock/wildlife water within the western (P-16) and central (Hamilton) portions of the BLM County Line grazing allotment. As a result of implementation of the project, these ditches would no longer be used, and the Pahsimeroi River would be completely excluded from livestock access within the allotment. Without these water sources, there could be decreased utilization in the central and western parts of the allotment, and a correspondent increase in utilization in the northern and southern parts of the allotment near the existing County Line pipeline and Big Creek channel, respectively. The Pahsimeroi River and the abandoned ditches would need to be replaced in order to provide livestock water sources in these parts of the allotment, and to benefit wildlife that have become dependent on the Hamilton ditch.

Type of Action

The ROW applicant, the Furey Lane/P-16 Irrigation Company, is requesting a ROW authorization (IDI-37646) across BLM administered land to install and maintain an irrigation diversion and associated infrastructure, including a ditch and adjacent maintenance access road, bubbler, overflow, and pipeline.

The IDFG Fish Screen Program is requesting a separate ROW authorization (IDI-37700) to construct and maintain a National Marine Fishery Service (NMFS) compliant fish screen. The ROW application would also allow IDFG access to use and improve (grading) approximately 1.7 miles of existing designated roads across BLM administered land to maintain the fish screen and associated infrastructure.

Purpose and Need for Action

The purpose of this action is to provide access to the ROW applicants to install and maintain an irrigation diversion and associated infrastructure, including a ditch and adjacent maintenance access road, bubbler, overflow, pipeline, NMFS compliant fish screen, and to allow access across existing designated roads to the POD and associated infrastructure. This action would provide resource benefits consistent with the Challis Resource Management Plan (RMP; BLM 1999) by: 1) removing a known fish passage barrier, 2) eliminating fish entrainment in the P-16 and Hamilton ditches, 3) improving riparian habitat on the Pahsimeroi River, and 4) augmenting instream flow in the Pahsimeroi River and Big Creek.

The need for the action is established by the BLM's responsibility under the FLPMA to respond to requests for legal access across public lands administered by the BLM, and is in accordance with the FLPMA and consistent with the Challis RMP.

Location of the Proposed Action

The proposed reconstructed P-16 diversion and fish screen are located on the Pahsimeroi River, approximately 5.6 miles west southwest of Patterson, Idaho at: Boise Meridian, T. 14 N., R. 22 E., Sec. 35, NESW (Figure 3). The reconstructed POD would be located approximately 520 feet upstream from the existing POD in order to facilitate construction of the diversion headworks and fish screen, and to provide adequate head for operation of the pipeline and associated irrigation infrastructure. The reconstructed POD would remain in the same 40 acre parcel as it is currently located and described in the water rights. The irrigation pipeline would begin in Section 35 on BLM administered land and extend approximately 1.37 miles (7,228 feet) to private land located at: Boise Meridian, T. 14 N., R. 22 E., Sec. 26 (Figure 4).

Figure 3. Project Location Map

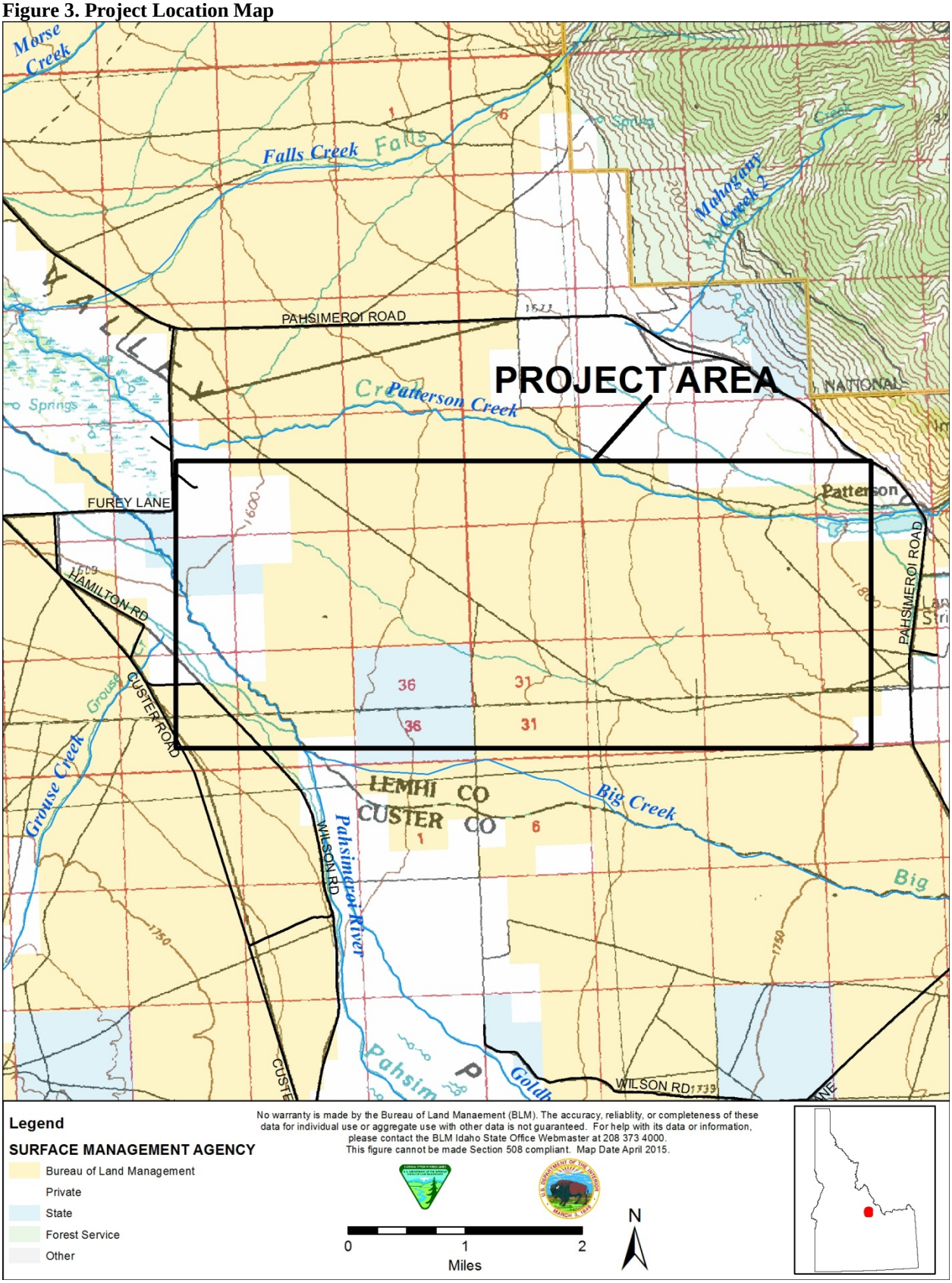
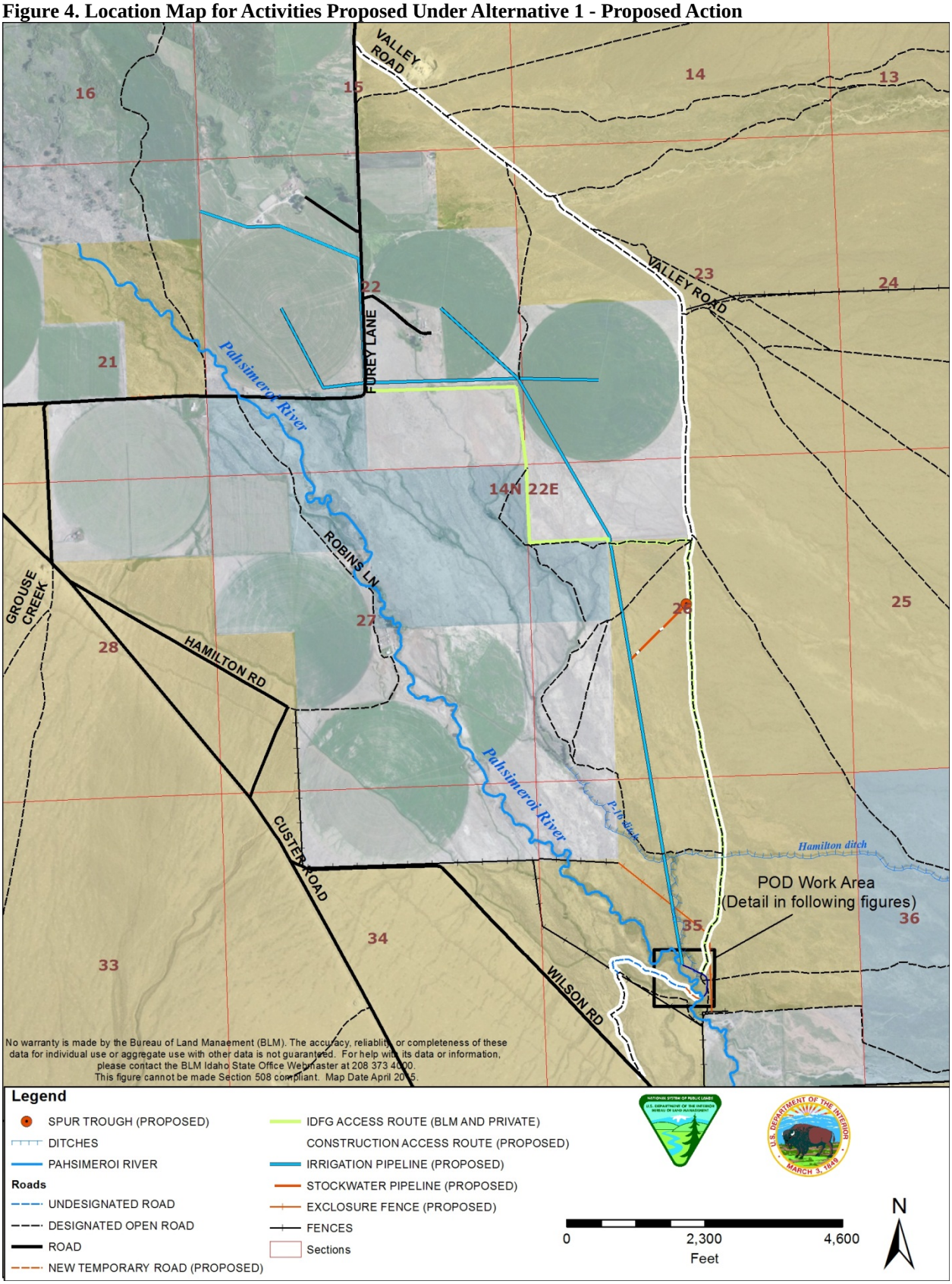


Figure 4. Location Map for Activities Proposed Under Alternative 1 - Proposed Action



CONFORMANCE WITH APPLICABLE LAND USE PLAN

The applicable Land Use Plan for the Proposed Action is the 1999 Challis RMP. The alternatives analyzed in this EA are subject to and in conformance with the following goals and objectives of the Challis RMP (BLM 1999).

- Biological Diversity: Goal 1, Page 21: Maintain functional and repair non-functional ecological systems and processes to ensure continued sustained production of ecosystem products and values such as forage, timber, clean water, and wildlife and fisheries habitat.
- Fisheries: Goal 1, Page 23: Ensure a natural abundance and diversity of aquatic habitats to support fisheries resources in a healthy and productive condition, to provide the continued opportunity for non-consumptive uses, and to ensure the viability of these species.
- Management Decision #6: provide opportunity and support to the Idaho Department of Fish and Game (IDFG), National Marine Fisheries Service (NMFS), US Fish and Wildlife Service (USFWS), US Forest Service (USFS), Bonneville Power Administration (BPA), appropriate Federally recognized tribes, and other partners for the cooperative management of anadromous and resident fish resources in order to promote fisheries opportunities on BLM administered public lands, while ensuring protection of priority salmonid fish resources.
- Floodplain/Wetland Areas: Goal 1, Page 26: Maintain or improve the unique resource values of wetland and floodplain areas.
- Land Tenure and Access: Goal 3, page 35: Consider public needs for use authorizations, such as ROWs, leases, permits, and withdrawals. Rationale: 8. New rights-of-way for water to be diverted from public land by a private claimant would only be granted if (a) the diversion facility is controllable, measurable, and/or designed to divert, at most, the amount of water permitted in the water right, and (b) the diversion would have no significant impact on existing resource values, and (c) granting the right-of-way would not adversely affect achievement of riparian management or aquatic objectives, and (d) when appropriate, the diversion facility is designed and constructed in accordance with the latest fish screening and bypass criteria.
- Minimum Stream Flow: Goal 1, Page 45: Maintain riparian areas, improve fish migration, decrease fish mortality, provide for recreational opportunities, and maintain aesthetics by facilitating the acquisition of minimum stream flows.
- Riparian Areas: Goal 1, Page 57: Manage stream riparian areas to maintain or achieve proper functioning condition to ensure desired functions, improve water quality, prevent and minimize flood and sediment damage, and establish conditions which support attainment of healthy and productive aquatic habitat. Maintain proper functioning condition stream riparian areas and restore functional-at-risk and non-functional stream riparian areas so that 75 percent or more of stream riparian areas are in proper functioning condition or making progress toward proper functioning condition within five years. Maintain proper functioning condition stream riparian areas and restore functional-at-risk and non-functional stream riparian areas so that 90 percent of riparian areas on fish bearing streams are in proper functioning condition or making progress toward proper functioning condition by 2010.

- Water Quality: Goal 1, Page 68: On perennial streams, improve water quality to fully support those beneficial uses which are not supported, are threatened, or are only partially supported. Maintain fully supported beneficial use status where it exists.

RELATIONSHIP TO STATUTES, REGULATIONS, OR OTHER PLANS

The National Historic Preservation Act of 1966, as amended (NHPA; with regulations under 36 CFR 800) established the federal government's policy and programs on historic preservation. Section 106 of NHPA requires agencies to consider the effects of their actions on historic properties (defined as cultural resources determined to be eligible for listing on the National Register of Historic Places) prior to project implementation. The NHPA specifically requires federal agencies to identify and manage historic properties on federally owned and administered lands. Consultation under NHPA for this project has been conducted in accordance with BLM's National Programmatic Agreement and the 2014 implementing Protocol Agreement between Idaho BLM and the Idaho State Historic Preservation Office.

The Fort Bridger Treaty of 1868 (15 Stat. 673) specifically reserves the rights of the Shoshone and Bannock Tribes to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands, including public lands administered by the BLM CFO. The federal government has a federal trust responsibility to manage public lands to provide for the continued exercise of tribal treaty rights, consistent with management policies, on all unoccupied lands within their jurisdiction. Part of the federal trust responsibility entails conducting government-to-government consultation with Indian groups when a proposed project has the potential to impact the exercise of treaty-reserved rights.

The Clean Water Act (CWA; 33 USC §1251 et seq.) requires that states and tribes restore and maintain the chemical, physical, and biological integrity of the nation's waters. States and tribes must adopt water quality standards necessary to protect fish, shellfish, and wildlife while providing for recreation in and on the waters whenever possible.

Section 303(d) of the CWA establishes requirements for states and tribes to identify and publish a prioritized list of water bodies that are impaired (not fully supporting their designated beneficial uses) every two years. The most recent publication for Idaho is the 2012 Integrated Report (IR, IDEQ 2014) prepared by the Idaho Department of Environmental Quality (IDEQ) and approved by the United States Environmental Protection Agency (EPA) on July 11, 2014. For waters identified on this list, the state must establish a Total Maximum Daily Load (TMDL) for each pollutant causing the water body not to fully support its designated beneficial uses. The TMDL is the amount of pollutant that could be added to the water body per day while allowing the given water body to still fully support all of its designated beneficial uses. TMDLs are used to establish allowable pollutant loads at levels adequate to achieve water quality standards required for the designated beneficial uses.

Section 404 of the CWA addresses permits for dredged and/or filled material. This project would require placement of fill within the Pahsimeroi River channel below the ordinary high water mark, and therefore is subject to permitting under Section 404. CSWCD, Challis Office, in coordination with the ROW applicants and BOR, will apply for the required federal and state 404 permits.

An Idaho Department of Water Resources (IDWR) transfer is not required as the reconstructed P-16 POD would be installed approximately 520 feet upstream and located in the same 40 acre parcel as the existing POD.

The Clean Air Act of 1970 (amended 1990) resulted in a major shift in the federal government's role in air pollution control. This legislation authorized the development of comprehensive federal and state regulations to limit emissions from both stationary (industrial) and mobile sources, and substantially expanded the government's enforcement responsibility and capability.

Section 7 of the ESA outlines the procedures for federal interagency cooperation to conserve federally listed species and designated critical habitat. Section 7(a)(2) states that each federal agency shall, in consultation with the Secretary of the Department of Interior, insure that any action they authorize, fund, and/or carry out is not likely to jeopardize the continued existence of a listed species or result in the destruction or adverse modification of their designated, proposed, critical, or essential habitat.

Pursuant to Section 305(b)(2) of the Magnuson-Stevens Act, federal agencies must consult with the NMFS regarding any of their actions authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken that may adversely affect Essential Fish Habitat (EFH). The Magnuson-Stevens Act, Section 3, defines EFH as "those waters and substrate necessary for fish for spawning, breeding, feeding, or growth to maturity."

In 1995, the BLM adopted the Interim Strategy for Managing Anadromous Fish-Producing Watersheds in Eastern Oregon and Washington, Idaho, and Portions of California, commonly referred to as PACFISH (USDA-USDI 1995a). PACFISH provides Riparian Management Objectives for managing riparian resources. PACFISH standards apply to watersheds that contain anadromous fish such as the Salmon River, Pahsimeroi River, and their tributaries.

Also in 1995, the BLM implemented the Bull Trout Habitat Conservation Strategy, commonly referred to as INFISH (USDA-USDI 1995b). INFISH is virtually identical to PACFISH except that it applies to land management activities that influence bull trout habitats rather than anadromous fisheries habitats. INFISH standards may apply to watersheds not already covered by PACFISH.

SCOPING, ISSUES, AND DECISIONS TO BE MADE

Scoping and Issues

BLM CFO internal project scoping meetings were held in 2013 and 2014.

On December 13, 2013, the BLM CFO Field Manager sent a letter to the Shoshone-Bannock Tribes' Fort Hall Business Council and to tribal technical staff, requesting their review of the proposed project and offering to initiate government-to government consultation if the Tribes felt the project warranted it. As of May 27, 2015, BLM CFO had not received any comments or concerns from the Shoshone-Bannock Tribe.

On December 13, 2013, the BLM CFO Field Manager sent a scoping letter to interested members of the public, state and federal agencies, and the commissioners from both Custer and Lemhi counties requesting comments on the P-16 Furey Lane Water Conservation and Reconnect Project. The letter sought public input for the project and contained a list of preliminary issues identified during the October 31, 2013 meeting. Supportive comments were received from various groups during the public scoping process, as well as comments detailing issues to be addressed in the EA including potential impacts to private property values, access to private property, and impacts to sage-grouse, pygmy rabbits, and other wildlife. The NEPA Project Summary was posted to BLM's ePlanning NEPA database, available to the public, in December 2013. Table 1 lists the issues identified through internal and external scoping for the proposed project.

Table 1. Issues Identified through Scoping

Resource	Resource Issue
Cultural Resources	▪ How would the Proposed Action and alternatives impact historic properties or other cultural resources that may be present in the action area?
Threatened, Endangered, and Sensitive Fish; Fisheries	▪ How would designated critical habitat for Chinook salmon, steelhead, bull trout and EFH be affected in the action area reach of the Pahsimeroi River and downstream from short term impacts related to diversion removal, reconstruction, and associated riparian restoration activities? ▪ Are juvenile or adult Chinook salmon, steelhead, bull trout, or other native salmonids (rainbow trout, westslope cutthroat trout) likely to be present in the action area reach of the Pahsimeroi River? How would these individuals be affected from short term impacts related to diversion removal, reconstruction, and associated riparian restoration activities? ▪ How would designated critical habitat for Chinook salmon, bull trout and EFH in the action area reach of the Pahsimeroi River be affected by the project further in time when hydrologic connectivity, and restored instream flows occur? ▪ How would Chinook salmon, bull trout, steelhead, and other native and non-native salmonids in the action area reach of the Pahsimeroi River be affected by the project further in time when hydrologic connectivity, fish passage and restored instream flows occur?
Invasive /Non-native Species	▪ How would the Proposed Action and alternatives impact the abundance and distribution of invasive/non-native species?
Economic and Social Values	▪ How would the Proposed Action and alternatives impact the local and regional economy including agricultural practices within the Pahsimeroi Valley? ▪ How would the Proposed Action and alternatives economically impact the permittee due to increased livestock management including water hauling and riding? ▪ How would increasing fence/stockwater trough system maintenance economically impact the permittee? ▪ How would the Proposed Action and alternatives impact the property values of private landowners with portions of the P-16 ditch on their property?
Migratory Birds	▪ How would the Proposed Action and alternatives impact migratory birds and their habitat?
Native American Religious Concerns	▪ How would the Proposed Action and alternatives impact Native American religious concerns in the action area?

Resource	Resource Issue
Soils	▪ How would the Proposed Action effect long-term viability of soils (productivity, infiltration, ground cover)?
Threatened, Endangered, and Sensitive Animals/ Wildlife	▪ How would the Proposed Action and alternatives impact sage-grouse habitat including designated Preliminary Priority Habitats in the project area? Specifically, how would fence design and amount of disturbance in mapped habitat impact sage-grouse habitat? ▪ How would vegetation removal and potential burrow disturbance impact pygmy rabbits that may be present in the project area? ▪ How would the construction and placement of supplementary stock/wildlife troughs affect sage-grouse?
Range Resources	▪ How would the proposed project alter grazing patterns due to water development/availability from the loss of Hamilton ditch water source? ▪ How would the change in grazing patterns alter upland vegetative species within the allotment?
Tribal Treaty Rights and Interests	▪ How would access to and utilization of treaty- reserved resources be impacted by the Proposed Action and alternatives?
Vegetation	▪ How would the Proposed Action and alternatives impact existing vegetation composition?
Water Quality	▪ How would the Proposed Action and alternative(s) impact water quality (specifically temperature and sediment) in the Pahsimeroi River? ▪ How would sediment and erosion be mitigated both during and following implementation of the Proposed Action? ▪ How would instream flows downstream of the new P-16 headworks be affected by the Proposed Action and alternatives?
Wetland Riparian Zones	▪ What wetland/riparian species and vegetation types would be disturbed/created as a result of the Proposed Action and alternatives?

Decisions to be Made

The Challis Field Manager is the authorized officer responsible for decisions regarding the management of BLM administered public lands within the project area. The EA will provide information for the authorized officer to make an informed decision. Based on the results of the NEPA analysis, the authorized officer will issue a determination of the significance of the environmental effects and whether an environmental impact statement (EIS) would be required.

The EA will provide information for the authorized officer to select an alternative in its entirety, or select specific portions from the alternatives. The Field Manager may authorize: 1) reconstruction of the P-16 diversion and construction of associated infrastructure, including associated bank rehabilitation or enhancement, fence construction, grading of existing designated

open roads across BLM administered lands to access the construction site, and wildlife/stockwater system construction and/or reconstruction, 2) granting of a ROW to the Furey Lane/P 16 Irrigation Company for the diversion structure, ditch and adjacent maintenance road, and pipeline; and 3) granting of a ROW to Idaho Department of Fish and Game Screen Program for a fish screen, bypass pipe, and access across BLM administered lands to maintain the screen and associated infrastructure.

THE PROPOSED ACTION AND ALTERNATIVES

Description of Alternative 1 - Proposed Action

A ROW would be authorized to the Furey Lane/P-16 Irrigation Company to construct and/or maintain: 1) a new headworks and diversion structure located in the Pahsimeroi River, approximately 520 feet upstream of the existing POD, 2) an open ditch, from the POD to the fish screen, 3) associated irrigation infrastructure downstream of the fish screen, including a trash screen and bubbler with associated rock overflow, 4) a barbed wire exclosure fence, and 5) an 18-inch diameter buried pipeline. The ROW authorization for the reconstructed irrigation headworks would be 100 feet long by 100 feet wide. The ROW authorization for the ditch, and adjacent maintenance road from the headgate to the fish screen would be 670 feet long by 35 feet wide. The ROW authorization for the bubble screen and rock overflow would be 75 feet long by 100 feet wide. The ROW authorization for the exclosure fence would be 3,215 feet long by 8 feet wide. The ROW authorization for the pipeline would be 7,228 feet long by 35 feet wide. The irrigation infrastructure would deliver decreed water rights across BLM administered land to private land in the vicinity of Furey Lane. ROW dimensions and locations that would be issued to the Furey Lane/P-16 Irrigation Company are shown in Figure 5 below.

A ROW would be issued to IDFG authorizing construction and/or maintenance of a fish screen, a secondary debris screen, and a fish return pipe. Additionally, the ROW would authorize IDFG access across an existing designated open two-track road from private land to the diversion structure and fish screen, and the authority to conduct minor improvements (grading), minor fill placement as needed, installation of culverts if necessary, and maintenance of the access roads (Figure 4). The ROW authorization for the fish screen would be 70 feet long by 70 feet wide. The ROW authorization for the bypass pipe would be 110 feet long by 25 feet wide. The ROW authorization for the access road would be 8,750 feet long by 20 feet wide. ROW dimensions and locations that would be issued to IDFG are shown in Figure 6 below.

Figure 5. ROW Dimensions and Locations for Furey Lane/P-16 Ditch Co.

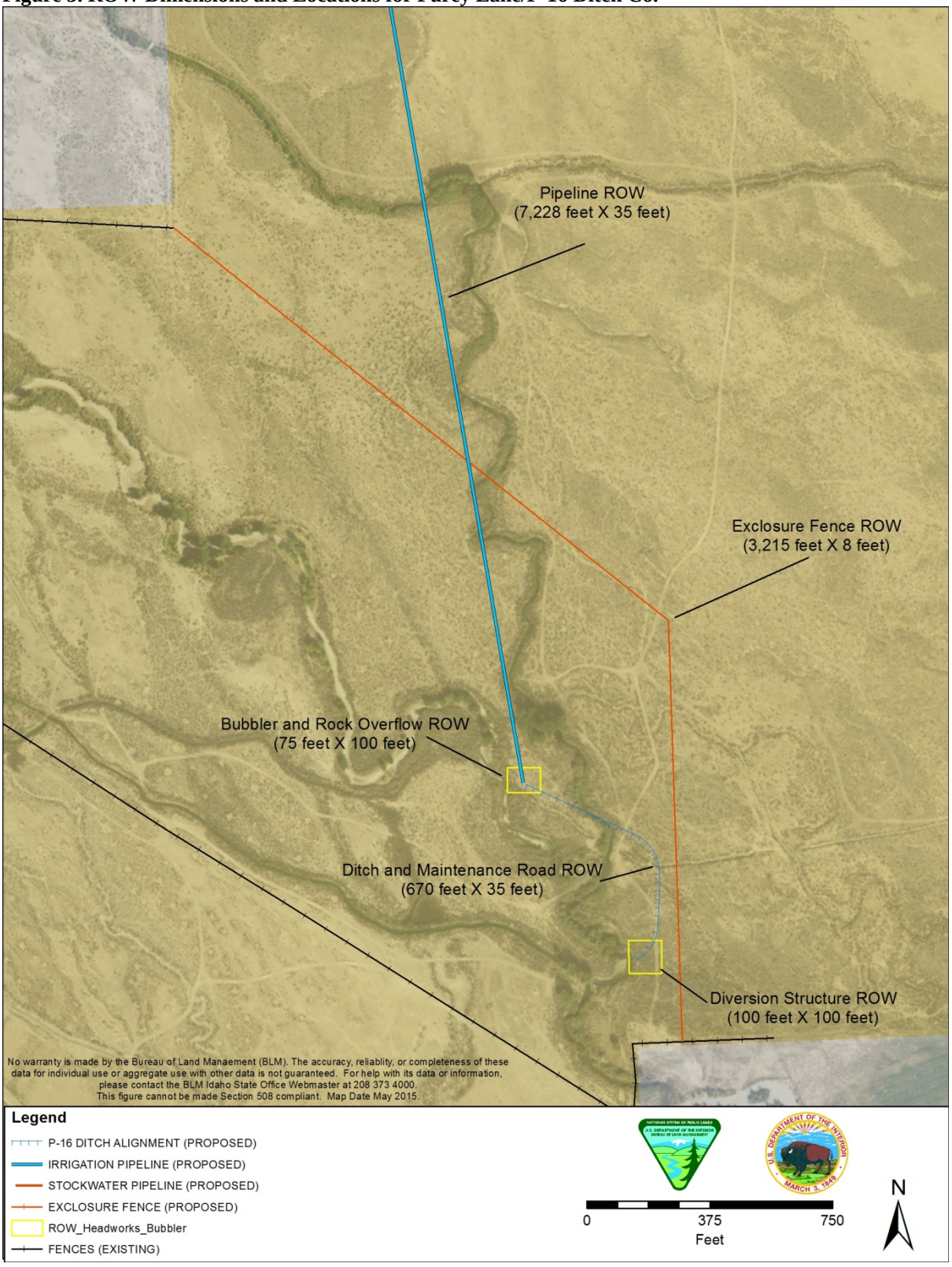
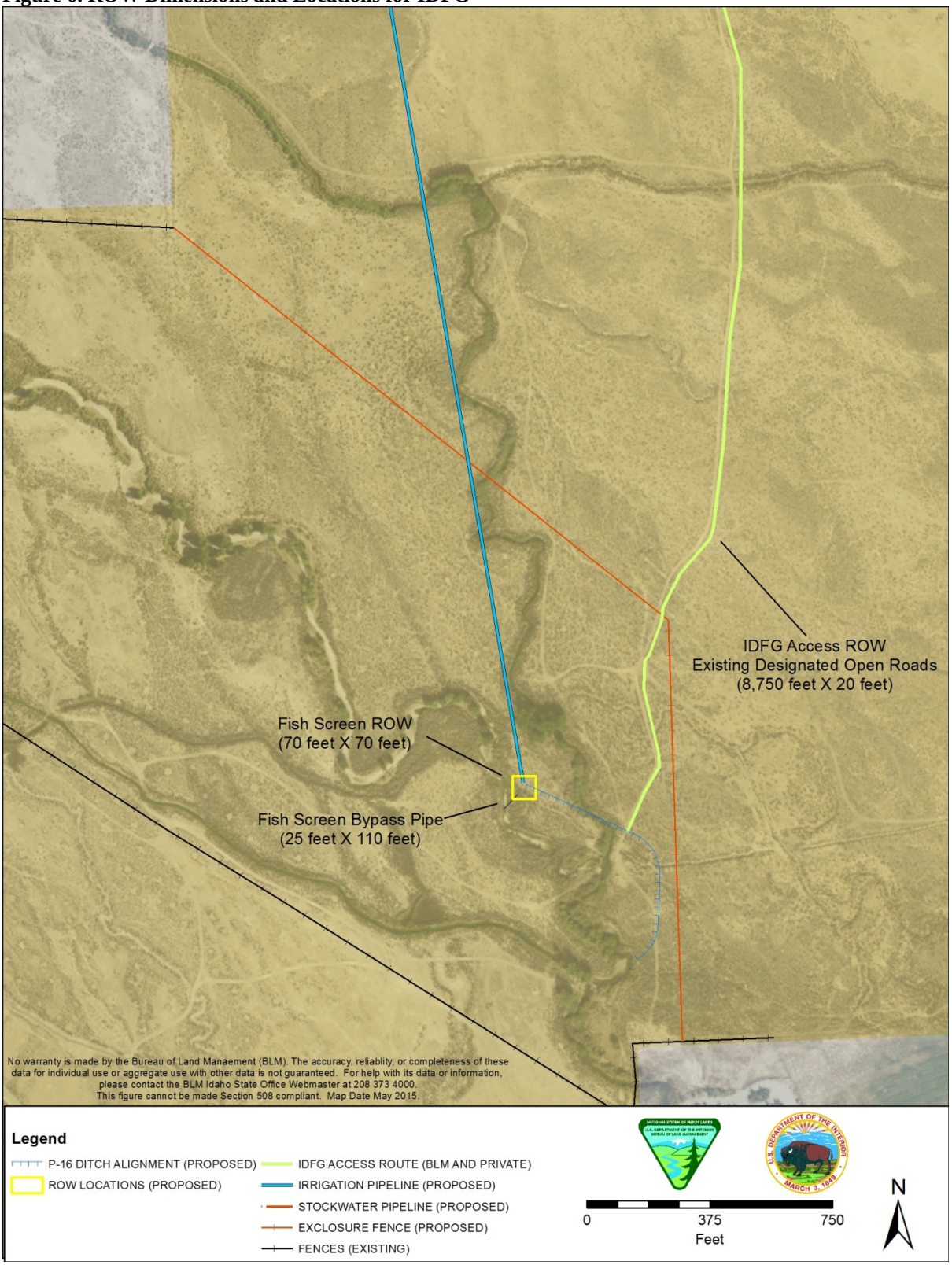


Figure 6. ROW Dimensions and Locations for IDFG



Proposed construction activities associated with the action include:

1. Relocation of the existing POD, and construction of new instream diversion headworks approximately 520 feet upstream of the existing POD.
2. Closure of the existing POD and backfilling approximately 760 feet of the existing P-16 ditch.
3. Channel reconstruction of approximately 135 feet of the Pahsimeroi River channel to provide appropriate grades for water diversion and improve riparian habitat and channel functionality.
4. Construction of a temporary crossing over the Pahsimeroi River.
5. Construction of approximately 670 feet of ditch and adjacent maintenance access road from the reconstructed POD to the fish screen.
6. Construction of approximately 350 feet of temporary access road to access construction areas on the west side of the Pahsimeroi River.
7. Construction and installation of a NMFS compliant fish screen and fish bypass pipe,
8. Construction of a trash screen, bubbler, rock overflow, and 7,228 feet of 18-inch buried irrigation pipeline to private property in the vicinity of Furey Lane.
9. Construction of 1,500 feet of stockwater pipeline to supply a trough in the BLM County Line Allotment. Trough would be located at: Boise Meridian, T. 14 N., R. 22 E., Sec. 26, SWNE.
10. Construction of a 4-wire fence to exclude livestock from the irrigation headworks, ditch, fish screen, and approximately 1.05 miles of the Pahsimeroi River. The fence would be designed in accordance with BLM Manual 1741-1 and would be wildlife friendly (smooth bottom wire, designated wire spacing, maximum top wire height, etc.).

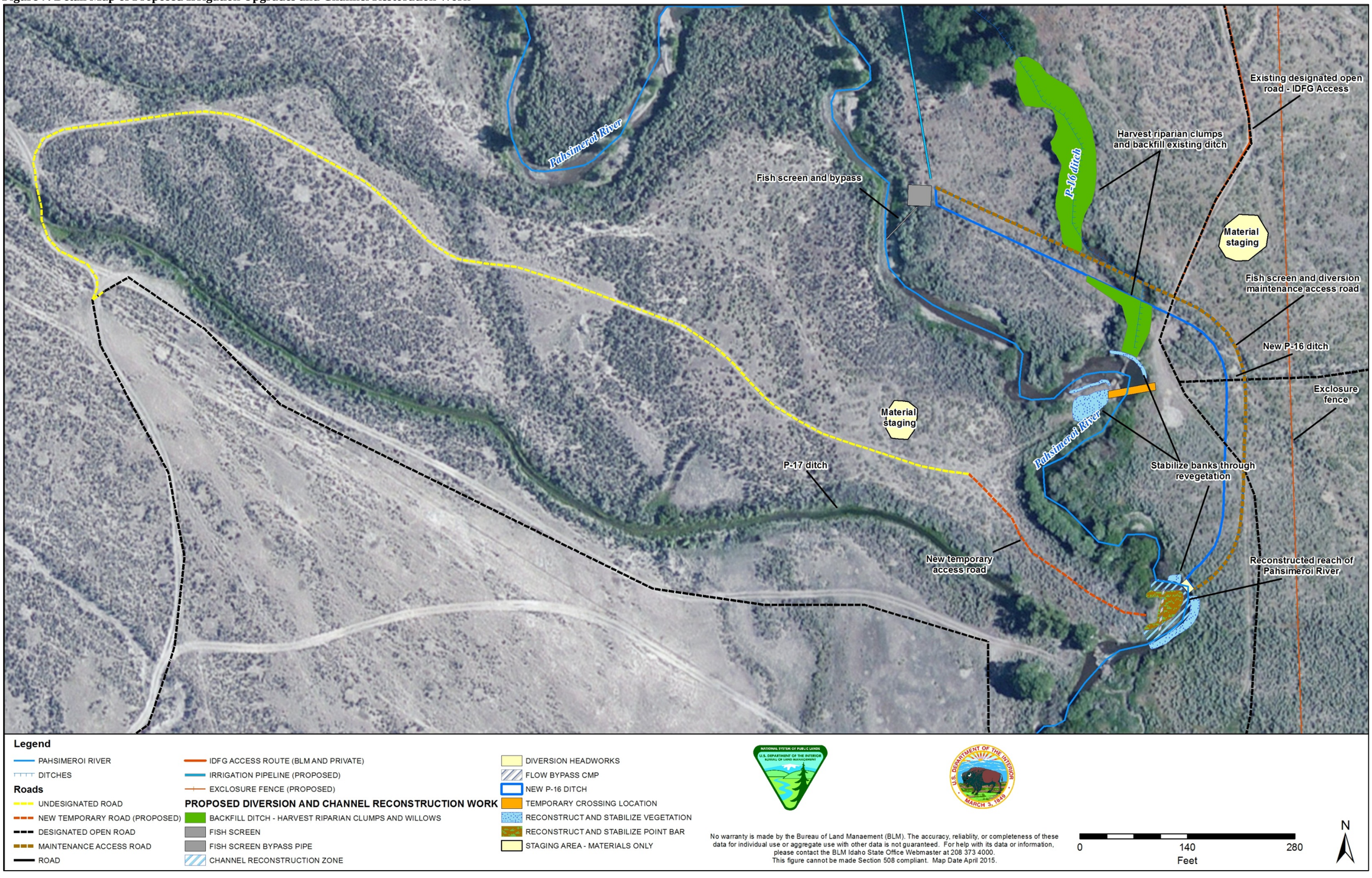
The new irrigation system would provide adequate water to meet the proponent's irrigation needs, and would allow the landowners to discontinue use of Big Creek water rights (9.54 cfs) that are currently conveyed via the Hamilton ditch and are used to supplement Pahsimeroi River water rights diverted at P-16.

Areas disturbed during construction would be revegetated as part of the project design. Revegetation plans include reseeding disturbed areas and transplanting more than 2,000 willow cuttings and 80 riparian vegetation clumps from the existing P-16 ditch to sites disturbed during construction. Upland areas around the fish screen, along the pipelines, and the watering trough areas would be reseeded with a BLM approved seed mix and treated per the BLM CFO Integrated Weed Control Program to control invasive plant species (BLM 2008).

All instream and upland construction are planned for implementation during the summer and fall of 2015, but could extend into the winter or even early spring of 2016 if necessary. Construction activities are anticipated to take seven weeks, with instream work occurring for approximately three weeks.

The objectives of the Proposed Action are to: 1) improve water delivery efficiency to private landowners with water rights from the Pahsimeroi River 2) remove an existing instream fish migration barrier and eliminate entrainment within the irrigation infrastructure; 3) increase flows downstream of P-16 in the Pahsimeroi River, 4) improve riparian habitat within the Pahsimeroi River downstream of the P-16 diversion, and 5) discontinue diversion and conveyance of Big Creek water via the Hamilton ditch and increase streamflow in Big Creek below the Hamilton ditch POD. Specific construction activities and actions proposed are shown in Figure 7 below, and described in the following sections.

Figure 7. Detail Map of Proposed Irrigation Upgrades and Channel Restoration Work



Channel Dewatering and Fish Bypass System

A temporary bypass system would be used to dewater the project reach during channel reconstruction and installation of the headworks structure and provide downstream fish passage around the site during construction. No instream work would occur until flows in the work area are less than 20 cfs.

A temporary channel spanning cofferdam, consisting of ecology blocks, bentonite supersacks, or similar would be placed in the river channel to direct the entirety of Pahsimeroi River flow into a 36-inch diameter, 60 foot long corrugated metal pipe (CMP), or equivalent, that would be installed across the floodplain/sand bar directly west of the proposed POD. The bypass pipe would have a slope of approximately 1.5%, and would remain in place for the duration of in-channel construction, expected to take three weeks.

A second cofferdam consisting of ecology blocks, bentonite supersacks, or similar, would be installed downstream to keep water from backing up into the work area. If necessary, a pump would be used to fully dewater the existing deep pool at the downstream end of the work area. The pump intake would meet NMFS screening criteria. Water from the work area would be pumped either into the existing P- 17 ditch, the P-16 ditch downstream of the work area, or other methods would be used to filter the water before it is returned to the river. Bypass system construction limits would be established and Best Management Practices (BMPs) would be implemented in accordance with the drawings and specifications prior to and during construction.

The instream work area would be slowly dewatered to encourage any fish present to emigrate from the area, minimizing the number of fish that would have to be salvaged. IDFG biologists would conduct fish salvage by electrofishing and netting in the dewatered section after water is turned into the bypass pipe under their take permit. All fish removed would be released into live water at the direction of IDFG.

Following completion of instream work, the stream channel would be “pre-washed” into the existing P-16 ditch, in order to minimize sedimentation occurring from the work area. The rewatering and “pre-washing” of the new channel would occur gradually to minimize the chance that any fish upstream of the work site would be washed into the ditch. The cofferdams and bypass pipe would be removed from the site. The bypass pipe alignment would be back-filled with the original excavated native material. The native fill would be compacted and covered with one foot of rounded cobble, ranging in intermediate diameter between two to nine inches. Live riparian vegetation clumps salvaged from the existing P-16 ditch would be transplanted at the point of the bar, and live brush trenches would be installed across the bar behind the riparian clumps.

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by BOR. The P-16 Diversion Replacement drawings (BOR 2014) are available upon request from the CFO.

Site Access and Temporary Pahsimeroi River Crossing

Routes that are currently designated open by the 2008 Challis Travel Management Plan (TMP) would provide primary access to the site for construction and maintenance (Figure 4, Figure 7). Access to the west side of the river would be via an existing, but not designated open route. Additionally, access to the west side would require construction of approximately 350 feet of new, temporary access road to provide access from the end of the undesignated segment of road to the construction site. Following completion of construction activities, the temporary road would be obliterated by ripping and reseeding the roadbed. Surface disturbance associated with construction of the temporary access road would be 14 feet by 350 feet (0.11 acres) (Figure 7).

No existing route crosses the Pahsimeroi River or P-16 ditch in the project vicinity to allow passage from one side to the other. In order to maximize efficiency of construction activities, and thereby minimize the amount of time required for dewatering the reconstructed stream reach, it is anticipated the contractor would need to move equipment and/or materials back and forth from one side of the river to the other. Therefore, a temporary crossing would be installed across the Pahsimeroi River to provide access to the west side of the project area during construction. The temporary crossing would be constructed by placing one or two cofferdam structures (ecology blocks, supersacks, or similar) instream from the west bank. The cofferdam would divert water to the opposite bank and allow placement of a 48-inch diameter, 40 foot long CMP or equivalent in the river. Once the pipe is in place, clean riprap sourced either from the BLM Patterson Creek pit or other off-site sources would be used to backfill around the pipe. All fill would be placed by equipment operating from the bank. After the pipe is placed, the cofferdams would be relocated to divert the water into the pipe, and the remainder of the channel would be filled with clean rock to complete the crossing. Disturbance associated with installation and removal of the temporary crossing would be approximately 45 feet by 50 feet (0.05 acres). Removal of the crossing would follow the sequence described above, in reverse. All fill placed in the Pahsimeroi River to construct the crossing would be removed from the channel at the completion of construction activities and would be hauled off site, used as backfill in the existing P-16 ditch, or used to improve the crossing over the Hamilton ditch along the proposed IDFG access route.

The temporary crossing, if needed, would be in place for no more than three weeks. The crossing would be installed just upstream of the existing P-16 POD in an area that has been previously disturbed by diversion maintenance activities. Live willows (< 0.02 acres) removed during installation of the temporary crossing would be stockpiled and replanted when the crossing is removed, or transplanted at another site in the project area. Disturbed areas would be reclaimed following removal of the temporary crossing by reseeding and/or live willow staking and riparian vegetation clump placement.

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by BOR. The P-16 Diversion Replacement drawings (BOR 2014) are available upon request from the CFO.

Channel Reconstruction

Approximately 135 feet (0.11 acre, assuming 35 foot disturbance width) of the Pahsimeroi River channel would be reconstructed to provide appropriate grades for diversion, allow for installation

of the irrigation diversion structure, and improve channel habitat and functionality (Figure 7). Within the reconstructed reach, the entire streambed would be excavated to grade and backfilled with engineered streambed materials (ESM). ESM comprised of equal parts 3-inch minus pit-run and 12-inch riprap would be installed from the upper end of the project site to the riffle crest, where the riprap component size would be increased to18-inch. The ESM would be placed in lifts (typically 6-inches per lift) and the fines would be jetted or flooded into place until water ponds on the surface. This would help to decrease water loss from the reconstructed streambed to groundwater.

In addition to placement of ESM in the streambed, the streambanks would be laid back to appropriate grades as specified by the design documents. Design typical drawings indicate that bank angles would vary between 1.5:1 and 2:1 slopes; however final slopes may be determined during construction and would not be steeper than 1.5:1. Following construction, banks would be stabilized through a variety of methods including placement of rootwads, transplanted whole live shrubs and willows, live willow stakes, live brush bank treatments, and short sections of riprap.

The reconstructed channel begins with a riffle at the upper end, which would transition into a constructed pool where the relocated P-16 POD would be. At the pool tailout, a riffle would also be constructed to provide grade control and ensure functionality of the diversion. The reconstructed diversion structure, consisting of a steel headgate and wing walls would be installed on the east side of the river in the engineered pool, approximately midway through the reconstructed channel length. Grade control would be provided by riffle crest features at both the pool head and tailout; these structures would ensure the appropriate water surface elevation to divert water into the headgate at all anticipated stream stages with minimal or no maintenance. The grade control riffle design has been reviewed by NMFS engineering staff, and the structures meet fish passage requirements for all life stages.

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by BOR. The P-16 Diversion Replacement drawings (BOR 2014) are available upon request from the CFO.

Reconstructed Diversion Structure

The new headworks would be a low profile, steel inlet structure with a lockable slide gate, installed approximately 520 feet upstream of the existing POD. The foot of the headgate structure would extend below the ESM and not require additional riprap. No concrete would be used on the stream side of the gate structure. A grated operating deck behind the slide gate would be installed to improve access and safety for personnel adjusting flows. Elevation of the deck would be above the stage of the 50-year flow event. The headgate would be lockable, and would have a flow measuring device installed. Construction would be supervised by the BOR designated site supervisor to establish top of structure elevation and to meet fish passage requirements.

The headworks structure would be 18 feet long, 4 feet wide, and 10 feet tall, with 13.5 foot steel wingwalls extending back into the streambank at 45 degrees. The operating deck of the structure would be on grade with the surrounding terrain and the bottom of the headworks structure would

extend approximately 3 feet below the streambed. The entire structure would be placed on a 6-inch thick subgrade of clean rock, with a mean diameter of approximately 3 inches.

The watertight slide gate would cover a 5.5 foot wide by 2 foot high opening. Two steel constructed wing walls would extend from each corner at the face of the headworks structure at a 45-degree angle, and would extend 13.5 feet into the streambank ensuring security of the headworks structure during high flows. The headworks would route diverted water into a stilling basin connected to the ditch that is described below. Disturbance associated with installation of the new diversion structure would be 100 feet by 100 feet (0.23 acres).

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by BOR. The P-16 Diversion Replacement drawings (BOR 2014) are available upon request from the CFO.

Ditch and Maintenance Access Road

A ditch, with an adjacent maintenance access road, would be constructed to deliver water diverted at the reconstructed POD to the fish screen. The total length of the ditch would be approximately 670 feet, and the associated ROW width would be 35 feet including both the ditch and adjacent maintenance road. The locations of the ditch and maintenance road are shown on Figure 7.

The reconstructed diversion would route water through the diversion headworks into a riprap lined stilling basin, which would transition into the ditch to the fish screen. The stilling basin would decrease the velocity of the diverted water, allowing for some sediment to be deposited in the basin before traveling down the ditch to the fish screen. A geo-membrane installed on the bottom and sides of the stilling basin would be lined with 18-inch riprap to a thickness of approximately 1.5 feet. The stilling basin would be approximately 12 feet long by 4 feet wide, with the sides rising approximately 6 feet at 1.5:1. The outflow of the stilling basin would feed into an open ditch lined with native material. The ditch would be a minimum of 4 feet deep, with a 6 foot bottom width, and sides sloped at 2:1 rising to meet the existing surrounding grade. Approximately 2,410 yd^3 of excess fill would be generated from excavation of the ditch. The excavated fill would be used as fill to close the existing P-16 ditch, and at other construction areas as needed. Any fill not needed for construction would be used to backfill approximately 760 feet of the existing P-16 ditch. The ROW and potential area of surface disturbance from the ditch and maintenance access road would be 35 feet by 670 feet (0.54 acres).

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by BOR. The P-16 Diversion Replacement drawings (BOR 2014) are available upon request from the CFO.

Fish Screen and Bypass System

IDFG would install a 12 foot long by 30-inch diameter rotary drum, self-cleaning fish screen approximately 670 feet downstream of the reconstructed P-16 POD. The ROW dimensions for the fish screen would be 70 feet by 70 feet (0.11 acres). The screen would prevent fish entrainment into the irrigation system, and would route fish back to the river downstream of the

diversion via a bypass pipe. The fish screen was designed in accordance with NMFS anadromous salmonid passage facility design (USDC NMFS, 2011), and would meet NMFS criteria at a variety of flow rates. The design flow is for 8.0 cfs at 72% submergence, which includes 7.2 cfs for irrigation and 0.8 cfs for the fish return flow. The locations of the fish screen and bypass pipe are shown on Figure 7.

The screen would be set in a single concrete bay, poured on site, which would include a sediment trap and trash rack on the intake side of the screen. The screen floor and walls would be cast-in-place concrete. The screen and other mechanical components would be fabricated off-site. The screen would be operated hydraulically by a paddlewheel installed below the screen.

To meet NMFS criteria, the fish screen would include a bypass pipe to return entrained fish back to the Pahsimeroi River unharmed. The bypass pipe would be a buried 10-inch diameter PVC pipe approximately 110 feet long, bedded and covered with one to two feet of soil. The ROW dimensions for the bypass pipe would be 110 feet by 25 feet. The streambank would be hardened with riprap to prevent erosion at the point where the bypass pipe empties into the river. Willow cuttings would be placed in the streambank as the riprap is placed. Surface disturbance associated with installation of the bypass pipe would be 2,750 ft^2 (0.06) acres).

While legally designated open routes would be primarily be used for construction access to site, approximately 670 feet of new road would be constructed parallel to the new diversion ditch to allow access for maintenance of the headgate, ditch, and fish screen, this road would be included in the ROW grant for the ditch company for the ditch, with an overall width of 35 feet. The Challis TMP would be amended to include this route as part of the system of open roads. The maintenance road would be used three to five times a week during the irrigation season (April 1 through October 31) to maintain the headgate and fish screen. No currently designated open routes would be closed and no alterations would impede passage through the area.

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by IDFG. The P-16 Fish Screen System drawings (IDFG 2014) are available upon request from the CFO.

Ditch below Fish Screen and Bubbler with Rock Overflow

Downstream of the fish screen, there would be approximately 30 feet of open ditch that would flow through a trash screen and into a pipe that discharges to an NRCS designed bubbler with a rock overflow. The bubbler would remove all debris larger than 3/32-inch, and would be the final structure before the diverted water enters the 18-inch delivery pipeline. The bubbler and rock overflow would be constructed on a 48 foot by 48 foot, 30-inch deep bed of rock (approximately 213 cubic yards) slightly downstream of the fish screen. The bubbler outflow would connect to a pipeline (18-inch diameter, 7,228 feet length) that would deliver decreed irrigation water to private lands in the vicinity of Furey Lane (Figure 4). The bubbler overflow would be routed over clean rock back to the Pahsimeroi River. Disturbance associated with the ditch from the fish screen to the bubbler, and the bubbler and rock overflow would be 0.20 acres (35 feet by 30 feet for the ditch, and 75 feet by 100 feet for the bubbler).

Irrigation Pipeline

The pipeline would be constructed across BLM administered land to private land in the vicinity of Furey Lane (Figure 4). The maximum width of disturbance would be 35 feet, and the resultant surface disturbance would be 5.81 acres. The ROW dimensions for the pipeline would be the area of disturbance (35 feet by 7,228 feet). To maintain design pressure for the gravity flow system, the pipeline would be buried at depths between three to five feet depending on topography, and would be buried at sufficient depth to maintain 30 inches of cover. The pipe would be bedded on sand or other fine-grained material, sourced from the excavated material, material obtained from the BLM Furey Lane pit, or other off-site sources. On top of the pipe bedding, the trench would be backfilled with the excavated material; with any unsuitable materials removed by screening, if necessary. There is not expected to be excess material following burial of the pipe, however, if after completion of burial of the pipe there is excess material, excess material would be used to backfill an additional length of the P-16 ditch on BLM administered land.

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by NRCS. The P-16 Irrigation System drawings (NRCS 2013) are available upon request from the CFO.

Spur Stockwater Pipeline and Trough

In order to replace livestock/wildlife water sources lost in the western part of the County Line Allotment as a result of fencing and ditch abandonment, a 1 ¼-inch High Density Polyethylene (HDPE) buried spur pipeline would branch off of the main irrigation pipeline and extend approximately 1,500 feet east to supply a new water trough located at: Boise Meridian, Idaho, T. 14 N., R. 22 E., Sec. 26, SENW (Figure 4). The spur pipeline would be laid with a pipe-layer, typically mounted on the back of a bulldozer, this method results in a disturbance width of approximately 1.5 feet where the pipe is laid. Surface disturbance from installation of the pipeline would be 1.5 feet by 1,500 feet (0.05 acres). Surface disturbance associated with the trough would be 175 feet by 175 feet (0.7 acres), for a total disturbance of 0.75 acres. BLM would complete all water rights application/transfers in order to ensure that the spur trough would have a valid water right associated with it.

Weed control for this and all ground disturbing project actions would follow the Challis-Salmon Integrated Weed Control Program Programmatic Environmental Assessment (BLM 2008).

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised onsite by the designated site supervisor, and would be in accordance with the design drawings and engineering completed by NRCS. The P-16 Irrigation System drawings (NRCS 2013) are available upon request from the CFO.

Upgrades to Existing BLM Access Roads

Access to the site during construction and for maintenance would follow existing public and private roads as shown on Figure 4 and Figure 7. A private road, approximately 1.2 miles long would connect with an adjacent designated open two-track road on BLM administered lands and extend approximately 1.7 miles across BLM administered lands to the project site. IDFG would

make minor improvements to this road to improve passage, including filling in low spots and grading the surface periodically, typically once every few years. All grading would take place within the current road disturbance, and no upgrades to the road surface material or width would occur. All proposed improvement activities would occur within the existing road disturbance and no additional disturbance is anticipated as a result of these activities. The road would be used by IDFG maintenance personnel up to five times a week during the irrigation season (April 1 to October 31) to maintain the fish screen. The private landowners would use the road periodically during the same period to maintain the diversion, ditch, and bubbler. The alignment of the IDFG access road, where these upgrades would occur, is shown on Figure 6.

Close Existing Point of Diversion

The existing P-16 diversion would be closed by backfilling approximately the first 80 feet of the ditch, from the Pahsimeroi River to the point where the new ditch would transect the existing ditch. The backfill would be completed to an elevation of at least 5,325 feet, and the height of the backfill would match the top of the new ditch bank where it transects the existing ditch alignment. Riparian vegetation clumps would be placed along the Pahsimeroi River at the existing ditch POD to ensure that the river does not erode through the backfilled portion of the ditch.

An additional 760 feet (approximate) beyond the intersection of the existing P-16 ditch with the new ditch would be backfilled with about 1,900 yd^3 of excess material, backfill in the ditch would not be placed above the existing surrounding grade. The backfilled section of ditch would be reseeded with a BLM approved upland seed mix. The remaining 6,600 feet (approximately 1.25 miles) of the P-16 ditch would not be impacted by harvest of riparian clumps or backfilling of excess material. Because the ditch has been used and maintained annually since its initial construction, no new surface disturbance is anticipated from closure of the POD. The P-16 pre-FLPMA ditch that crosses private and federal land and would be abandoned as part of the proposed project would no longer be needed or used by the water right holders. The landowners (private) and land management agency (federal) would be free to reclaim and use the land that the ditch occupies.

All non-rock material (canvas, plastic, tarps, etc.) associated with past diversion activities would be removed from the vicinity of the existing diversion during implementation.

Closure of the P-16 ditch would be completed by the landowner or their designated agent, as required for irrigation diversion, and therefore is exempt under 33CFR 323.4a (3) and 323.4a (6) from needing a Clean Water Act Section 404 permit.

Fence to Exclude Livestock from Diversion Structures

Approximately 3,215 feet of 4-wire wildlife friendly fence would be constructed to exclude livestock from the irrigation headworks and ditch, the fish screen, and approximately 1.05 miles (channel length) of the Pahsimeroi River (Figure 4, Figure 7). The fence would be constructed according to BLM standards as described in BLM Manual Handbook 1741-1 (BLM 1989) and would be marked with fence diverters to help prevent potential collisions by sage-grouse. Surface disturbance associated with installation of this fence would be 8 feet by 3,215 feet (0.59 acres) and would occur in the uplands.

All construction would be in accordance with design criteria stipulated in the plan set or this document and would follow BMPs described herein. All construction would be supervised

onsite by the designated site supervisor and would be in accordance with the design drawings and engineering completed by BOR. The P-16 Diversion Replacement drawings (BOR 2014) are available upon request from the CFO.

Summary of Ground Disturbing Impacts for Alternative 1

The Proposed Action is composed of several parts that are summarized in Table 2.

Table 2. Estimated New Ground Disturbance under Alternative 1 – Proposed Action

Proposed Activity under Alternative 1	Disturbance (acres)
Temporary access road on southwest side of Pahsimeroi River (14 feet by 350 feet)	0.11*
Construct and remove temporary stream crossing (45 feet by 50 feet)	0.05
Instream reconstruction activities (assumes 35 foot disturbance width by 135 feet length of reconstructed channel)	0.11
Diversion structure, operating deck, and stilling basin (100 feet by 100 feet)	0.23
Ditch and maintenance road (670 feet by 35 feet)	0.54*
Fish screen and bypass pipe (70 feet by 70 feet and 25 feet by 110 feet, respectively)	0.17*
Ditch below fish screen and bubbler with rock overflow (30 feet by 35 feet and 75 feet by 100 feet, respectively)	0.20*
Irrigation pipeline (35 feet by 7,228 feet)	5.81*
Spur stockwater pipeline and trough (1.5 feet by 1,500 feet and 175 feet by 175 feet, respectively)	0.75*
Fence (approximately 3,215 feet by 8 feet)	0.59 *
Total Estimated Ground Disturbance	8.56

*Identified as upland construction sites

Best Management Practices

The project area is above Hooper Lane, which is currently understood to be the upstream extent of Chinook salmon and steelhead presence in the Pahsimeroi River (Salmon-Challis 2014). The Pahsimeroi River above Hooper Lane is annually dewatered due to irrigation withdrawal and natural infiltration during much of the summer. Dewatering coupled with limited riparian vegetation and increased water temperatures may also limit fish presence within the project area. Therefore, a summer-fall construction work window for fisheries is considered adequate (Salmon-Challis 2014). The work window for construction to minimize effects to terrestrial wildlife is from July 15, 2015 through March 1, 2016. All construction is anticipated be completed during the late summer or early fall of 2015.

The following Best Management Practices (BMPs) will be applied to all construction activities and/or maintenance activities associated with project implementation and long-term operation of the ROW, as appropriate. This list includes, but is not limited to, applicable conservation measures required for project components covered by the NMFS (2015) and USFWS (2015) Programmatic ESA Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation for Habitat Restoration Projects.

- Prior to construction, the project area will be flagged to identify the following: (1) Sensitive resource areas, such as areas below ordinary high water, spawning areas, springs, and wetlands; (2) equipment entry and exit points; (3) road and stream crossing alignments; (4) staging, storage, and stockpile areas; (5) no-spray areas and buffers for herbicides.
- Temporary erosion controls, such as silt fences, weed-free straw matting/bales or fiber wattles will be installed before any significant alteration of the project area, and will be appropriately installed down slope of project activity with the riparian buffer area until site rehabilitation is complete. *The Catalog of Stormwater BMP, Idaho Department of Environmental Quality, for Idaho Cities and Counties* (IDEQ 2005) will be cited for construction direction. Construction spill prevention and control will be in accordance with BMP 8: *Spill prevention and control*. Once the site is stabilized, temporary erosion control measures must be removed.
- Adequate materials for the emergency control of erosion and chemical spills will be maintained on site at all times, including: (1) An adequate supply of sediment control materials (e.g. silt fence, straw wattles, certified weed-free straw bales); and (2) an oil-absorbing floating boom and absorbent pads whenever surface water is present.
- Sediment will be removed from erosion controls once the sediment has reached one-third of the exposed height of the control. If inspections show that the controls are ineffective, crews will be immediately mobilized to repair, replace, or reinforce controls as necessary.
- Contractors will be required to have a spill containment kit of appropriate size for the equipment used at the construction site. If spills of hazardous materials (including petroleum products) occur on site in excess of 25 gallons, the site supervisor shall immediately notify Idaho Department of Environmental Quality and the BLM, in that order.
- Construction equipment and materials staging, including refueling areas, will occur away from streams (150 feet minimum distance). All possible steps will be taken to minimize the possibility of machine lubricants entering the stream (i.e., equipment will be leak free prior to arrival on site and inspected daily).
- All equipment will be pressure washed to remove any excess oil, grease, or weed seeds before arriving at the work site.
- Machinery will be operated from the top of the streambank on adjacent upland and developed areas at each site to the maximum extent practicable. Equipment will not be driven or operated in flowing water.
- Hydraulic fluids used in any vehicle that will be operated in live water will be non-toxic to salmonids.
- No uncured “green” concrete will be allowed to enter the active stream channel.

- All project work would cease during heavy precipitation events (>1.6-inches in 24 hours [5-YR, 24-HR Storm Event]) in order to minimize resource damage. Project work will not occur until ground is sufficiently dry that wheeled equipment does not leave ruts with depth greater than 2-inches. Additionally, ground disturbing activities would not occur during wet conditions (i.e., during or immediately following rain events).
- Sequence or schedule work to reduce exposed bare soil to wind erosion. Water may be used to control dust.
- Any waste liquids generated at the staging areas will be temporarily stored under cover on an impervious surface such as tarpaulins until such time they can be properly transported to and treated at an approved facility.
- Heavy equipment will be selected (when possible) and operated in a manner that minimizes adverse effects to the environment (e.g., minimally-sized, low pressure tires, minimal hard turn paths for tracked vehicles, temporary mats or plates within wet areas or sensitive soils).
- Access to the construction site will occur on existing BLM roads and 350 feet of temporary access road. For construction of the temporary road, minimize soil disturbance and compaction within 150 feet of a stream, waterbody, or wetland by clearing vegetation to ground level and placing clean gravel over geotextile fabric, unless otherwise approved in writing (email) by NMFS.
- Following completion of construction, all materials for temporary road construction will be removed and disposed of properly.
- Complete earthwork (including drilling, excavation, dredging, filling and compacting) as quickly as possible. During excavation, stockpile native streambed materials above the bankfull elevation, where it cannot reenter the stream, for later use.
- Rock for instream structures will not be mined from any stream.
- All construction materials must come from outside of the construction site, and cannot be procured from BLM administered lands, unless approval is given by the authorized officer (Field Office Manager or his/her representative). The exceptions to this requirement are mineral materials (riprap, fill, gravel) that were procured with a valid BLM permit.
- CSWCD will ensure that adequate sanitation facilities are provided on site during construction, in accordance with 29 CFR 1910.141(c)(1)(i).
- All instream work will be done after the streambed has been dewatered. Dewatering and rewatering will be done slowly to minimize the suspension of disturbed sediments and avoid excessive downstream turbidity.
- Reconstructed stream channels will be “pre-washed” into a reach equipped with sediment control devices, prior to reintroduction of flow to the stream. For this project, it is suitable to divert the “pre-wash” water into the existing P-16 ditch system.
- Fish salvage will be conducted by IDFG during dewatering activities. When work area isolation is required, a fish biologist will determine how to remove ESA-listed fish, with least harm to the fish, before inwater work begins. This will involve either passive movement of fish out of the project reach through slow dewatering, or actively removing the fish from the project reach. Should active removal be warranted, a fish biologist will clear the area of fish before the site is dewatered using one or more of a variety of methods including seining, dipping, or electrofishing, depending on specific site conditions. A fish biologist will conduct or supervise the following activities: slowly

remove approximately 80% of the streamflow from the work area to allow some fish to leave work area volitionally; install blocknets; capture fish through seining and relocate to streams; then electrofish to capture and relocate fish not caught during seining; continue to slowly dewater the stream reach; collect any remaining fish in cold-water buckets and relocate to the stream. Use aerators or replace the water in the buckets at least every 15 minutes with cold clear water. While block nets are set, inspect them regularly for fish and remove any living to an area far enough away to avoid additional impingement risk. All of these activities will be completed on the same day. All handling of fish, using any method, will be conducted by or under the direction of a fish biologist, using methods directed by the following: NMFS Guidelines for Electrofishing Waters Containing Salmonids Listed under the ESA (NMFS 2000). For each project, the Project Sponsor will report the number of fish handled to NMFS and USFWS in the Project Completion Form (NMFS 2015; USFWS 2015).

- When reintroducing streamflow to a dewatered stream reach, the Project Sponsor (or their representative) will monitor the stream for turbidity. An appropriate and regularly calibrated turbidity meter, measuring nephelometric turbidity units (NTUs), is required. A sample must be taken prior to anticipated turbidity pulses at a relatively undisturbed area approximately 100 feet upstream from inwater disturbance to establish background turbidity levels. A sample must then be taken every hour and approximately 600 feet downstream from the point of discharge, or most appropriate downstream site, during sediment pulses and be compared against the background measurement. If turbidity levels exceed 50 NTUs over background levels for two consecutive readings (2 hours), the Project Sponsor must cease work immediately and take measures to reduce turbidity before continuing to reintroduce streamflow.
- All operators of construction equipment and/or construction personnel are required to immediately cease operation if a sick, injured, or dead specimen of a threatened or endangered species is found in association with project activities. Care will be taken in handling dead specimens in order to preserve biological material in the best possible condition for later analysis of cause of death.
- Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the authorized officer. An evaluation of the discovery will be made by the authorized officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.
- Pursuant to 43 CFR 10.4(g), the holder of this authorization must immediately notify the authorized officer by telephone, with written confirmation, upon the discovery of human remains, funerary items, sacred objects, or objects of cultural patrimony. Further, pursuant to 43 CFR 10.4(c) and (d), the holder must stop activities in the vicinity of the discovery and protect it for 30 days or until notified to proceed by the authorized officer.
- Minimize the removal of riparian vegetation, any riparian vegetation removed during construction will be preserved and replanted during site reclamation.

- Vegetation may be grubbed only from areas where permanent ground alteration will occur. Vegetation is to be cut at ground level and root wads retained where temporary clearing occurs.
- Each area requiring revegetation will be replanted prior to, or at the beginning of, the first growing season following construction. Reestablishment of vegetation will be achieved in disturbed areas to at least 70% of pre-project conditions within 3 years. An appropriate mix of species will be used to achieve establishment and erosion control objectives, preferably comprised of forb, grass, shrub, or tree species native to the project area or region and appropriate to the site. Non-native or invasive species will not be used. Vegetation, such as willow, sedge and rush mats, will be salvaged from disturbed or abandoned floodplains, stream channels, or wetlands to be replanted during site restoration. Fencing will be installed as necessary to protect the vegetation. Surface fertilizer will not be applied within 50 feet of any stream channel, waterbody, or wetland. Short-term stabilization measures may include the use of weed-free certified straw, jute matting, and other similar techniques.
- Weed infestations near the project area would be identified by the construction crews or on-site construction supervisor(s) prior to construction. Heavy equipment will avoid unnecessarily entering those areas to reduce the potential for spreading of invasive species.
- Riparian and streambank disturbance will be kept to a minimum at each site. Large willows that are removed will be salvaged with intact root-masses and replanted on site to expedite site recovery. All disturbed streambanks will be replanted with willows and other native plants and reseeded with a native seed mix.
- All access road improvement work (not including proposed new temporary road construction) will be done within the existing road prisms on BLM administered land. Placement of culverts, should it be necessary, will follow established BLM guidelines.
- Construction and/or maintenance in upland sites will be done so as to keep soil, grass, shrub and woody vegetation disturbance to a minimum. The upland construction sites will be reseeded with a BLM approved seed mix.
- Any large woody debris (LWD), topsoil, and native channel material displaced by construction will be stockpiled for use during site restoration.
- Treated wood may not be used in a structure (e.g., bridge) that will be in or over water or permanently or seasonally flooded wetlands.
- Abandoned ditches shall be backfilled to ensure that future high flows do not breach the ditch plug, and shall be backfilled to a height at least equivalent to the surrounding existing grade within that reach.
- Right-of-way holder shall remove only the minimum amount of vegetation necessary for the use and maintenance of the existing road.
- Right-of-way shall be maintained in a sanitary condition at all times; waste materials at those sites shall be disposed of promptly at an appropriate waste disposal site. 'Waste' means all discarded matter including, but not limited to, human waste, trash, garbage, refuse, oil drums, petroleum products, ashes, and equipment.
- The holder shall be responsible for weed control on disturbed areas within the limits of the right-of-way. The holder is responsible for consultation with the authorized officer and/or local authorities for acceptable weed control methods (within limits imposed in the

grant stipulations). Control measures must be done in accordance with the Challis Field Office Integrated Weed Management Program. Coordination with the Challis Field Office Weed Specialist shall be completed **before** applying herbicides.

- The holders of right-of-ways, IDI-37646 and IDI-37700, agree to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act of 1976, 42 U.S.C. 6901 et seq.) on the right-of-way (unless the release or threatened release is wholly unrelated to the right-of-way holder's activity on the right-of-way.) This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
- There is reserved to the Authorized Officer, the right to grant additional rights-of-way or permits for compatible use on, over, under, or adjacent to the land involved in this grant.
- Ninety (90) days prior to termination of the right-of-way, the holder shall contact the authorized officer to arrange a joint inspection of the right-of-way. This inspection will be held to agree to an acceptable termination (and rehabilitation) plan. This plan shall include, but is not limited to, removal of facilities, drainage structures, or surface material, recontouring, topsoiling, or seeding. The authorized officer must approve the plan in writing prior to the holder's commencement of any termination activities.

Permit Requirements and Contractual Agreements

A Class III intensive cultural resource inventory was conducted over the Area of Potential Effect of the Project. No cultural resources were located. The Idaho State Historic Preservation Office has reviewed and concurred with the findings and determination of effect. Because of limited ground visibility during cultural resource inventory, a BLM archaeologist would monitor during ground disturbing activities associated with the fish screen installation and reconstruction of the POD.

A fish screen agreement between IDFG and the landowners for 0.8 cfs would be completed prior to construction.

The existing and reconstructed PODs are in the same legal location so an IDWR water right transfer is not required.

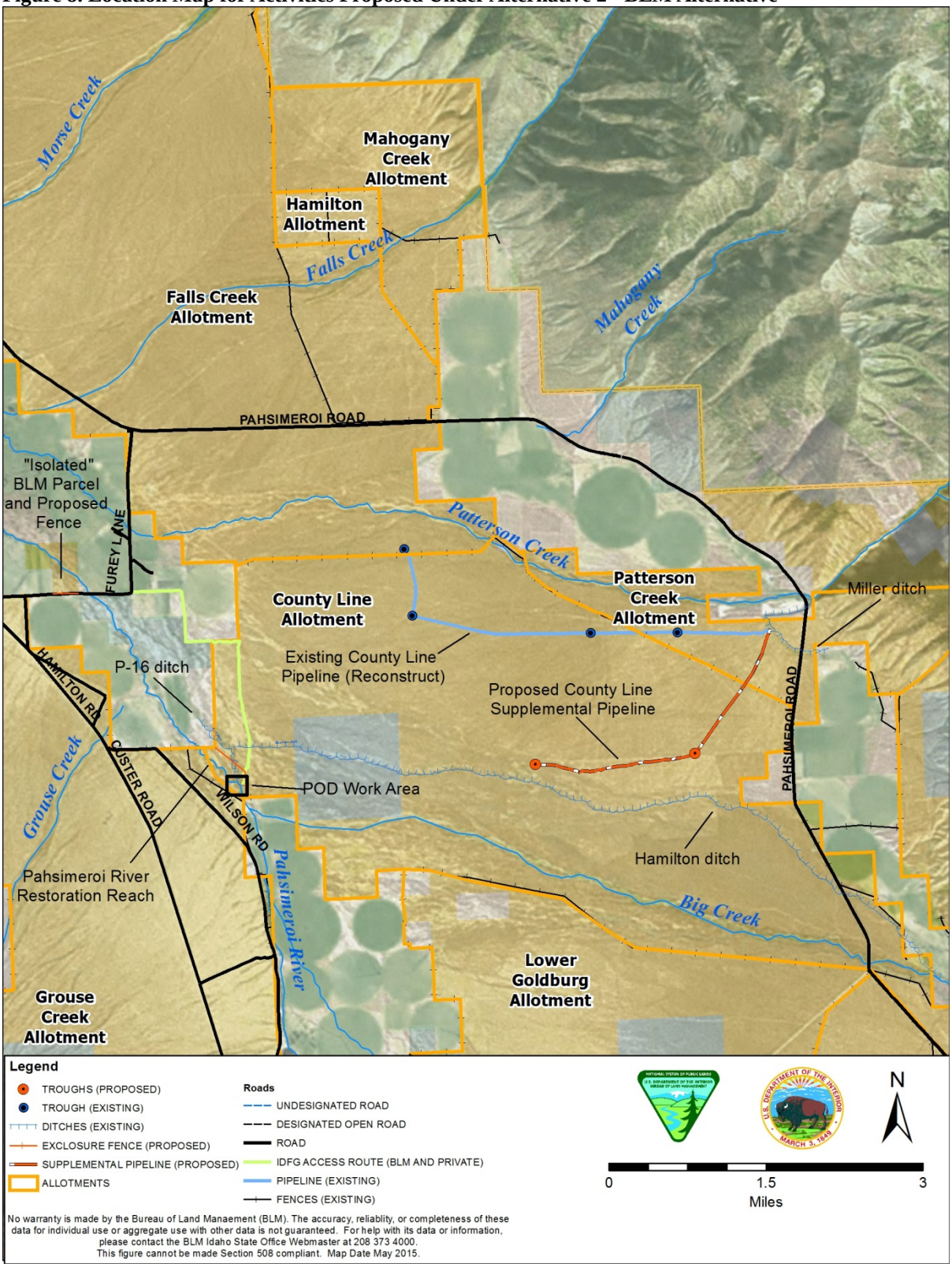
At the completion of the P-16 Furey Lane project, diversion of water from Big Creek at the Hamilton ditch POD would be permanently restricted under an agreement formalized through a Grant and/or Conservation Easement to achieve increased flows in Big Creek. Mr. Ted O'Neal has already signed his agreement, which is held by The Nature Conservancy. Big Creek Ranch, LLC will sign their agreement once approval is given to proceed with construction of the P-16 project. The exact mechanism for this agreement will be determined through consultation with either The Nature Conservancy or Lemhi Regional Land Trust, the water users within Water District 73, and IDWR. Although some uncertainty exists regarding the strategy utilized to ensure that Big Creek LLC's water rights remain instream, Big Creek Ranch LLC intends to utilize the method that would best protect the water instream while having consensus between the affected parties. The water normally diverted for irrigation at the Hamilton ditch (9.54 cfs) would remain in Big Creek. All of the closure actions would take place behind the existing diversion; no other actions would occur in Big Creek. In addition to the conservation easements

described above, the landowners will sign a 15-year Diversion Modification Agreement with CSWCD.

Alternative 2 – BLM Alternative

Alternative 2 incorporates all of the actions described in Alternative 1. Therefore, Alternative 2 will incorporate the disturbance and actions as described above, as well as several additional actions (described below) that are proposed to address issues and resource concerns resultant of Alternative 1. The general proposed construction plan, including BMPs and design criteria remain the same as that described under the Proposed Action. The four actions are not listed in order of priority, and locations for each action are shown in Figure 8, below.

Figure 8. Location Map for Activities Proposed Under Alternative 2 - BLM Alternative



County Line Allotment Pipeline Reconstruct

Under this action, the existing County Line pipeline (21,648 feet) would be reconstructed, following the original alignment (Figure 8). The pipeline was installed in the 1980's without adequate engineering, vents, or drains and has not functioned properly since installation. Replacement is necessary to improve the operability of the pipeline. Completion of this action would improve livestock distribution on the allotment during the three and a half week season of use.

Under this action, the existing pipeline would be completely replaced with new 1 ¼-inch HDPE pipe laid in the current alignment. The pipeline would be installed on appropriate grade with functional vents and drains. The pipeline would be engineered by BLM with installation completed by BLM or by contract with BLM oversight. The pipeline would be laid with a pipe-layer, typically mounted on the back of a bulldozer, this method results in a disturbance width of approximately 1.5 feet where the pipe is laid. This action would likely also require replacement of the existing hydroshear diversion structure from the Miller ditch off Patterson Creek. The new hydroshear would meet NMFS screening criteria for screen slot size and approach velocities.

Although the reconstructed pipeline would follow the same alignment as the original pipeline, the disturbance associated with it is being analyzed as new disturbance because the original pipeline was installed over 30 years ago and the vegetation has had adequate time to recover to pre-disturbance levels. Total surface disturbance resulting from installation of the new pipeline would be 1.5 feet by 21,648 feet (0.75 acres). The existing Cooperative Range Improvement Agreement would be modified and authorize the reconstruction of the pipeline.

If the pipeline were re-constructed, maintenance and operation of the pipeline would be the responsibility of the permittee(s) under a cooperative range improvement agreement signed by the permittee(s) and the BLM. One trough was replaced in 2013, and the remaining three troughs would be replaced. All four troughs would be floated and fitted with bird/small mammal ladders.

Maintenance of range improvement projects consists of timely repair of an improvement to keep it in usable condition for the purpose intended over its normal expected life span. Fence maintenance includes: periodic inspection, keeping the wire attached to the posts with proper tension, maintaining a specified number of wires, replacing bent or broken posts and stays, repairing gates, repairing drainage crossings, and other work needed to keep the fence usable. Maintenance of water developments would consist of periodic inspection, repair or replacement of worn or damaged parts, repairing leaks, removing trash or silt, winterizing the facility, maintaining water flows during agreed upon times, and maintaining wildlife escape ramps.

The BLM would monitor the trough locations for noxious or invasive weed species and treat appropriately if found.

Human activities such as fence and pipeline maintenance or construction, facility maintenance, utility maintenance, or any project or related work at or near (1 km or .6 miles from occupied leks that results in or will likely result in disturbance to lekking birds would be avoided from approximately 6:00 pm to 9:00 am. In general this guideline should be applied from approximately March 15 through May 1 in lower elevation habitats and March 25 through May

15 in higher elevation habitats. (4.3.5.3 Human disturbance conservation measures, page 4-70, July 2006 Idaho Sage-Grouse Conservation Plan).

County Line Allotment Supplemental Pipeline Construction

The Hamilton ditch currently is a water source in the central part of the allotment (Figure 8), and if this project is implemented would no longer be available to wildlife and livestock within the allotment. In order to continue to provide a water source within the central part of the allotment, this alternative proposes installation of new supplemental pipeline to replace the Hamilton ditch water source. A new supplemental pipeline and two troughs would be constructed, utilizing the water right and existing POD from Patterson Creek for the Miller ditch (Figure 8). The pipeline would be buried with a pipe layer, typically mounted on the back of a bulldozer, this method results in a disturbance width of approximately 1.5 feet where the pipe is laid. The pipeline would be 13,814 feet long, with 5,748 feet of the pipeline installed in the center of an existing two-track road to reduce new disturbance and subsequent impacts to upland vegetation. The remaining 8,066 feet of pipeline installation would take place in previously undisturbed soils and vegetation. This action would create new disturbance along the 8,066 feet of pipeline installed outside of the existing road, and at the two trough locations. Both troughs would be floated and fitted with bird/small mammal ladders. Troughs would be placed, to the greatest extent practicable, in existing disturbed areas and away from areas with tall sagebrush. The pipeline would be engineered by BLM with installation completed by BLM or by contract with BLM oversight. Surface disturbance associated with the length of pipeline not installed along an existing road would be 1.5 feet by 8,066 feet (0.28 acres) and surface disturbance associated with the two troughs would be 175 feet by 175 feet (0.70 acres each trough). Total disturbance would be 1.68 acres.

If the pipeline were constructed, maintenance and operation of the pipeline would be the responsibility of the permittee under a cooperative range improvement agreement signed by the permittee and the BLM.

Maintenance of range improvement projects consists of timely repair of an improvement to keep it in usable condition for the purpose intended over its normal expected life span. Fence maintenance includes: periodic inspection, keeping the wire attached to the posts with proper tension, maintaining a specified number of wires, replacing bent or broken posts and stays, repairing gates, repairing drainage crossings, and other work needed to keep the fence usable. Maintenance of water developments would consist of periodic inspection, repair or replacement of worn or damaged parts, repairing leaks, removing trash or silt, winterizing the facility, maintaining water flows during agreed upon times, and maintaining wildlife escape ramps.

The BLM would monitor the trough locations for noxious or invasive weed species and treat appropriately if found.

Human activities such as fence and pipeline maintenance or construction, facility maintenance, utility maintenance, or any project or related work at or near (1 km or .6 miles from occupied leks that results in or will likely result in disturbance to lekking birds would be avoided from approximately 6:00 pm to 9:00 am. In general this guideline should be applied from approximately March 15 through May 1 in lower elevation habitats and March 25 through May 15 in higher elevation habitats. (4.3.5.3 Human disturbance conservation measures, page 4-70, July 2006 Idaho Sage-Grouse Conservation Plan).

Riparian Restoration Downstream of the Existing P-16 diversion

Under this alternative, all of the irrigation efficiency improvements described under the Proposed Action Alternative would be installed, and the 0.65 mile reach of the Pahsimeroi River downstream of P-16 is anticipated to have an increased duration of flow as a result of those water savings. BLM, with assistance from volunteers or cooperating partners, would complete channel restoration work within the Pahsimeroi River riparian area, downstream of the existing P-16 POD (Figure 8). This restoration work would be completed to expedite the recovery of riparian species within the riparian area and would include placement of willow trenches, fascines, stakes and other actions that can be completed by hand, without the use of heavy equipment. Restoration work would be completed along the banks in this reach, and would not include any instream work. No channel realignment activities are proposed at this time. No surface disturbance is anticipated as a result of these actions.

Fencing of BLM parcel below Furey Lane

There is an unfenced, isolated parcel of BLM administered land located at: Boise Meridian, T. 14 N., R. 22 E., Sec. 21, SWNE, SENE, NESE (120 acres), downstream of the Furey Lane crossing over the Pahsimeroi River (Figure 8). This BLM parcel includes approximately 2,400 feet of the Pahsimeroi River which has been historically leveed and straightened, and is currently dewatered during the growing season as a result of natural infiltration and irrigation withdrawals. Additionally, this parcel has been subject to trespass agriculture, unregulated grazing use from trespass cattle, and periodic drift from authorized grazing on the Grouse Creek Allotment. A 4-wire wildlife friendly fence, approximately 1,313 feet long, would be constructed along the southern border of the property, adjacent to Furey Lane and connected to existing private fences on both sides. This fence would prevent livestock access along this reach of the Pahsimeroi River, and would allow the riparian vegetation and stream channel to maximize the benefits of longer duration flows that are anticipated following project implementation. Surface disturbance associated with installation of this fence would be 8 feet by 1,313 feet (0.24 acres).

Summary of Ground Disturbing Impacts for Alternative 2

This alternative includes disturbance from Alternative 1, plus additional disturbance from actions proposed under Alternative 2. The total estimated ground disturbance is summarized in Table 3 below.

Table 3. Estimated Ground Disturbance under Alternative 2

Construct and remove temporary stream crossing (45 feet by 50 feet)	0.05
Temporary access road on southwest side of Pahsimeroi River (14 feet by 350 feet)	0.11*
Instream reconstruction activities (assumes 35 foot disturbance width by 135 feet length of reconstructed channel)	0.11
Diversion structure, operating deck, and stilling basin (100 feet by 100 feet)	0.23
Ditch and maintenance road (670 feet by 35 feet)	0.54*
Fish screen and bypass pipe (70 feet by 70 feet and 25 feet by 110 feet, respectively)	0.17*
Ditch below fish screen and bubbler with rock overflow (30 feet by 35 feet and 75 feet by 100 feet, respectively)	0.20*
Irrigation pipeline (35 feet by 7,228 feet)	5.81*
Spur stockwater pipeline and trough (1.5 feet by 1,600 feet and 175 feet by 175 feet, respectively)	0.75*
Fence (approximately 3,215 feet by 8 feet)	0.59 *
Alternative 1 Total	***8.56***
County Line pipeline reconstruction (1.5 feet by 21,648 feet)	0.75*
County Line Allotment Supplemental Pipeline Construction with approximately 8,066 feet new disturbance (8,066 feet by 1.5 feet (pipeline) and 175 feet by 175 feet (per trough, two troughs proposed)	1.68*
Riparian Restoration Downstream of the existing P-16 diversion	0.00
Isolated BLM parcel fence along Furey Lane	0.24*
Alternative 2 Total	***2.67***

*Identified as upland construction sites

Best Management Practices for Alternative 2

Project BMPs would be the same as described for the Proposed Action Alternative.

Alternative 3 – No Action Alternative

Under this alternative the P-16 Furey Lane Water Conservation and Reconnect Project would not be implemented and no construction activities would occur. Diversion of decreed water rights at P-16 would continue to be accomplished by seasonal installation of the instream push-up dam,

and the reach below P-16 would continue to be limited by water availability, particularly late in the summer when the P-16 diversion captures the entirety of flow in the Pahsimeroi River. The irrigators would continue to divert the entirety of their decreed water rights (18.72 cfs) via the existing P-16 ditch, and the diversion structure would continue to remain a seasonal impediment to fish migration. Water would continue to be diverted into the Hamilton ditch from Big Creek to meet the decreed irrigation water rights on the appurtenant acreage.

BLM would deny the IDFG Screen Program and the Furey Lane/P-16 Irrigation Company's ROW applications.

Alternatives Considered but not Analyzed in Detail

An alternative to upgrade the existing P-16 POD and locate the headworks, screen, and pipeline in the existing disturbance footprint and ditch was considered. This alignment would be a more complex route, increase cost and logistical difficulty of installation, and involve multiple private landowner easements/agreements. This alternative would not meet the project purpose to improve irrigation efficiency.

The second alternative considered, but not analyzed in detail, was to place the irrigation pipeline in an existing designated route to minimize new ground disturbance. However, the designated route would require installation of numerous additional bends and associated thrust blocks due to the current road alignment, which would increase cost and decrease system efficiency.

The interdisciplinary team considered these alternatives. They determined that due to the increased cost and not meeting the long-term sustainability goals of improving riparian and aquatic habitat through improvements to irrigation efficiency, these two alternatives would not be carried forward for further analysis.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section provides a description of the general environmental setting and baseline conditions for resources considered. This section also discloses the anticipated environmental impacts to the resources considered under the Proposed Action and Alternatives. The resources considered for the analyses are shown in Table 4.

General Setting

The Project is located in the Pahsimeroi River subbasin (4th Field Hydrologic Unit Code 17060204). Flow regimes within the Pahsimeroi River are highly variable, with numerous losing and gaining reaches between the headwaters and mouth. The subbasin is located in east-central Idaho between the Lost River and Lemhi mountain ranges, and elevations range from 12,662 feet at Borah Peak to approximately 4,600 feet at the Pahsimeroi River mouth near Ellis, Idaho. The valley topography is characterized by steep, rugged mountains, transitioning into gentle slopes on the valley floor. The valley floor has a maximum width of about 26 miles, but the majority of the valley is less than 10 miles in width and is marked by large gravel-filled alluvial fans spreading out from the mountain ranges and converging on the valley floor (IDEQ 2001). The project is located within a stream reach that is perennial but loses flow to groundwater and is below the mid-basin spring complexes and above the lower valley, both of which typically gain flow from groundwater.

The project reach is within the BLM County Line allotment. The 10,391 acre allotment is comprised of 9,751 acres of BLM administered public land and 640 acres of state land. Portions of the Pahsimeroi River (approximately 1.05 miles), Big Creek (approximately 6.3 miles) and Patterson Creek (approximately 0.45 miles) occur within the allotment. These drainages are influenced by irrigation diversion and natural infiltration and possess both perennial and intermittent reaches. Topography within the allotment is relatively flat, ranging from 5,300 feet on the Pahsimeroi River to 5,600 feet at the upper Pahsimeroi Road. Mean annual precipitation in the allotment is approximately eight inches.

The climate of the region is semi-arid high desert typical of the Rocky Mountains in central Idaho. This climate is characterized by cold winters and hot, dry summers which are affected by the Pacific Ocean maritime masses. Elevations, topography and aspect result in high variability in microclimates throughout the valley. Climate data collected between 1934 and 2015 in May, Idaho recorded an annual mean precipitation of 7.83 inches. During the period of record, the mean monthly precipitation ranged between 0.27 inches in February to 1.36 inches in June. Mean monthly maximum temperatures ranged between 30.5 °F in January to 86.4°F in July and mean monthly minimum temperatures ranged between 5.8 °F in January to 45.7°F in July (WRCC 2015) with extremes of 101°F recorded on August 3, 1961, and -40°F recorded on December 23, 1983 (IDEQ 2001).

The Pahsimeroi River originates near the base of Borah and Leatherman Peaks at the southern end of the valley. The stream network of the subbasin is fragmented by large alluvial fans and diversions. Only during periods of high spring runoff or flood events do many of the Pahsimeroi River tributaries connect with surface flow to the main stem river (Colvin and Moffitt 2009).

Land Ownership

Much of the land (91%) in the subbasin is publicly owned. BLM and USFS lands make up the majority, with the remainder of public lands owned by the State of Idaho. The BLM manages 220,373 acres (41%), primarily the lower elevation foothills, non-agricultural developed lands and a small amount of land in the valleys. The USFS manages 246,721 acres (46%), mostly in the higher elevation uplands and forested mountains. There are 19,326 acres (4%) administered by the State of Idaho that are mostly being leased for grazing by the Idaho State Department of Lands. Private land comprises about 45,489 acres (9%) of the land in the subbasin, generally along the valley bottoms where the flatter, more fertile agricultural land is located.

Land Use

Historical use of the subbasin has been extensive. Euro-American habitation of the valley began in the late 1800's and was highly dependent on existing water sources for cropland irrigation and livestock production. Historic over-grazing has contributed to significant changes in the landscape, many of which are still apparent today. Today, farming and livestock grazing remain the two primary land uses in the subbasin. Irrigation practices, permeable soils, dry climate and natural infiltration over alluvial fans contribute to the annual dewatering of portions of the Pahsimeroi River, including the reach associated with the project (BLM 2012a; Williams et al. 2006).

Resources Considered in the Impact Analysis

The results of the scoping and site-specific assessments indicated that not all of the resources considered are present or would be impacted by the Proposed Action or Alternatives described in

earlier in this document. Only those resources that are present and impacted are discussed in the following narratives. A description of the resources considered is presented in Table 4 below.

Table 4. Resources Considered in the Impacts Analysis

Resource	Not Present	Present, Not Impacted	Present, Impacted	Rationale
Access		Present Not Impacted		Implementation of the Proposed Action or Alternatives would not result in changes in access to the area.
Air Quality		Present Not Impacted		Implementation of the Proposed Action or Alternatives would not result in production of vehicle or equipment emission or particulate matter above baseline levels as required by the Clean Air Act.
Areas of Critical Environmental Concern (ACEC's)	Not Present			There are no ACECs located in the proposed project area.
Cultural Resources	Not Present			The results of Class III inventory indicate no cultural resources would be impacted within the proposed project area. The BLM would provide an archaeologist to monitor ground disturbing activities associated with the installation of the fish screen and reconstruction of the POD.
Economic and Social Values			Present Impacted	Impacts are disclosed under Economic and Social Values.
Environmental Justice		Present Not Impacted		There are minority and low-income populations near the proposed project area, however the alternatives described would not affect these populations as described under Executive Order 12898 of 2/11/1994. There would be no disproportionately high and adverse human health or environmental effects to the minority and low-income populations in the area resulting from the Proposed Action or Alternatives.
Existing and Potential Land Uses		Present Not Impacted		The Proposed Action or Alternatives would not affect current or future authorized uses occurring in the proposed project area.

Resource	Not Present	Present, Not Impacted	Present, Impacted	Rationale
Floodplains		Present Not Impacted		The Lemhi County, Idaho Flood Insurance Study (FEMA 1990) identifies the proposed project area as Zone D, an area where no floodplains have been delineated and no flood hazards have been identified. However, the 1990 study delineated the 100-Year floodplain to a point approximately 0.33 miles downstream of the proposed project area. Therefore, even though the proposed project area was outside of the geographic scope of the 1990 investigation, it can be assumed that those mapped floodplains would continue into the proposed project area. However, no actions that are proposed would limit the rivers ability to access its floodplain, nor would any of the actions proposed change the functionality of that floodplain. Therefore, there are no impacts anticipated to occur to floodplains as a result of implementation of any of the Proposed Action or Alternatives.
Forest Resources	Not Present			There are no forest resources in the proposed project area.
Invasive, Non-Native Species			Present Impacted	Impacts are disclosed under Invasive, Non-Native Species.
Mineral Resources		Present Not Impacted		Mineral resources (e.g. sand, gravel, fill) are present on almost all lands in the BLM CFO area, and authorized BLM mineral sources would be utilized for project implementation. However, there would not be impacts to such resources from the Proposed Action or Alternatives.
Migratory Birds			Present Impacted	Impacts are disclosed under Threatened, Endangered and Sensitive Wildlife and Migratory Birds.
Native American Religious Concerns	Not Present			There are no known ceremonial sites or resources associated with ceremonial practices in the proposed project area.

Resource	Not Present	Present, Not Impacted	Present, Impacted	Rationale
Paleontological Resources	Not Present			There are no known paleontological resources located in the proposed project area.
Prime and Unique Farmlands	Not Present			There are no prime or unique farmlands located within or near the proposed project area.
Range Resources			Present Impacted	Impacts are disclosed under Vegetation Type, Communities, and Rangeland Resources.
Recreational Use		Present Not Impacted		Access and availability for recreation opportunities would not change as a result of implementation of the Proposed Action or Alternatives.
Soil Resources			Present Impacted	Impacts are disclosed under Soil Resources.
Threatened, Endangered, and Sensitive Plants	Not Present			There are no known threatened, endangered, or sensitive plants or their habitat within the proposed project area.
Threatened, Endangered, and Sensitive Animals/ Wildlife			Present Impacted	There are no threatened or endangered animals or their habitats within the proposed project area. There is no designated habitat for lynx or Yellow-billed Cuckoos within the proposed project area and will not be addressed further in this document. Impacts to sensitive wildlife species present are disclosed under Threatened, Endangered and Sensitive Wildlife and Migratory Birds.
Threatened, Endangered, and Sensitive Fish; Fisheries			Present Impacted	Impacts are disclosed under Threatened, Endangered, and Sensitive Fish; Fisheries.
Tribal Treaty Rights and Interests			Present Impacted	Impacts are disclosed under Tribal Treaty Rights and Interests.
Vegetation			Present Impacted	Impacts are disclosed under Vegetation Type, Communities, and Rangeland Resources.

Resource	Not Present	Present, Not Impacted	Present, Impacted	Rationale
Visual Resources			Present Impacted	Impacts are disclosed under Visual Resources.
Wastes, Hazardous and Solid	Not Present			There are no solid or hazardous wastes in the proposed project area and none would be created during the implementation of the Proposed Action or Alternatives.
Water Quality (Surface and Ground)			Present Impacted	Impacts are disclosed under Water Quality (Surface and Ground).
Wetland and Riparian Zones			Present Impacted	Impacts are disclosed under Wetlands and Riparian Zones.
Wild and Scenic Rivers	Not Present			There are no wild and scenic rivers near the proposed project area.
Wild Horse and Burro HMAs	Not Present			There are no wild horse and burro HMAs in the proposed project area. The Challis Wild Horse HMA is located approximately 17 air miles from the proposed project area on the west side of the Lost River Mountain Range.
Wilderness	Not Present			There are no wilderness areas or WSAs in the proposed project area. The nearest WSA (Goldburg WSA) is located approximately 10.3 miles to the southeast.
Lands with Wilderness Characteristics	Not Present			There are no Lands with Wilderness Characteristics present or affected within the proposed project area.
Wildlife Resources			Present Impacted	Impacts are disclosed under Threatened, Endangered and Sensitive Wildlife and Migratory Birds.

Economic and Social Values

Affected Environment

The project is located on the border between Lemhi and Custer Counties, and actions associated with the project would occur in both counties. The Pahsimeroi River divides the lower part of the valley roughly in half; with the southern and western side of the Pahsimeroi valley located in Custer County and the northern and eastern side located in Lemhi County. In general, the physical impacts of the Proposed Action and Alternatives would occur in Lemhi County. The town of Patterson (Lemhi county) is the closest population center, and the city of Challis (Custer county) is the nearest major population center. This analysis describes anticipated socioeconomic impacts in both Lemhi and Custer counties.

Custer County has an estimated population of 4,140. Median household income in the period from 2009-2013 was $39,541, which is below the state median of $46,767 (USCB, 2015a). In December 2014, the unemployment rate was 4.3%, slightly higher than the state average (3.7%,) IDOL 2015a). The largest employment sectors in the county have been mining, government, and agriculture. Employment in the services sector has seen steady growth within the county and as of 2014, represented 30% of total employment (IDOL 2015a). Within the county, relatively low paying jobs in accommodation, food service, and retail trade are increasing in availability, while higher paying jobs in mining are generally decreasing due to continuing budget cuts within the federal government and cessation of operations at the Thompson Creek Mine, located in southern Custer County.

Lemhi County has an estimated population of 7,726. Median household income in the period from 2009-2013 was $34,122, which is well below the state median of $46,767 (USCB 2015b). In December 2014, the unemployment rate was 6.0%, nearly double the state average ((3.7%), IDOL 2015b). Historically, the Lemhi county economy was based on mining activity, however there are no mines operating in the county as of 2015, although there is some potential in cobalt and rare earths for new mine development. Lemhi county's basic economic sections are services and retail (tied to tourism and ranch/farm activities), government, agriculture/ranching, mining, and construction. The largest number of jobs in Lemhi county in 2014 included government, retail trade, construction, and farming. In recent years, service contracts and material sales related to aquatic and riparian restoration projects has become an increasingly important sector of the local economy (BLM 2014a).

As the economy of Lemhi County has shifted from timber and mining, agriculture and ranching has become a major part of the Lemhi county economy. This sector also exerts considerable influence on the culture and demographics of the county. There are many challenges facing ranchers today including increasing regulation, climate change, and the influence of a global market. As ranches are sold in whole or part, ranchers may have fewer options to graze livestock, which may result in increased costs and decreased viability of either continuing their operations or passing them on to their heirs. Small towns in the county are unique places with shared values and a relationship with nearby farm and ranchlands. Quality of life issues such as a slower pace of life, low crime rates, high levels of interpersonal trust, opportunities for community involvement, a sense of belonging, and a high value placed on the quality of nearby surroundings motivate people to live in these communities.

Alternative 1 – Proposed Action, Direct/Indirect Impacts

This alternative would not have any direct socio-economic impacts as an irrigation system is already in place and the permittees would continue to receive their decreed water rights regardless of the alternative selected. Specialized technical assistance has been provided by USBR, CSWCD, NRCS, IDFG, and BLM CFO, including engineering and design of the fish screen system and a cost-effective and more efficient irrigation system. IDFG would oversee construction of the new diversion structure and fish screen system. Local contractors would have the opportunity to provide services for nearly all facets of the proposed construction work, which could provide an economic benefit to the local economy. The proposed diversion and irrigation improvements would also allow the landowners to operate their irrigation system in a more time and cost efficient manner than their current operation. This project would not change the amount or time of use for the decreed water rights, with the exception of the proposed

reduction in season of use by Big Creek Ranch LLC, previously described. There would be no loss of employment in the area due to the project.

This alternative would include closure of the P-16 ditch, which conveys water seasonally during the irrigation season (April 1- October 31), and is maintained by the water right holders (Furey Lane/P-16 Irrigation Company). Approximately one mile of the P-16 ditch flows across public land, with the remainder (0.28 miles) flowing across nine parcels of private land before it enters properties owned by members of the ditch company. The nine privately owned parcels do not have water rights from the P-16 ditch and therefore its removal would not impact irrigation on those properties.

Closure of the P-16 ditch could affect the amenities of these nine privately owned parcels of land through which the ditch now flows. While these parcels do not possess any water rights from the P-16 ditch, its closure would halt the aesthetically-pleasing and desirable flow of seasonal water through the properties. Additionally, as the ditch dries up, its associated riparian vegetation would likely die off and the vegetation would transition back to the surrounding upland habitat type. Property values are generally dependent on supply and demand, amenities of the property, and location, and the potential exists for adverse impacts to private property values under the Proposed Action related to the loss of live water and the associated riparian habitat. However, these values are artificial, as the ditch is not a natural stream course and as such is subject to management and control by the water right holders. Beneficial impacts to the property owners could also potentially occur with ditch closure as the set back and restriction for use of the land now occupied by the ditch would be removed, allowing property owners to develop and access all of their property without having to cross the ditch. Over time, riparian habitat on the Pahsimeroi River would establish and/or recover, and the habitat quality of the river would equal or exceed the current man-made habitat value provided by vegetation along the P-16 ditch. Finally, BLM holds no authority over water diversion into the ditch. The water right owners possess the sole authority to divert water into this ditch system, and can cease or modify that activity at their discretion.

The landowners would also discontinue use of the Hamilton ditch, as they would be able to meet their irrigation needs with their Pahsimeroi River water rights. The volume of water normally diverted into the Hamilton ditch would remain in Big Creek. Socioeconomic impacts are not anticipated as a result of closure of the Hamilton ditch. Similar to the P-16 ditch, cessation of diversion of the associated water rights in the Hamilton ditch is outside of BLM's scope of authority, and is at the water right holder's discretion.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

The social and economic impacts would be the same as described in Alternative 1. Additionally, this alternative would include construction of additional water troughs in the southern part of the County Line Allotment. Construction of the pipelines and troughs would remove the potential need to haul water for livestock during the grazing season, an activity that could increase production costs for the permittee.

All of the actions proposed under Alternative 2 would be completed by either BLM or by contract. Local contractors would have the opportunity to provide services for all facets of the proposed construction work, which could provide an economic benefit to the local economy.

If the supplemental pipeline were constructed, maintenance and operation of those features would be the responsibility of the permittee(s), managed through a cooperative range agreement between the permittee(s) and the BLM. The permittee(s) could incur additional operating expenses to their operations due to the additional maintenance requirements related to the proposed range improvements.

Alternative 3 - No Action, Direct/Indirect Impacts

The private landowners would not implement irrigation methods that would conserve water and improve irrigation efficiency. The potential for construction contractors to benefit from construction of this project would not be realized.

There would be no impact to property values or amenities for the nine parcels intersected by the P-16 ditch.

Invasive, Non-Native Species

Affected Environment

The native vegetation in the proposed project area has been heavily impacted by historic land use practices related to ditch construction and maintenance, as well as livestock grazing impacts related to historic grazing practices. Uplands within the project area have an intact overstory of native shrubs, but the herbaceous component in the understory has been replaced with annual weeds, primarily halogeton (*Halogeton glomeratus).* Some upland sites still have a native assemblage of grass species. Riparian vegetation along the Pahsimeroi River within the proposed project area consists of mesic grasses and forbs. Some willows can be found near the point of diversion for the P-16 ditch but do not occur along the Pahsimeroi River. Due to historic disturbances and inconsistent flow regimes, native riparian vegetation in the understory has been replaced in some sites with invasive species. Canada thistle, (*Cirsium arvense),* poverty sumpweed (*Iva axillaris),* musk thistle (*Carduus nutans*) and Scotch thistle (*Onopordum acanthium)* are found along the greenline. Poverty sumpweed, while native to the western U.S, can form large clonal colonies on sites subjected to disturbance and become invasive. The following is a list of invasive, non-native species that have been inventoried in the area surrounding the proposed project.

Whitetop *(Cardaria draba)*

Scotch thistle (*Onopordum acanthium)*

Spotted knapweed *(Centaurea stoebe)*

Musk thistle *(Carduus nutans)*

Leafy spurge *(Euphorbia esula)*

Canada Thistle *(Cirsium arvense)*

Halogeton *(Halogeton glomeratus)*

Cheatgtrass *(Bromus tectorum)*

Black henbane *(Hyoscyamus niger)*

The BLM follows an Integrated Weed Control Program to manage invasive species. Under the integrated program weed locations are mapped and treated with the appropriate method to eradicate or control a population. Treatment may include chemical, biological or manual

methods. All of these methods have been employed in the vicinity of the proposed project area and would continue, along with monitoring.

Use of herbicides has been evaluated by BLM in the 2007 Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement. The BLM CFO tiered to this document while planning its weed control program in the Challis-Salmon Integrated Weed Control Program Programmatic Environmental Assessment (BLM 2008).

Alternative 1 – Proposed Action, Direct/Indirect Impacts

New ground and vegetation disturbance associated with the Proposed Action would disturb about 8.56 acres (Table 2) and impacts would remain over the next one to two years until the vegetation has re-established. Invasive species establish more readily in disturbed sites and tend to expand from the initial establishment. There is a possibility of invasive species becoming established within the 8.56 acres of new disturbance in the project area. Planting, reseeding, monitoring, and treating the proposed project area sites would reduce the possibility of invasive species becoming established and/or spreading over the long-term. There are also BMPs identified for construction activities and maintenance to further limit the potential transport and establishment of invasive plant species. It is anticipated that the project BMPs, coupled with post-project monitoring would prevent the establishment of new weed infestations in areas disturbed by project implementation.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

The area of disturbance for this alternative would include the 8.56 acres from Alternative 1. Under Alternative 2, there would be an additional 2.67 acres of upland ground disturbance for a total of approximately 11.23 acres. Of those, 10.84 acres are classified as uplands (Table 3). Again, there is a possibility of invasive species invading the disturbed areas in the proposed project area; however, reseeding, monitoring and treating these sites would reduce the possibility of invasive species becoming established and/or spreading over the long-term. There are also BMPs identified for construction activities and maintenance to further limit the potential transport and establishment of invasive plant species.

Alternative 3 – No Action, Direct/Indirect Impacts

There would be no change to existing conditions under this alternative for non-native plant species. The abundance and distribution of invasive plant species in the proposed project area would remain as described in the affected environment. BLM would continue to monitor and treat invasive and non-native vegetation on lands administered by the BLM CFO; therefore invasive species are anticipated to maintain or to decrease in existing levels.

Soils

Affected Environment

Generally, soil types within the subbasin are poorly developed with high gravel and cobble components, making them well drained and resistant to erosion. Three soil types- two Pahsimeroi loams and a Kadletz loam make up 94% of the County Line Allotment. They are gravelly to extremely gravelly loams and sandy loams. The remainder of the soils across the allotment are gravelly, saline loamy soil complexes including Bursteadt-Tohobit Complex associated with the floodplain in the area of the existing and proposed POD. Alluvial fan

remnant soils include Bock-Bromaglin Complex (also found on stream terraces), Sparmo-Zer Complex, and Zer-Snowslide Complex. The Zer Gravelly Loam Saline, and Whiteknob Gravelly Loam soils are found along stream terraces and outwash fans in the proposed project area (NRCS 2014).

Generally, soils within the vicinity of the Project are deep, somewhat excessively drained, with slow runoff potential, low to moderate hazard of water erosion, and are not susceptible to wind erosion. Slopes for these soil types ranges between 0 and 10%, with the majority in the low end of this range. The proposed project area is located in a portion of the subbasin with very low relief, with elevations ranging between 5,300 feet on the Pahsimeroi River to 5,600 feet at the upper Pahsimeroi Road. Slopes within the project area are flat to nearly flat.

Geophysical data indicate the deepest portion of the basin, known as the depocenter, occurs near Furey Lane and stretches between the mouths of Patterson and Goldburg Creek (Young and Harenberg 1973). The depth of valley fill generally shallows with progression from the depocenter toward the northern and southern ends of the basin, though the fill is much shallower near the mouth as compared to the southern end of the basin (Young and Harenberg 1973, Williams et al. 2006). Based on gravity data, Young and Harenberg (1973) suggest that basin sediments near the southern end of the basin may be as much as 1,200 feet thick, which is considerably deeper than sediments near the mouth, which are only tens of feet thick. The project is located in a losing reach of the Pahsimeroi River (meaning that some of the water in the stream is lost through its bed to groundwater), and the depth of the alluvium in the area has been estimated to be up to 3,000 feet (Williams et al. 2006). Hydrology of the basin is driven by subsurface structural features, as well as the depth and heterogeneity (or lack thereof) of basin fill. Young and Harenberg (1973) noted that a bedrock ridge extends from Mahogany Hill (central portion of the basin) northeastward toward the valley axis. This subsurface structure is likely responsible for, and marks the northern terminus of a spring network located in the central part of the valley. Downstream of this spring complex is the beginning of the losing reaches in which the project is located.

Alternative 1 – Proposed Action, Direct/Indirect Impacts

Ground disturbing activities proposed under the Proposed Action include channel reconstruction, fence, road, and temporary stream crossing construction, revegetation, ditch filling, and installation of diversion headworks, fish screen, irrigation ditches and pipeline, stockwater pipelines and watering troughs, as well as maintenance on all of the above. Construction would result in removal of some vegetation and expose bare soil to erosive forces such as wind and water. Impacts to soils include the potential for increased erosion due to removal of stabilizing vegetation, and compaction or rutting from operation of heavy equipment within the project area. The soils present at the project site and along the pipeline route have erosion capabilities ranging from slight to moderate, and would be subject to increased erosion until they could be stabilized through seeding and/or revegetation. Project BMPs, such as limiting the disturbed area to the greatest extent possible and reseeding or transplanting vegetation on disturbed areas would greatly minimize the potential for soil loss due to erosion. Soils within the construction area could experience some level of compaction related to operation of heavy equipment, however the most susceptible soils (i.e. those located near the Pahsimeroi River) have likely already been compacted due to the historic diversion maintenance. Cessation of operations during heavy precipitation events and when the area soils are saturated will limit the amount of compaction and rutting that could occur as a result of the Proposed Action. Soil disturbance associated with

the Proposed Action would total about 8.56 acres; however all of the surface disturbance that would occur would be reclaimed at the end of construction, either through transplanting or planting of vegetation, or by reseeding (Table 2).

Soils within the riparian area would respond more quickly to reseeding and revegetation than upland soils due to water availability, however reseeding in the fall would improve the likelihood for seeding success, since the seeds would receive the benefit of winter and spring moisture before germination. Additionally, revegetation plans include transplanting more than 2,000 willow cuttings and 80 riparian vegetation clumps from the existing P-16 ditch onto the streambank, portions of the floodplain, and other areas disturbed by construction to further hasten the recovery and stabilization process of soils disturbed in these areas. Some cottonwoods and other large woody material would remain in place along the river and P-16 ditch to facilitate regrowth and soil retention, and to reestablish streambank stability. Upland areas around the fish screen and along the pipeline installation route would be reseeded with a BLM approved seed mix and treated per the BLM CFO Integrated Weed Control Program to control noxious weeds.

Overall, soils within the project area may experience minor increases in erosion susceptibility; however the Proposed Action design criteria, BMPs, soil types present, and topography near the project sites would significantly reduce the risk of soil erosion. Reseeding and revegetation efforts coupled with weed treatment will help soils quickly recover to pre-disturbance levels. As a result, impacts to soils as a result of the Proposed Action are anticipated to be minor, localized, and short term.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

Impacts anticipated under this alternative would be similar to those described under the Proposed Action, but this alternative would result in a greater total area of disturbance. The area of disturbance for this alternative would include the 8.56 acres from Alternative 1, as well as an additional 2.67 acres of upland ground for a total of approximately 11.23 acres (Table 3). Impacts to soil resources under this alternative are the same as Alternative 1. Reclamation of disturbed areas would also be the same as Alternative 1.

Under Alternative 2, the existing County Line pipeline would be reconstructed, following the same alignment. The existing 4.1 mile long County Line pipeline was installed over three decades ago, and as such the vegetation has had time to recover to pre-disturbance levels, therefore replacement of the pipeline is being analyzed as new disturbance. The new pipeline would be installed on the existing alignment and three of four existing watering troughs would be replaced. Approximately 0.75 acres of ground would be disturbed as a result of the pipeline replacement. There would be no new disturbance from replacement of the existing troughs, as the replacement troughs will be placed in the same locations that are already disturbed. Reseeding with native grasses and forbs would be completed following construction activities, and invasive plant species monitoring and treatment would be completed by the BLM.

The supplemental pipeline and two new watering troughs would be constructed just north of the Hamilton ditch. The pipeline would be installed in the center of an existing two-track road for the first 5,748 feet (no new disturbance), with the remainder (8,066 feet) resulting in new disturbance. The objective for installation of this pipeline is to replace the water source that would be lost through the abandonment of the Hamilton ditch, and the primary goal is to maintain appropriate distribution of livestock across the allotment. This action would impact

approximately 1.68 acres (Table 3). Reseeding with native grasses and forbs would be completed following construction activities, and invasive plant species monitoring and treatment would be completed by the BLM.

An isolated tract of BLM administered land adjacent to Furey Lane would be fenced to limit livestock access. Approximately 0.24 acres of soil disturbance would occur next to the road where posts, braces, and 1,313 feet of 4-wire fence would be installed. This parcel of land is not part of an authorized grazing allotment (BLM 2012b). The action would stop unauthorized use of these lands, and would allow the riparian corridor in this area to benefit from the anticipated duration of flow as a result of the irrigation efficiency improvements.

Under Alternative 2, there would be a slight increase in the total amount of disturbed area (11.23 acres) over the Proposed Action (8.56 acres). Overall, soils within the project area may experience minor increases in erosion susceptibility; however the project design criteria, BMPs, soil types present, and topography near the project sites would significantly reduce the risk of soil erosion. Reseeding and revegetation efforts, coupled with weed treatment, would help soils recover to pre-disturbance levels. As a result, impacts to soils as a result of Alternative 2 are anticipated to be minor, localized, and short term.

Alternative 3 – No Action, Direct/Indirect Impacts

Under this alternative, soil resources are not expected to change from the conditions described in the Affected Environment. The existing rates of soil erosion, water infiltration, and ground cover stability would remain the same.

Threatened, Endangered and Sensitive Wildlife and Migratory Birds

Affected Environment

There are three terrestrial wildlife species that are identified by USFWS for consideration under the ESA that have been documented or have the potential to occur in the BLM CFO (Table 5).

Table 5. Threatened, Endangered, Candidate and Proposed Wildlife Species with the Potential to occur in the Proposed Project Area

Common Name	Scientific Name	Status	General Habitat
Canada lynx	*Lynx canadensis*	Threatened	Conifer
Yellow-billed cuckoo	*Coccyzus americanus*	Threatened	Riparian
Greater sage-grouse	*Centrocercus urophasianus*	Candidate	Sagebrush steppe

The nearest designated Canada lynx analysis unit (LAU) is 5.4 miles from the project area and 0.72 miles from the proposed County Line pipeline reconstruction site described in Alternative 2. The project area consists of agricultural land and dry scrublands. Suitable habitat for Canada lynx consists of mature forest which does not occur within the project area. No lynx linkage is present where any of the alternatives would occur.

Suitable yellow-billed cuckoo breeding habitat is defined as large blocks of riparian habitat with dense understory foliage (USFWS 2001). Breeding habitat requirements are defined as a minimum of approximately five acres of prime riparian habitat with old growth cottonwoods, and a dense understory of willow or dogwood. Research has concluded that yellow-billed cuckoos have never been particularly abundant in Idaho, and the nesting strongholds for this

species are limited state wide, with a nesting population at fewer than 20 pairs (Reynolds and Hinckley 2005). Based on data from the USFWS (2001) and Reynolds and Hinckley (2005), the proposed project area does not constitute potential, suitable breeding habitats for the yellow-billed cuckoo.

The Canada lynx and yellow-billed cuckoo will not be discussed further in this analysis due to a lack of suitable habitat and/or the lack of any known presence of these species within the project area.

The bald eagle is no longer a federally listed species. However, this information is presented for disclosure and clarification that the project will not impact the species or its nesting area. In 2009, a new bald eagle nest was found in cottonwoods along the Pahsimeroi River about 3.9 miles from the project area (IDFG 2009). The nest is not within line of sight of construction activities associated with the project. A review of wildlife data in the CFO records was completed, and no observations or occurrences of bald eagles were noted in the project area.

Greater Sage-Grouse

In response to declines in greater sage-grouse populations, the National Sage-Grouse Habitat Conservation Strategy (National Assessment) was developed to assess "the ecological status and potential factors that influenced greater sage-grouse and sagebrush habitats across their entire distribution" and to help guide "future actions for conserving sage-grouse and associated sagebrush habitats" on BLM administered lands (Connelly et al. 2004). The purpose of the national assessment is "to set goals and objectives, assemble guidance and resource materials, and provide a comprehensive management direction for the BLM's contributions to the on-going multi-state sage-grouse conservation effort in cooperation with the Western Association of Fish and Wildlife Agencies (WAFWA)" (BLM 2004).

In Idaho, state-wide guidance is provided by the *Conservation Plan for the Greater Sage-Grouse in Idaho* (Idaho Sage-grouse Advisory Committee 2006). The primary goal of the plan is to maintain, improve, and, where possible, increase sage-grouse populations and habitat in Idaho, while considering a variety of other land uses (Idaho Sage-grouse Advisory Committee 2006). In order to meet this goal, the plan outlines a series of conservation measures designed to minimize impacts associated with a wide array of potential threats to sage-grouse and their habitats.

The Idaho Sage-grouse Management Plan was completed in 1997 and updated in 2006. This plan called for the creation of local working groups that would develop sage-grouse management plans for each of Idaho's sage-grouse planning areas (Idaho Sage-grouse Advisory Committee 2006). The Challis Sage-Grouse Local Working Group (LWG) was formed in 2002. The Challis LWG is made up of interested parties of both private citizens and public agencies. The Challis LWG completed the Challis Sage-Grouse Conservation Plan (Challis SCP) in 2007. The goal of Challis SCP is to plan and oversee the implementation of conservation measures within the Challis Sage-Grouse Planning Area. The Challis SCP designated priority areas and mapped seasonal sage-grouse habitat throughout the LWG area (Figure 9 and Figure 10). Seasonal habitat is delineated by sage-grouse observations and habitat type encompassing those locations. Seasonal maps are updated as new data points are collected.

On March 5, 2010, the USFWS found the greater sage-grouse "warranted, but precluded by higher priority listing actions" and placed it on the candidate species list. Until sage-grouse can

be addressed by USFWS, it is managed by the state and addressed by BLM as a special status species (BLM 2014b). In response, the BLM has identified wildfire, habitat loss due to invasive plant species, and habitat fragmentation as the major threats to sage-grouse in the western portion of the existing sage-grouse range, which includes Idaho.

The December 27, 2011, BLM *Instruction Memorandum No. 2012-043, Greater Sage-Grouse Interim Management Policies and Procedures* (Interim Management, BLM 2011), provides guidance on interim conservation policies and procedures to be applied to ongoing and proposed authorizations and activities that affect the greater sage-grouse and its habitat until long term conservation measures can be incorporated into Land Use Plans. These policies and procedures apply to Preliminary Priority Habitats (PPH) and Preliminary General Habitats (PGH). Interim Management defines PPH as areas that have been identified as having the highest conservation value to maintaining sustainable greater sage-grouse populations and PGH as areas of occupied seasonal or year-round habitat outside of priority habitat. The conservation policies and procedures for PPH are to seek to maintain, enhance, or restore conditions for greater sage-grouse and its habitat and for PGH to reduce and mitigate adverse effects on greater sage-grouse and its habitat to the extent practical (BLM 2011a).

The eastern most trough of the proposed supplemental pipeline and approximately 0.5 miles of that supply pipeline are within greater sage-grouse winter habitat as designated in the Challis RMP (Figure 9). The remainder of the Proposed Action and alternatives are within PPH (Figure 9). Challis LWG summer habitat encompasses the majority of the actions under the Proposed Action, as well as all of the fencing on the BLM section of Furey Lane and a portion of the proposed County Line pipelines under Alternative 2 (Figure 10). All parts of the proposed actions except the County Line pipelines are within the Challis LWG Grouse/Morse Creek priority area (Figure 9). All portions of the Proposed Action and alternatives except the fencing on the BLM parcel on Furey Lane are within Sage-grouse Key Habitat (Figure 10).

There are two known active leks on BLM administered lands, one in Custer County, approximately 3.25 miles west of the proposed project area and one in Lemhi County, approximately 3.45 miles north of the proposed project area. A third undetermined lek is located on private land in Lemhi County to the east of the County Line pipeline. According to BLM CFO meta-data, this location was last counted in 2002, however no birds have been observed on or near the site since that time.

Figure 9. Greater Sage-Grouse Leks and Habitat near the Project Area

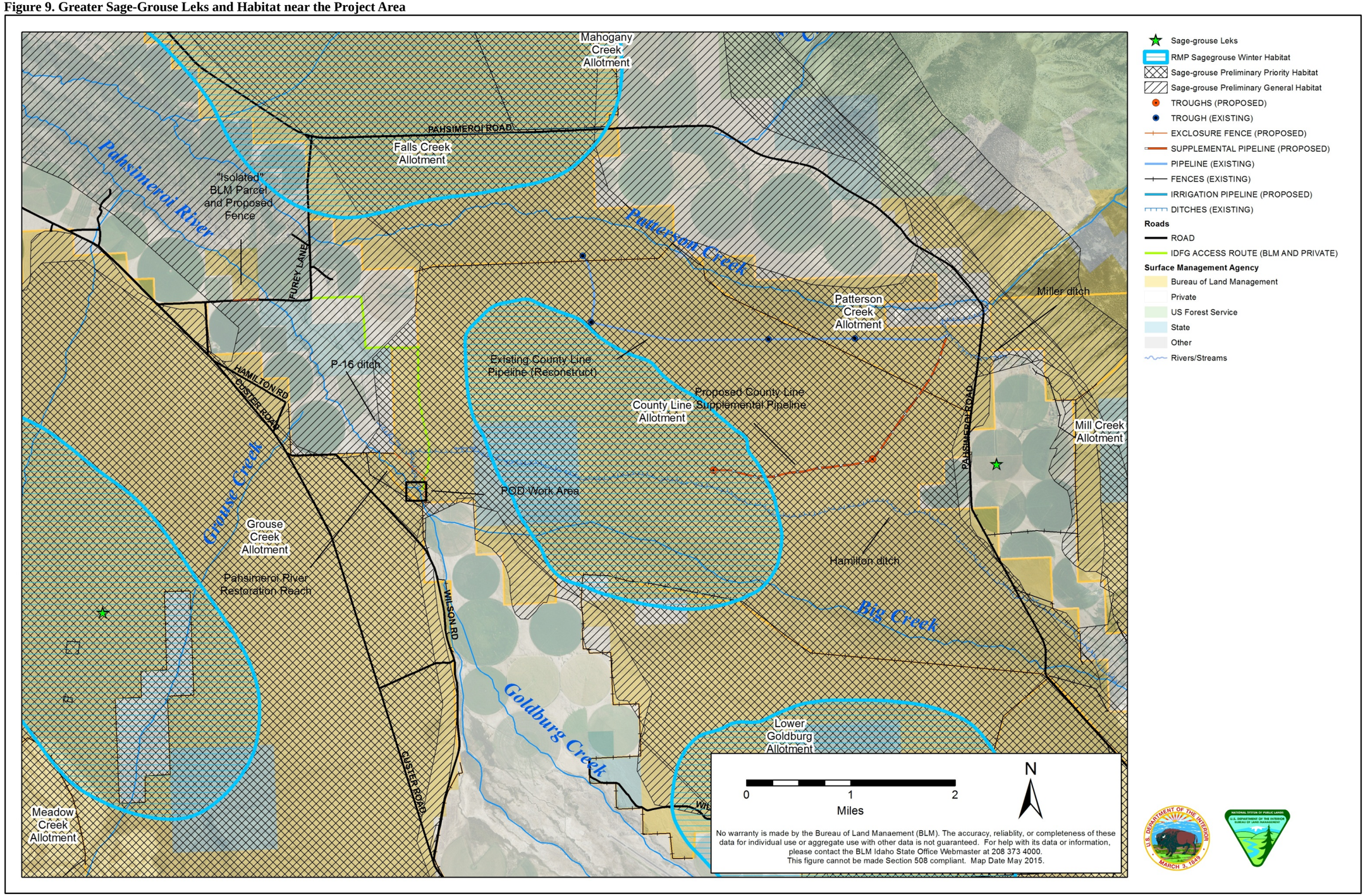
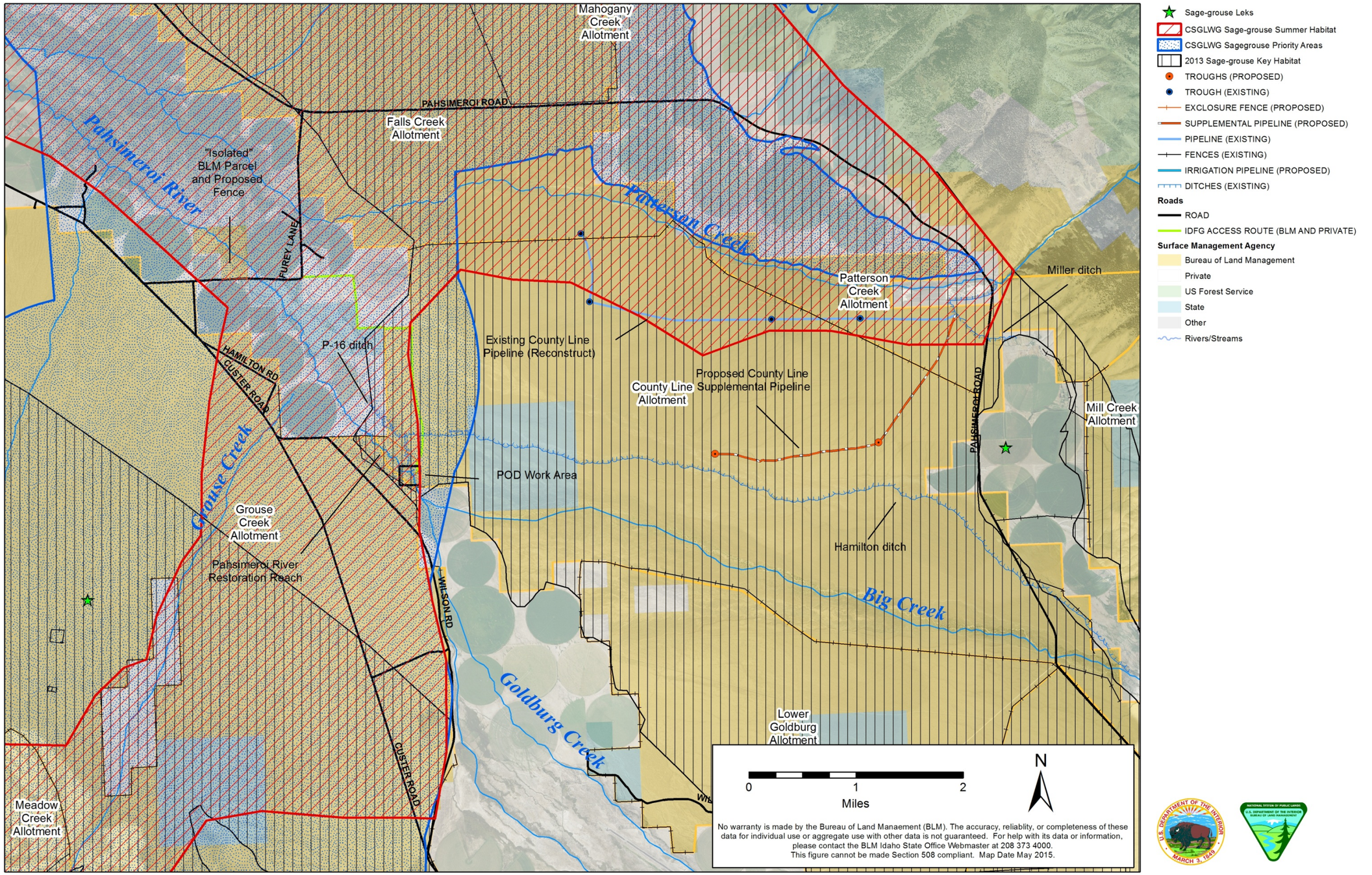


Figure 10. Greater Sage-Grouse Leks and Custer Sage-Grouse Local Working Group Habitat Designations



Pygmy Rabbit

Pygmy rabbits are known to be distributed historically and presently throughout southern and eastern Idaho where preferred habitat conditions exist. Pygmy rabbits are sagebrush obligates and are found in landscapes with tall, dense stands of sagebrush and deep soils for construction of burrow systems (Green and Flinders 1980). On September 20, 2010, the USFWS 12-month finding (75 FR 60515) on the petition to list found that the pygmy rabbit was "not warranted at this time" for the populations found outside the Columbia River distinct populations segment. The majority of the proposed project area, which includes the main irrigation pipeline, spur pipeline and watering troughs are mapped as potential occurrence for pygmy rabbits as per the Conservation Data Center Predicted Distribution layer (Scott et al. 2002a; Scott et al. 2002b).

Three separate pygmy rabbit surveys were conducted within the areas where ground disturbance would occur, with each survey occurring in a separate part of the proposed project area. Pygmy rabbit sign was found on two of the three surveys, but only one survey found pygmy rabbit evidence in an area of potential disturbance. This was associated with the supplemental County Line pipeline that had two places where pygmy rabbit evidence was found.

Migratory Birds

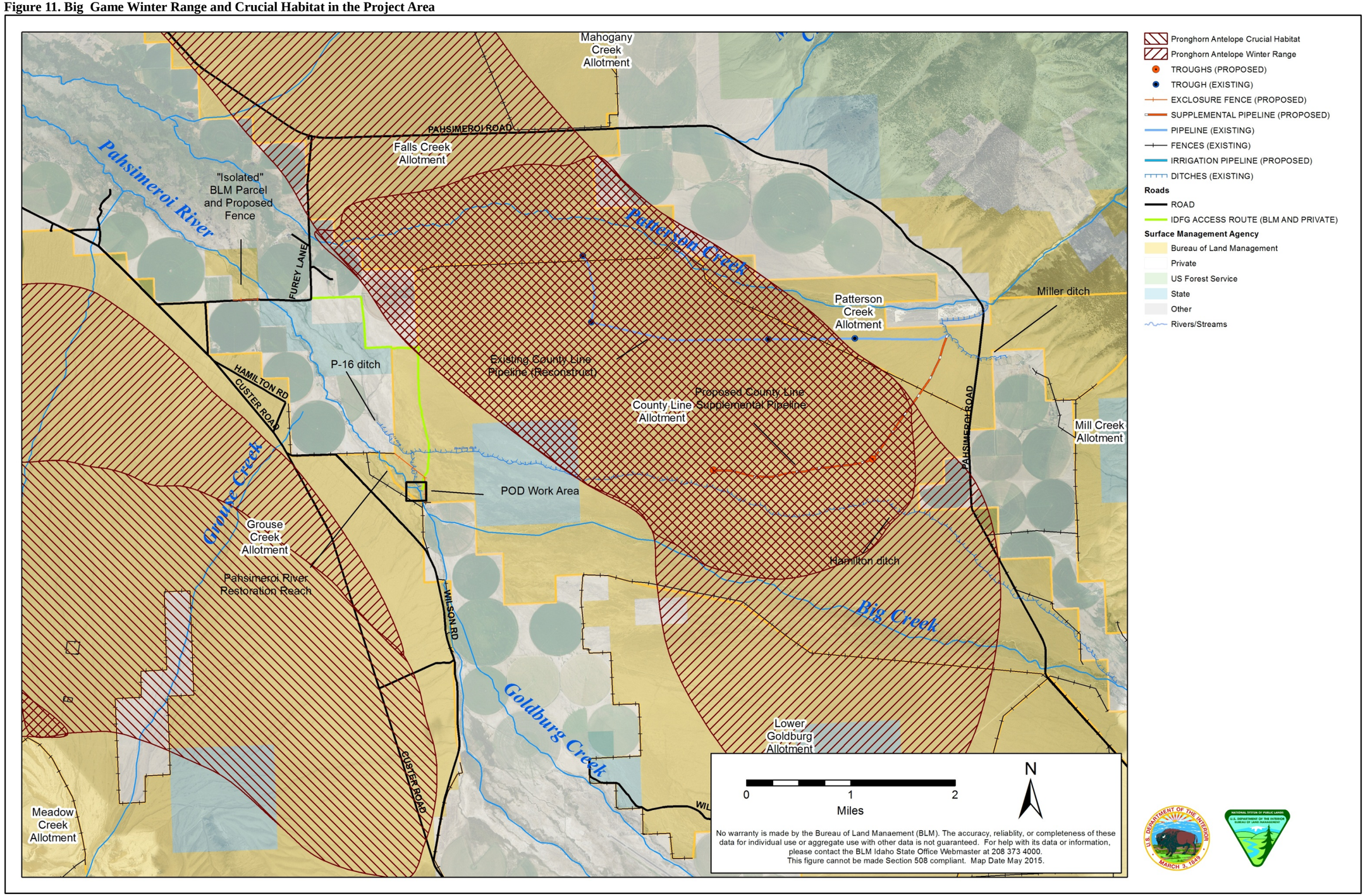
The Migratory Bird Treaty Act of 1918 makes it illegal for anyone to take, possess, import, export, transport, sell, or offer for sale, purchase, or barter, any migratory bird, or their parts, nests, or eggs of such a bird except under the terms of a valid permit issued by USFWS. Executive Order 13186, signed in 2001, on the responsibilities of federal agencies to protect migratory birds, directs those agencies to ensure environmental analyses of proposed federal actions required by NEPA to evaluate the effects of those actions on migratory birds. Migratory birds have the potential to exist throughout the Pahsimeroi River valley on all habitat types. The majority of impacts from the Proposed Action and its alternatives are in upland habitat types outside of the riparian corridor. Idaho Partners in Flight considers riparian habitat and non-riverine wetlands as two of the four highest priority habitat types in Idaho (Idaho Partners in Flight 2000). Portions of the Proposed Action and its Alternatives would take place in the riparian corridor.

Big Game Species

The Challis RMP has designated pronghorn antelope winter and crucial habitat through the central section of the County Line Allotment, which includes portions of the proposed project area (Figure 11). Of most concern are areas that have been designated as crucial winter range. These crucial winter range areas are those that are most readily accessible and utilized most often in a severe winter by big game species.

The nearest designated gray wolf pack territory is the Doublesprings pack, located approximately 20 miles south of the proposed project area (Holyan et al. 2011). The gray wolf is a highly mobile species that ranges over large territories in pursuit of its prey and has the potential to be present in all habitat types during the year.

Figure 11. Big Game Winter Range and Crucial Habitat in the Project Area



Alternative 1 – Proposed Action Direct/Indirect Impacts

Greater Sage-Grouse

There would be 8.17 acres of disturbance associated with the Proposed Action that would impact sage-grouse habitat (upland disturbance in Table 2). This acreage is located near the Pahsimeroi River channel and along the proposed irrigation pipeline alignment. Perches that could be used by raptors are present in the form of fence posts and naturally growing trees, thereby making much of the proposed area of disturbance an area of limited use to sage-grouse. Suitable sage-grouse habitat without perches is also present within the proposed project area. Construction would take place outside of the nesting season and the nearest active lek is over 4.5 km away, eliminating potential impacts to sage-grouse lekking from these activities. A trough installed on the delivery pipeline could increase livestock use surrounding the trough. This would not cause significant changes to livestock grazing patterns due to the present grazing associated with the water availability within the vicinity of the new trough.

A fence would be built to protect irrigation infrastructure and riparian resources along the main river channel. Construction of this fence would not provide an appreciable perch advantage for avian predators due to the presence of taller perches in the form of scattered trees along the river channel and taller stature sagebrush species (*Artemisia tridentata tridentata*) associated with deeper soil bottomlands. The fence is over 5 km away from the nearest active lek. This is outside the 2 km buffer suggested by Stevens (2011) as an area of collision risk. The fence would be marked with reflective bird diverters to mitigate potential sage-grouse strikes.

There would be increased activity along the proposed access road associated with maintenance of the fish screen by IDFG. Disturbance would be minimal for any sage-grouse that might be using the area around the access road and would not limit their use of these areas. Additionally, the majority of the use occurring on this road would occur outside of the lekking season.

For these reasons, actions associated with the Proposed Action would be in compliance with BLM *Instruction Memorandum No. 2012-43*, and BLM Manual 6840 and would not contribute to the further decline of the species or destruction of habitat.

Pygmy Rabbit

Ground disturbing activities can impact pygmy rabbits through direct mortality and/or collapse of burrows. Ground disturbing activity would occur on 8.17 acres (upland disturbance in Table 2). All disturbed ground would be reseeded and monitored for invasive plant species. Invasive plants species treatment would be completed if necessary. Impacts to desirable pygmy rabbit vegetation from these disturbances would be temporary until that vegetation could be reestablished. A pygmy rabbit survey was completed to identify pygmy rabbit activity within and around ground disturbing activities associated with this alternative. No pygmy rabbits or their sign was identified within the proposed action area. There was some recent pygmy rabbit sign identified north of the proposed activities, but these were at a distance as to not be impacted by the Proposed Action.

The livestock exclusion fence along the river channel would not provide any appreciable advantage over those already naturally present. The vegetation removed during construction of the fence would be temporary and would not limit availability of suitable habitat for any pygmy rabbits that might move into the area.

Additional vehicle travel of the access road would have an increased potential for road mortality of individual pygmy rabbits using the area. This would be very limited due to this road being prohibitive for vehicles to travel at the higher rates of speed where potential vehicle mortality has a higher possibility.

The actions described in the Proposed Action would be in compliance with guidance in BLM Manual 6840 and would not contribute to the listing of the species.

Migratory Birds

Ground disturbing activities can impact migratory birds through direct disturbance and removal of potential nesting and foraging habitat. Under this alternative 8.17 acres (upland disturbance in Table 2) would be disturbed. The construction period would mitigate impacts to birds from ground disturbing activities by occurring outside the nesting period. Riparian vegetation disturbance within the proposed project area would have an impact on migratory bird habitat. However, the small scale, temporary nature of the vegetation disturbance would keep impacts to this habitat to a minimum. Available habitat would shift over time in the form of new riparian habitat establishing along the river channel and existing habitat along dewatered or plugged ditches slowly desiccating from lack of water resources. In the long term, riparian habitat availability to migratory birds would be similar to what is currently available. Upland vegetation disturbance would take longer to revegetate. Upland vegetation is not limited in availability and ground disturbing activities associated with this alternative would not prohibit individuals that use the area from nesting in future seasons.

Big Game Species

Impacts to pronghorn from ground disturbing activities would be through direct disturbance during construction and through a loss of habitat due to permanent structures. A total of 8.17 acres (upland disturbance in Table 2) of ground disturbing activities could take place under this alternative. However, only approximately 0.12 miles of the IDFG access road would be within pronghorn crucial and winter habitat. The scale of this project would not limit wintering habitat availability for pronghorn. Disturbances within and adjacent to pronghorn winter and crucial range would be temporary and pronghorn could move to areas without construction activities. Loss of habitat would be insignificant due to the scale of impacted habitat and because the Proposed Action would only improve existing roads.

The proposed spur trough off the delivery pipeline would provide a new water source not previously available to pronghorn. This benefit would only be for a portion of the year when the trough is turned on and is outside any designated big game habitat. Pahsimeroi River water would remain available to pronghorn.

The abandonment of the Hamilton ditch would remove a water source that is available to big game species when the ditch conveys water (typically from 4/1-10/31). However, because these species are mobile, there would be minimal impacts related to discontinuation of the Hamilton ditch. Additionally, implementation of the Proposed Action would result in a greater duration and extent of surface flow in Big Creek, which would help mitigate the loss of water from the Hamilton ditch.

The livestock exclusion fence along the river channel could impede movement by pronghorn. This fence would be built to BLM wildlife friendly standards in order to help mitigate pronghorn movement across the valley.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

All impacts (8.17 acres, (upland disturbance in Table 2)) described in Alternative 1 would also apply to this alternative (Table 3). Impacts described below would be in addition to those already described in Alternative 1. Total ground disturbing activities under Alternative 2 would be about 10.84 acres (8.17 acres under Alternative 1 and an additional 2.67 acres for additional proposed actions under Alternative 2).

Greater Sage-Grouse

There would be an additional 2.67 acres of ground disturbance under this alternative. The County Line pipeline reconstruct would account for 0.75 acres of this total. This pipeline is located within sage-grouse PPH and Challis LWG summer habitat. The County Line supplemental pipeline would disturb 1.68 acres and is located within PPH. The last trough and a short distance of this pipeline would be located within Challis RMP winter habitat. The initial 0.25 miles of the pipeline is located within Challis LWG summer habitat. Disturbance from reconstruction of the existing County Line pipeline would be temporary and limited to the footprint of the initial build. These pipelines and troughs would maintain livestock distribution across the allotment, and would replace the water source lost through abandonment of the Hamilton ditch. The County Line supplemental pipeline would provide replacement water for that which is currently available in the Hamilton ditch. This would not measurably change use patterns of livestock in the area. The pipeline is 1 ¼-inch HDPE that would be installed with a pipe layer on a bulldozer. This is done in a single pass and disturbance is limited to some brush being crushed, but not killed and ground disturbance with a width of approximately 1.5 feet. The pipeline construction area could be utilized by sage-grouse immediately following construction activities. Troughs for the County Line supplemental pipeline would be placed along the disturbed area of the existing road and would be placed as to minimize impacts to sage-grouse habitat. All troughs would be fitted with floats and bird ladders. These would follow mitigation measures, as described in Interim Management IM-2012-043, for West Nile Virus and entrapment within the trough.

There would be an additional 0.24 acres of disturbance associated with the fence for the BLM parcel along Furey Lane. This fence is within PGH and within Challis LWG summer habitat and the Grouse/Morse Creek priority area. Due to the location of this fence (next to a road and surrounded by agricultural land and development), sage-grouse use of the area would be limited. This fence would be marked with bird diverters to mitigate possible collisions of sage-grouse.

Actions associated with Alternative 2 would be in compliance with the December 2011 BLM *Instruction Memorandum No. 2012-43* (BLM 2011a), and BLM Manual 6840 and not contribute to the listing of the species.

Pygmy Rabbit

The County Line pipelines proposed under this alternative have the potential to impact pygmy rabbits through direct mortality and burrow collapse during construction. Two pygmy rabbit presence surveys were conducted, one on each leg of the County Line pipelines. No pygmy rabbit evidence was found on the County Line pipeline reconstruct, eliminating potential impacts from the reconstruct. Troughs associated with this pipeline already exist and would not provide additional perch opportunities for avian predators. Evidence in the form of fresh or recent fecal material and adjacent open burrows in mima mounds was found along the County Line

supplemental pipeline proposed route. This evidence was found along the edges of the proposed pipeline route which would be located in the middle of an existing road. Routing down the existing road would mitigate the potential for direct mortality and burrow collapse impacts. Troughs associated with the supplemental pipeline would provide additional perching opportunities for avian predators.

The fence that is proposed to be constructed on the 120 acre isolated BLM administered parcel on Furey Lane would be constructed along an existing well-traveled road that is currently fenced on the opposite side of the road. There are no known pygmy rabbits or suitable habitat in the proposed project area; therefore, therefore there would be no impacts to pygmy rabbits from this action.

The actions described in Alternative 2 would be in compliance with guidance in BLM Manual 6840 and would not contribute to the listing of the species.

Migratory Birds

The proposed County Line pipeline reconstruction and construction of the County Line supplemental pipeline under this alternative would take place in upland vegetation. This would remove an additional 2.67 acres of upland habitat over that proposed under Alternative 1. Removal of this habitat would not limit migratory birds' life processes as available similar habitat surrounds these proposed areas. Construction would occur between mid-July to March, mitigating impacts to migratory birds during nesting season. Young of the year would be mobile and could relocate if present during construction activities.

The riparian restoration action has the potential to disturb migratory birds during implementation. This would be a short term, temporary disturbance and would occur in a work window (mid-July through March) that would mitigate impacts. This action would help to expedite recovery of habitat and would have a long term beneficial impact for migratory birds through improvement of habitat within the riparian corridor. This would help to offset the gradual desiccation of vegetation along the P-16 ditch, which would be dewatered under both Alternatives 1 and 2. Over the long term, riparian habitat quantity and quality is expected to meet or exceed that available along the P-16 ditch.

The fence along the isolated BLM parcel could impact migratory birds present during construction. This would be a short term impact and would be mitigated by the timing of the work window. Elimination of unauthorized grazing of this parcel would have a long term beneficial impact to migratory birds.

The actions described in Alternative 2 would be in compliance with guidance in BLM Manual 6840 and would not contribute to the listing of the species.

Big Game Species

The majority of the proposed County Line pipelines and both proposed new troughs would be within pronghorn winter and crucial habitat. Construction of these pipelines could cause impacts to big game through disturbance during construction and loss of available habitat. Construction could happen within the Big Game Winter Range restricted period (Nov. 15 – April 30) as designated by the Challis RMP. Due to the size of these projects and the amount of available suitable habitat, individuals that could be impacted by construction could relocate to adjacent areas without disturbances. An additional 2.67 acres of habitat could be disturbed from the construction of these pipelines. Not all of the disturbance would be within pronghorn crucial or

winter habitat. Installation of HDPE pipe associated with these would cause some vegetation alteration, but would not lead to total removal of vegetation and would be immediately available for use by ungulates following construction. Habitat loss due to trough installation and livestock use of new troughs would remain as long as grazing is permitted. All areas of disturbance would be reseeded with a BLM approved seed mixture to prevent weed infestation. This would not limit habitat availability for pronghorn.

The abandonment of the Hamilton ditch would remove a water source that is available to big game species when the ditch conveys water (typically from 4/1-10/31). However, because these species are mobile, there would be minimal impacts related to discontinuation of the Hamilton ditch. Implementation of the irrigation efficiency improvements would result in a greater duration and extent of surface flow in Big Creek, which would help mitigate the loss of water from the Hamilton ditch. Additionally, the proposed supplemental pipeline would further mitigate the loss of water availability from the closure of the Hamilton ditch.

All other actions under this alternative would not occur within designated big game habitat. The fence associated with the isolated BLM parcel would be built to BLM wildlife friendly specifications.

Alternative 3 – No Action, Direct/Indirect Impacts

All Wildlife Including Migratory Birds

This alternative would have no additional impacts to threatened, endangered, or sensitive species of wildlife and migratory birds. Habitat conditions in the project area, including vegetation and ground disturbance, would remain as described in the affected environment.

Threatened, Endangered and Sensitive Fish; Fisheries

Affected Environment

The Upper Salmon River Basin contains threatened, endangered, or sensitive (TES) fish species and critical habitat designated under the ESA. The majority of the BLM Challis Field Office occurs within the Upper Salmon River Basin (USRB). The USFWS and the NMFS have, under ESA, listed the following fish species and designated critical habitat for the area administered by the CFO as:

- Threatened - USFWS - Columbia River bull trout (*Salvelinus confluentus*)
- Threatened - NMFS - Snake River steelhead trout (*Oncorhynchus mykiss*)
- Threatened - NMFS - Snake River spring/summer Chinook salmon (*Oncorhynchus tshawytscha*)
- Endangered - NMFS - Snake River sockeye salmon (*Oncorhynchus nerka*)
- Designated Critical Habitat - USFWS - bull trout
- Designated Critical Habitat - NMFS - steelhead, Chinook salmon and sockeye salmon

There are several non-ESA listed fish species that are categorized by the BLM as "sensitive" in the USRB, two of which are known to occur in the Pahsimeroi River subbasin, westslope cutthroat trout (*Oncorhynchus clarki lewisi)* and Columbia River redband trout (*Oncorhynchus mykiss gairdneri*) (BLM 2014b). The Pacific Lamprey (*Entosphenus tridentatus*) is an anadromous fish and has also been identified as a BLM sensitive species in the USRB. However, species presence and distribution is uncertain, and it has not been found in the Pahsimeroi River basin. Within the Pahsimeroi River subbasin, at least 12 native non-game fish

species have been identified as being present or potentially present (Wallace and Zaroban 2013). These native and sensitive species will benefit from the consideration of effects to ESA listed fish and designated critical habitat (Table 6).

Table 6. ESA Listed Fish Species and Designated Critical Habitat for the BLM CFO in the Pahsimeroi River subbasin

Status	Species	Designated Critical Habitat	Essential Fish Habitat
Threatened	Snake River Spring/Summer Chinook Salmon	Yes	Yes
Threatened	Snake River Basin Steelhead	Yes	No
Threatened	Bull trout	Yes	No

Snake River sockeye salmon are listed in the USRB as endangered, and they use the mainstem Salmon River as a migratory corridor. The Snake River sockeye salmon was designated as endangered on November 20, 1991 (57 FR 58619) and modified on June 28, 2005 (70 FR 37160). NMFS designated critical habitat for the sockeye salmon, including the mainstem Salmon River, on December 28, 1993 (58 FR 68543). Snake River sockeye salmon have not been documented in the Pahsimeroi River subbasin, nor do they use the river as a migration corridor. Also, there is no sockeye salmon designated critical habitat in the Pahsimeroi River subbasin and sockeye do not use the Pahsimeroi River or tributaries for any part of their life cycle. Therefore, sockeye salmon will not be discussed further in this document.

The analyses for this project were conducted based on species known to occur in or near the project area according to USFWS, NMFS, IDFG, USFS and BLM records. The summaries that follow describe the status of the three ESA-listed species and their designated critical habitats which occur in the Pahsimeroi River subbasin, relative to areas affected by the Proposed Action and Alternatives. More detailed information on the status and trends of these species can be found in the listing regulations and critical habitat designations published in the Federal Register (Table 7).

Table 7. Federal Register (FR) notices for ESA-Listed Fish Species Considered in Analysis

Species	Listing Date and FR	Critical Habitat Designation Date and FR
Chinook salmon Snake River spring/summer run	6/28/05; 70 FR 37160	10/25/99; 64 FR 57399; 12/28/93; 58 FR 68543
Steelhead trout Snake River Basin	8/18/97; 62 FR 43937	9/02/05; 70 FR 52630
Bull trout Columbia River	11/1/99; 64 FR 58909	10/18/10; 75 FR 63897

The Pahsimeroi River contains populations and habitat for ESA listed fish species and is fragmented due to natural and anthropogenic factors. Migratory fish (anadromous and fluvial)

from the Salmon River that enter the Pahsimeroi River are limited by available and accessible habitat in the lower portions of the mainstem Pahsimeroi River and the lack of connectivity of tributaries. Several losing (natural infiltration) and dewatered (agricultural withdrawals) stream reaches exist along the mainstem Pahsimeroi River. Most Pahsimeroi River tributaries also contain losing and dewatered reaches as they cross their alluvial fans, which further fragments fish habitat. Currently within the Pahsimeroi River subbasin, the upper most extent of ESA listed anadromous fish species is approximately Hooper Lane, which is 6.9 miles downstream of the project area (Salmon-Challis 2014).

A multitude of human caused factors have also contributed to the fragmentation of habitat in the Pahsimeroi River subbasin, potentially limiting anadromous fish distribution. The most important factors are diversion/irrigation practices within naturally losing reaches, which often exacerbates low-flows in the Pahsimeroi River and most tributaries. Colvin and Moffitt (2008) surmised that diversion locations were placed upstream of the natural flow-losing reaches to ensure water supply throughout the irrigation season. Therefore, mainstem Pahsimeroi River and tributary fragmentation has most likely been exacerbated due to irrigation withdrawals, flow diversions, and ditch construction, at least since the late 1800s. These irrigation diversions can also create instream barriers associated with the diversion's infrastructure. Therefore, anadromous fish species have likely been fragmented from upper reaches of the Pahsimeroi River and its tributaries due to naturally flow-losing stream reaches, channel dewatering, and fish passage barriers due to irrigation.

Genetic analysis is required to distinguish among resident redband trout, rainbow trout of previously stocked native and non-native strains, and juvenile steelhead which co-occur in the USRB. Genetic analyses of the aforementioned rainbow trout/steelhead forms have not been conducted for any streams within the Pahsimeroi River subbasin. However, anadromous forms of rainbow trout (i.e., migratory steelhead) may have been historically fragmented from allotment streams due to losing stream reaches (Colvin and Moffitt, 2009). Currently, this fragmentation is exacerbated by irrigation withdrawals (i.e., stream dewatering) and structures (i.e., irrigation diversions, culverts, on-channel ponds). These structures constitute fish passage barriers and limit the genetic exchange between steelhead and rainbow trout (migratory and native/stocked strains, respectively).

The flow-limited stream reaches, which fragment the lower Pahsimeroi River from the upper Pahsimeroi River, were recognized by NMFS in the Critical Habitat Analytical Review Team Report (CHART) (NMFS 2005). Regarding the upper Pahsimeroi River and Big Creek, the CHART concluded these streams as "Unoccupied HUC5, ephemeral barrier prevents population expansion into this HUC5; based or review of public comments and new information the CHART determined that this HUC5 is not essential for conservation of the Evolutionarily Significant Unit (ESU)." Relative to ESA listed fish, the 1997 NMFS listing for Snake River steelhead did not recognize resident rainbow trout. For these reasons, migratory steelhead and rearing juvenile steelhead are likely absent, but resident forms of stocked strains of rainbow trout and redband trout may both occur in the project area. For brevity and clarity, rainbow trout will be used to refer to resident forms of redband and rainbow trout (native or stocked) and steelhead will be used when describing the migratory/anadromous form. Therefore, all *O. mykiss (subspp.)* within the project area are considered rainbow trout hereinafter in this assessment.

ESA Listed Fish Species Distribution

The project area includes the Pahsimeroi River upstream of Furey Lane to the P-16 POD (Figure 12). Anadromous salmonids have not been found, or are expected to exist, in this reach of the Pahsimeroi River (BLM 2012a; Salmon-Challis 2014). Habitats capable of supporting spawning and rearing for anadromous salmonids may exist in the Pahsimeroi River upstream of Hooper Lane and in Patterson Creek/Big Springs Creek, but may not be available for all life stages due to poor quality habitat, natural infiltration, agricultural dewatering, natural/anthropogenic barriers, and/or dry or substantially dewatered channel reaches (BLM 2014c). No recorded occurrences of steelhead trout or Chinook salmon exist in the Pahsimeroi River or Patterson Creek/Big Springs Creek upstream of Hooper Lane (BLM 2014c). Also, no observations of steelhead trout or Chinook salmon have been recorded in Big Creek, which enters the Pahsimeroi River 0.33 miles upstream of the P-16 POD. At the March 25, 2014 Salmon-Challis ESA Level 1 Team meeting, discussions among NMFS, USFWS, and BLM concerning ESA consultation for this project addressed anadromous fish distribution in the Pahsimeroi River subbasin. It was agreed upon that this project area exists upstream of known occupied steelhead or Chinook salmon habitat (Salmon-Challis 2014).

The lower 17 miles of the Pahsimeroi River and lower Patterson Creek/Big Springs Creek currently provide the only known spawning, rearing, and migration habitat for Chinook salmon and steelhead trout in the Pahsimeroi drainage. Both hatchery- and natural-origin spring/summer Chinook salmon are present in the Pahsimeroi River watershed (BLM 2012a). The hatchery stock was developed using endemic spring/summer Chinook salmon and is therefore considered part of the ESU for Snake River spring/summer Chinook salmon. Chinook salmon enter the Pahsimeroi River from mid-June to early October and spawn from late August to early October. The core spawning area is from the Burstedt Lane Bridge to Hooper Lane Bridge (BLM 2012a; Salmon-Challis 2014).

Snake River steelhead trout occupy the same Pahsimeroi River and lower Patterson Creek/Big Springs Creek reaches as Chinook salmon. Both hatchery- and natural-origin summer steelhead are present in the Pahsimeroi River Watershed. However, only the endemic summer steelhead are listed as threatened by NOAA Fisheries. Hatchery-origin summer steelhead in the Pahsimeroi River were transplanted from the Snake River for artificial propagation and are not listed, nor are they currently classified, as part of the ESU for Snake River summer steelhead. Both hatchery-origin and natural-origin adult steelhead enter the Pahsimeroi River and are intercepted at the lower hatchery weir for the Upper Pahsimeroi Hatchery from late February through early May with occasional arrivals as late as May 19. Similar to spring/summer Chinook salmon, spawning activity by steelhead within the Pahsimeroi River does not currently occur upstream of Hooper Lane (Salmon-Challis 2014).

Bull trout occur in the lower portions of the mainstem Pahsimeroi River, headwater stream reaches of the Pahsimeroi River subbasin, and most tributaries. Limited observations of bull trout exist in the lower Pahsimeroi River (Hooper Lane to the Pahsimeroi confluence with the Salmon River). Many bull trout populations are separated from the project site via anthropogenic barriers, irrigation dewatering, and natural infiltration. Bull trout presence has been documented in the Pahsimeroi River in the project area. In 2014, BLM fisheries personnel observed 5 bull trout stranded in pools downstream of the P-16 POD immediately after opening the ditch. Existing information suggests current habitat conditions and fish populations are subject to seasonal dewatering downstream of the P-16 POD through a combination of natural

and anthropogenic causes, and this limits fish populations and suitable habitat in the Pahsimeroi River (BLM 2012a).

Bull trout have also been found in reaches of Big Creek upstream of the project area. Big Creek enters the Pahsimeroi River 0.33 miles upstream of the P-16 POD and is fragmented form the Pahsimeroi River for most of the year (irregular connectivity usually less than 1 month/year during spring runoff). Bull trout in Big Creek may be displaced from upstream reaches during periods of high flows and may be transient in nature due to regular natural infiltration and annual dewatering. Fragmented and/or isolated populations of bull trout in Big Creek have been observed to spawn in perennial reaches (BLM 2014c). Limited connectivity (both natural and anthropogenic impediments and flow limitations) between Big Creek and the Pahsimeroi River may limit use of Big Creek by fluvial bull trout.

IDFG has sampled fish populations both up- and downstream of the project area (Figure 12). However, limited sampling efforts have been conducted within, or near, the project area. IDFG conducted fish surveys on the mainstem Pahsimeroi River upstream of the project area (2013 and 2014) from just below a private land impoundment (Flying Joseph Ranch) to McCoy Lane near the mouth of Goldburg Creek (IDFG 2015a). These fish survey sites occurred upstream (2.4 to 7.2 miles) of the project area, but represent the nearest known upstream fisheries survey data. A total of five survey sites, each ≈ 300 feet long, were established in this reach and multi-pass or single-pass electrofishing was conducted. During 2013, all five reaches were surveyed during periods of streamflow between June 24 and June 27. However, during 2014 only four of the five reaches were surveyed due to dewatered channel conditions at one site, data at the four sites was collected between June 24 and June 25. Only the two lower most survey sites are depicted on Figure 12. During these surveys, no juvenile Chinook salmon were present. A single bull trout (200 mm FL) was present at the lower most site during 2013, ≈2.4 miles upstream of the project area (Figure 12). During 2014, bull trout were not present in any of the reaches surveyed. During 2013, rainbow trout/juvenile steelhead (range 70-300 mm FL) were present in all five reaches. Comparatively, only the two lowermost reaches had rainbow trout/juvenile steelhead during 2014. The only other salmonids species observed was brook trout. Brook trout (range 60 to 300 mm FL) were the most widely distributed species and were present at each survey reach during 2013 and 2014.

During 2010 and 2014, IDFG conducted fish surveys on the mainstem Pahsimeroi River downstream of the project area from just below Hooper Lane to 0.72-miles downstream of Furey Lane (IDFG 2015b) (Figure 12). A total of four survey sites, ranging from ≈ 278 to 475 feet long, were established in this reach, and multi-pass or single-pass electrofishing was conducted. During 2010, all four reaches were surveyed during periods of streamflow between July 26 and August 3. However, in 2014, only one of the four reaches was sampled due to dewatered channel conditions, with data collected between July 10 and 12. The reach sampled in 2014 was located approximately 0.6 miles upstream of Hooper Lane, and no fish were captured. Thus, only the 2010 surveys yielded any species catch information (Figure 12). During 2010, no bull trout or rainbow trout/juvenile steelhead were observed. The only ESA listed species captured was a single Chinook salmon juvenile at the most downstream site below Hooper Lane. Other salmonids observed included: 1 mountain whitefish (90 mm FL) at the site ≈0.6 miles upstream of Hooper Lane and 25 brook trout (range 70 – 220 mm FL) at the three lowermost sample sites. The sample site just downstream of Furey Lane was sampled during 2010, and no fish were captured. In 2014 this site was dewatered and was not electrofished.

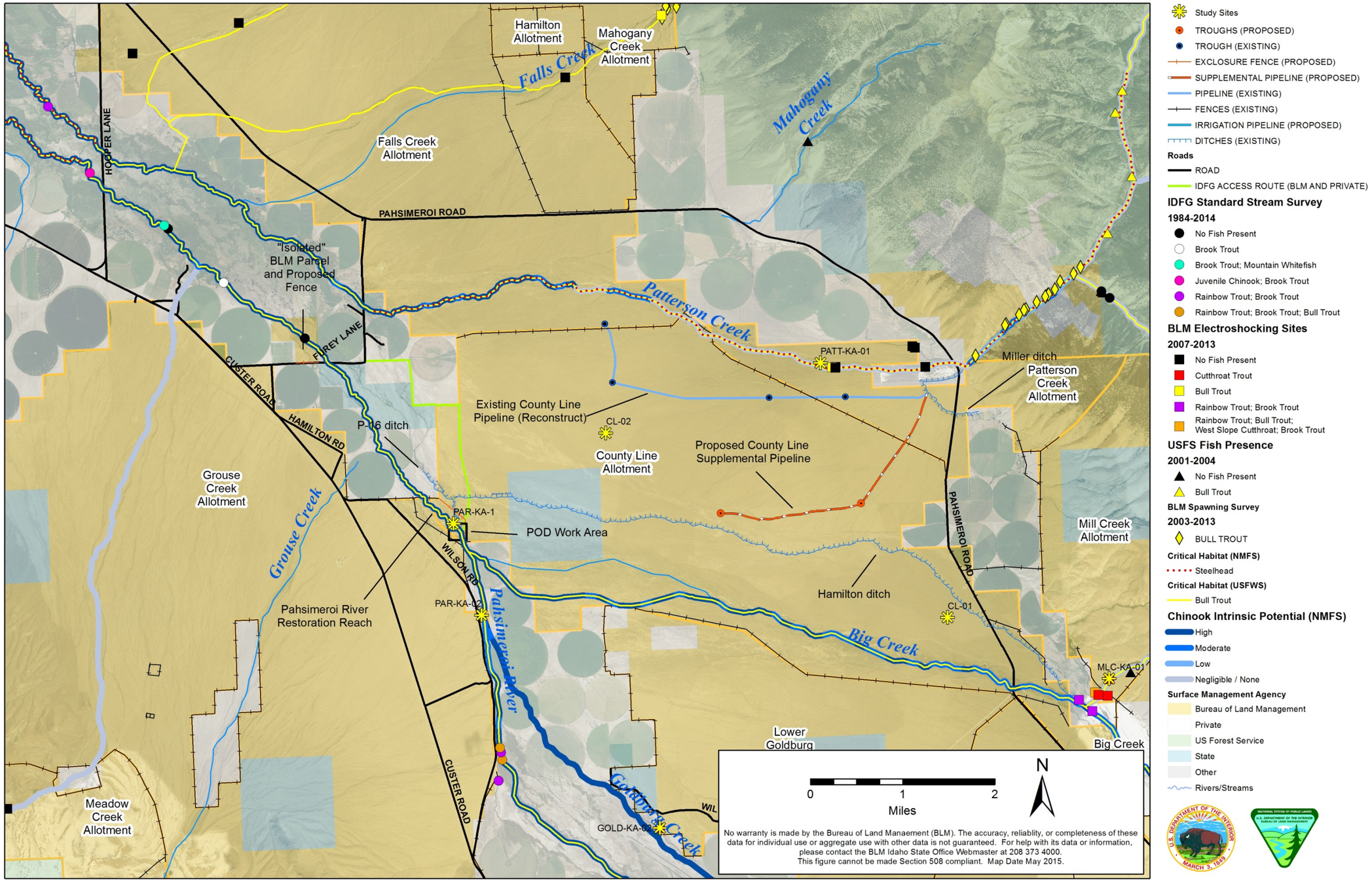
In conclusion, there is the potential for specific TES fish species to exist within the project area. Chinook salmon and steelhead trout have been documented 6.9-miles downstream of the project area, but are not known to exist upstream of Hooper Lane. Therefore, Chinook salmon and steelhead trout are not anticipated to be in the project area and would not be adversely affected during construction activities. It is anticipated that there would be long-term beneficial effects to Chinook salmon and steelhead, and other aquatic species, as a result of the project, and those effects are detailed in the sections that follow. Bull trout have been found downstream of the P-16 POD, but their densities, persistence, and habitat use in the project area are unknown. Pahsimeroi River bull trout populations are known to reside in the lower and headwater reaches of the mainstem river and in headwater reaches of several tributaries, both of which are highly fragmented from the project area. However, available fish survey data and BLM observations support the potential for the presence of bull trout within the project area. The fish species most likely to be encountered during project implementation are bull trout, rainbow trout, sculpin, and non-native brook trout. The potential exists, albeit small, for westslope cutthroat trout to be within the project area during construction activities.

ESA Fish Designated Critical Habitat

Critical habitat has been designated for Snake River spring/summer Chinook salmon and includes "river reaches presently or historically accessible…to Snake River spring/summer Chinook salmon" (FR 64 57399). This designation did not specify stream reaches included in the designation. While it remains uncertain, historical access to the project reach of the Pahsimeroi River and Big Creek may have existed. The NMFS habitat intrinsic potential analysis identifies the Pahsimeroi River and Big Creek as having high and moderate to high intrinsic habitat potential for Chinook salmon spawning (Cooney and Holzer 2006; BLM 2012a) (Figure 12). Therefore, for the purposes of this EA, both the Pahsimeroi River and Big Creek are assessed as Chinook salmon designated critical habitat.

Critical habitat for Snake River steelhead trout was designated in 2005, and includes the Pahsimeroi River upstream to Hooper Lane and Patterson Creek/Big Springs Creek to its headwaters (Figure 12). As such, critical habitat for steelhead does not exist within the proposed project area. On the Pahsimeroi River, the nearest steelhead critical habitat is approximately 6.9 miles downstream from the project area (Pahsimeroi River at Hooper Lane). The lower 17 miles of the Pahsimeroi River and lower Patterson Creek/Big Springs Creek currently provide the only known spawning, rearing, and migration habitat for steelhead in the Pahsimeroi drainage.

Figure 12. Fish survey points, habitat designations, and DMAs relative to the Project Area



Columbia River bull trout critical habitat was designated in 2010, and includes the Pahsimeroi River and many of its tributaries. The Pahsimeroi River, Patterson Creek/Big Springs Creek, and Big Creek are designated critical habitat for bull trout, of which only the Pahsimeroi River occurs in the project area (Figure 12). Patterson Creek/Big Springs Creek is downstream of the project area and Big Creek enters the Pahsimeroi River approximately 0.33 miles upstream of the P-16 POD. Within the Pahsimeroi River subbasin, bull trout populations are fragmented due to natural infiltration, agricultural dewatering, and instream barriers at certain times of the year. However, many of these impaired stream reaches are still listed as designated critical habitat for bull trout even though they are highly fragmented.

The description of the affected environment relative to riparian and wetland resources, water quality, and Clean Water Act designations are disclosed under the following sections for "Water Quality" and "Wetland and Riparian Zones". Other elements of fish habitat related to water temperature, streambank stability and stream substrate composition are described here under "Threatened-Endangered-Sensitive Fish/Fisheries".

Fish Habitat – Streambank Stability

The BLM has collected greenline and streambank metrics using the Multiple Indicator Monitoring method (MIM) at the Designated Monitoring Area (DMA) sites on the Pahsimeroi River and Big Creek. These sites are accessible to livestock and may have impacts due to livestock use (high percentage of alterations, low streambank cover, and high woody use). The following sections summarize the information with respect to federally listed fish species and their habitat in the project area. This section addresses the PACFISH (USDA-USDI 1995a) established bank stability objective of 80%, and the Challis RMP established bank stability objective of 90% for fish bearing streams.

On the Pahsimeroi River, DMA PAR-KA-01 (Pahsimeroi River) is located approximately 0.3 miles downstream of the P-16 POD, and data were collected in 2010 and 2013 as part of the range monitoring program. DMA PAR-KA-01 is frequently dry or has minimal stream flow due to irrigation diversions and natural infiltration characteristics of the stream reach. Available environmental baseline information from the DMA PAR-KA-01 suggests that this reach of the Pahsimeroi River is unstable and functioning at risk, with respect to bank stability (Table 8). Bank stability increased from 24% in 2010 to 70% in 2013, which is still below the PACFISH and CFO RMP objectives. The increase in bank stability could be due to the excessively high and prolonged discharges in 2011 and alteration of mesic grass species, which may have improved riparian grasses. However, these values may be driven by water availability, which is evident in greenline composition of mesic grasses and redtop (2010 and 2013, respectively). Instream fish habitat along the reach appears to be driven by a combination of natural and anthropogenic flow alteration influenced by diversions and natural infiltration.

The other Pahsimeroi River monitoring site near P-16 is DMA PAR-KA-02, which is located 1.1 miles upstream, was sampled in 2012. Streambank stability was 87%, which meets the PACFISH standards but falls slightly short of CFO RMP objectives (80% and 90%, respectively) (Table 7). The stability of this reach may be due to the perennial streamflows which contributes to the high percentage of streambank cover (46%). This reach is willow dominated with sedges as the primary greenline species, both of which contribute to channel stability and function. This site is indicative of the Pahsimeroi River potential natural condition if there were perennial stream flows and a more natural hydrograph.

The DMA on Big Creek (BGC-KA-02) is located upstream of the Hamilton ditch diversion and does not represent Big Creek in the project area (approximately 8.0 miles upstream). It is included here as a description of Big Creek where perennial flows occur. Data were collected at the Big Creek DMA in 2010 and 2013 as part of the range monitoring program (Table 9). At BGC-KA-02, streambank stability increased from 67% in 2010 to 75% in 2013, which is still below the PACFISH and CFO RMP objectives. Streambank cover was greater than 60% in both years, which contributes to streambank stability; however the dominant species (Kentucky bluegrass) does not provide the necessary deep and dense root masses needed to maintain streambank stability.

The 7.6-mile section of Big Creek downstream of the Hamilton Ditch is typical of other Pahsimeroi River tributaries as the flow across extensive alluvial fans and extremely deep alluvium, both of which can contribute to natural infiltration. Big Creek traverses geologically erosive soils, has seasonally high flows in the spring, prolonged periods of substantially decreased flows due to irrigation withdrawals in the summer, and is prone to natural infiltration as it flows across the alluvial fan. Big Creek is characterized by intermittent stream flow that is often absent for portions of the growing season. Thus, a lower level of streambank stability and streambank cover likely predominates in comparison to the percentages observed at the upstream DMA site with perennial flows.

Fish Habitat - Substrate Composition

The Pahsimeroi River was sampled by the CFO in 2010 and 2013 using the MIM method at DMA PAR-KA-01(downstream) and in 2012 at DMA PAR-KA-02 (upstream). Wolman pebble counts from DMA PAR-KA-01 in 2010 yielded 36% surface fines < 6.0 mm over gravel substrate (estimated D_{84} = 37 mm) (Table 8). At the same site in 2013, surface fines were 39% (estimated D_{84} = 44 mm), indicating little change between the sampling dates. The lack of perennial flows reduces riparian vegetation and can impact bank stability, contributing to excessive levels of fines. Wolman pebble counts from DMA PAR-KA-02 (upstream site sampled in 2012) yielded 33% surface fines < 6.0 mm over gravel substrate (estimated D_{84} = 53 mm). This site has perennial flows and stable, well-vegetated streambanks, which should reduce the input of fine sediments. Given the similarities between these sites, either substrate fines are within background levels or localized streambank conditions do not account for all sources of sediment inputs that may be affecting this reach of the Pahsimeroi River.

The DMA on Big Creek, BGC-KA-02, located upstream of the Hamilton Ditch diversion, was assessed using the MIM protocol in 2010 and 2013 (Table 9). Wolman pebble counts yielded 8% and 6% surface fines in 2010 and 2013, respectively (estimated D_{84} = 134 mm and 117 mm, respectively). Gradient in the reach is 3%, which is conducive to larger substrate sizes and fewer fines. These data do not represent the potential contribution of fine sediment that Big Creek could have on the Pahsimeroi River, due to the distance from the Pahsimeroi River (over 7.6 miles) and the dewatered and naturally intermittent streamflows. Big Creek enters the Pahsimeroi River between the Pahsimeroi DMAs.

Table 8. MIM Data for the Pahsimeroi River near the Project Area

MIM Attributes	MIM Site (Year)		
	PAR-KA-01 (2010)	PAR-KA-01 (2013)	PAR-KA-02 (2012)
Streambank Stability[1]	24%	70%	87%
Streambank Alteration	4%	2%	2%
Streambank Cover	29%	59%	73%
Woody Use[2]	0%	20%	46%
Fine Sediment[3]	36%	39%	33%
D_{50} (Sample size)[4]	16mm (200)	19mm (210)	20mm (200)
D_{84} (Sample size)[4]	37mm (200)	44mm (210)	53mm (200)
Greenline Width	6.98 m	6.88 m	4.58 m
Dominant Greenline Species	Mesic Grasses	Red Top	Sedges
Residual Height (Year End)	9.8"	6.4"	24"

[1] Target 90% for fish bearing streams (CFO RMP, BLM 1999).
[2] At PAR-KA-02, woody use was most likely due to wildlife (e.g., moose), not livestock.
[3] <6 mm intermediate diameter (b-axis).
[4] Particle sizes (D_{50} and D_{84}) were estimated from categorical size class data.

Table 9. MIM Data for Big Creek upstream of the Project Area

MIM Attributes	MIM Site (Year)	
	BGC-KA-02 (2010)	BGC-KA-02 (2013)
Streambank Stability[1]	67%	75%
Streambank Alteration	0%	0%
Streambank Cover	66%	63%
Woody Use[2]	20%	10%
Fine Sediment[3]	8%	6%
D_{50} (Sample size)[4]	53mm (200)	50mm (230)
D_{84} (Sample size)[4]	134mm (200)	117mm (230)
Greenline Width	10.7 m	10.3 m
Dominant Greenline Species	Kentucky Bluegrass	Kentucky Bluegrass
Residual Height (Year End)	7.0"	9.8"

1. Target 90% for fish bearing streams (CFO RMP, BLM 1999).
2. Woody use could be due to wildlife browsing (e.g., moose or elk) instead of livestock.
3. Less than 6 mm intermediate diameter (b-axis).
4. Particle sizes (D_{50} and D_{84}) were estimated from categorical size class data.

Fish Habitat – Water Temperature

In-stream water temperature data has been collected with temperature loggers (HOBO®, Onset Computer Corp.). Annual stream temperature maxima are presented as the 7-day running average of maximum daily temperatures, per PACFISH/INFISH guidelines. The temperature thresholds for various life history characteristics of bull trout, Chinook salmon, and steelhead rearing and spawning are depicted on the graphs for comparison of annual maxima (Table 10). The presence of an annual maximum temperature above a species threshold does not preclude

their presence, as fish are mobile and able to seek other stream reaches or micro-habitat refugia during the peak summer water temperatures. For example, while annual temperature maxima during July or August often exceed the bull trout spawning threshold, bull trout are fall spawners and substantial declines in maximum 7-day average temperatures between August, September, and October occur annually as a result of local climatic conditions. While ESA listed steelhead and Chinook salmon do not occur in the project area of the Pahsimeroi River subbasin, data indicate stream temperatures are not a limiting factor for these species in streams associated with the Pahsimeroi River.

Water temperature can be a limiting factor for salmonid habitat in the Pahsimeroi River in reaches where irrigation withdrawals and/or natural infiltration reduces surface flows. Temperature increases can also be affected by changes in a stream's width and depth (higher W/D ratio), reductions in riparian cover, and irrigation return flows. Annual climactic variability also has a strong influence on maximum temperatures reached during the summer. Table 10 summarizes instream temperature thresholds important to listed salmonids.

Table 10. PACFISH/INFISH (1995) Instream Temperature Thresholds for Listed Salmonids

Species	Spawning Season	Spawning Temperature (^oF)	Rearing Temperature (^oF)	Migration/Holding Temperature (^oF)
Chinook Salmon	Summer	≤ 60	≤ 64	≤ 64
Steelhead Trout	Spring	≤ 60	≤ 64	≤ 64
Bull Trout	Fall	≤ 48	≤54	≤ 59

[1.] Measured as the 7-day maximum average instream temperature.

Instream temperature monitoring provides seasonal thermal habitat suitability information relative to behavioral thresholds for listed salmonids in the Pahsimeroi River subbasin. Temperature monitoring usually begins in May and continues through late October. However, in reaches of dewatered stream channels, interruptions in daily recordings may occur. Daily maximum instream temperatures illustrate fine-scale variability while the maximum 7-day running average dampens this variability by averaging maximum daily values over a 7-day period. Averaging over a 7-day period is useful in detecting the timing of sustained instream maximum temperatures relative to spawning thresholds and for determining when seasonal cooling to salmonid behavioral thresholds occurs.

The Pahsimeroi River thermograph nearest project site is immediately upstream of the P-16 POD. Downstream of project site, near DMA PAR-KA-01, the Pahsimeroi River is regularly dewatered by the P-16 diversion, and therefore the temperature monitoring site was set upstream of the diversion. Data were collected at this site from 2004 to 2013, and indicate that maximum running 7-day average temperatures for each year (range = 66.5 - 74.7^oF) listed routinely peaks above Chinook salmon, steelhead trout, and bull trout's spawning and rearing thresholds. Daily instream temperatures from the latest year of available data (2013) indicates the reach peaked and temporarily remained above critical life stage temperatures for salmonid species until September (Figure 13). At this site, temperature consistently stays above Chinook salmon and steelhead trout spawning temperature until near the end of September. Bull trout rearing threshold temperature was reached around late September, and bull trout spawning threshold temperatures are met around early October. These results indicate temperature is not conducive

to species recruitment, which may be due to the limited instream flows from irrigation withdrawals. One exception is in the spring when temperatures may be below steelhead spawning thresholds, prior to thermograph deployment.

Big Creek water temperatures were measured directly upstream of the Mill Creek confluence by the CFO in 2013 (BLM 2014b, BLM 2014c). The data suggest that Big Creek may have limiting thermal conditions that are, at times, in excess of, or close to, exceeding behavioral thresholds (Figure 14). Below this point, Big Creek is further dewatered by the Hamilton ditch, which may contribute to increased water temperatures. Water savings left for instream flow could improve the temperatures observed in Big Creek; however, the extent of natural infiltration will still impact stream temperatures. The presence of brook trout and rainbow trout in Big Creek in September 2013, where in some cases fish were trapped in isolated refugia pools susceptible to increased temperatures, indicates some subsurface flow contribution capable of sustaining fish in isolated pools for one to two months.

Alternative 1 – Proposed Action, Direct/Indirect Impacts

Direct and indirect impacts from the Proposed Action would be beneficial for federally listed, candidate, or sensitive fish species as a result of less water being diverted at the P-16 POD, screening of the P-16 POD, cessation of Big Creek water being diverted into the Hamilton ditch, and abandonment of both the P-16 and Hamilton ditches. Access to, and occupancy of the project area is currently constrained for anadromous salmonids due to a combination of natural and anthropogenic influences. Irrigation withdrawal and losing stream reaches limit water availability and impede salmonid movement. The extent, duration, and final influence of the increased water in the streams are dependent on seasonal flows and the impact of natural infiltration.

Figure 13. 2013 Water temperature data for the Pahsimeroi River above the Grouse Creek confluence

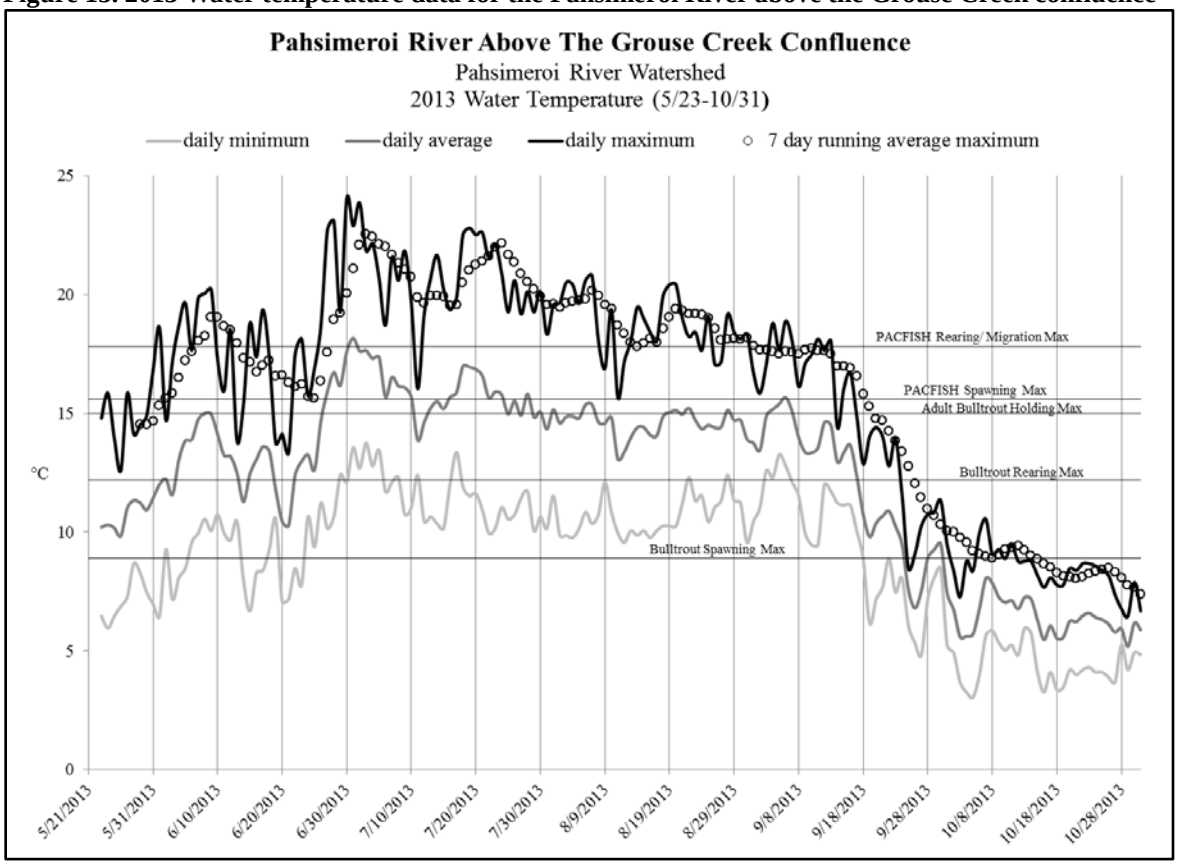
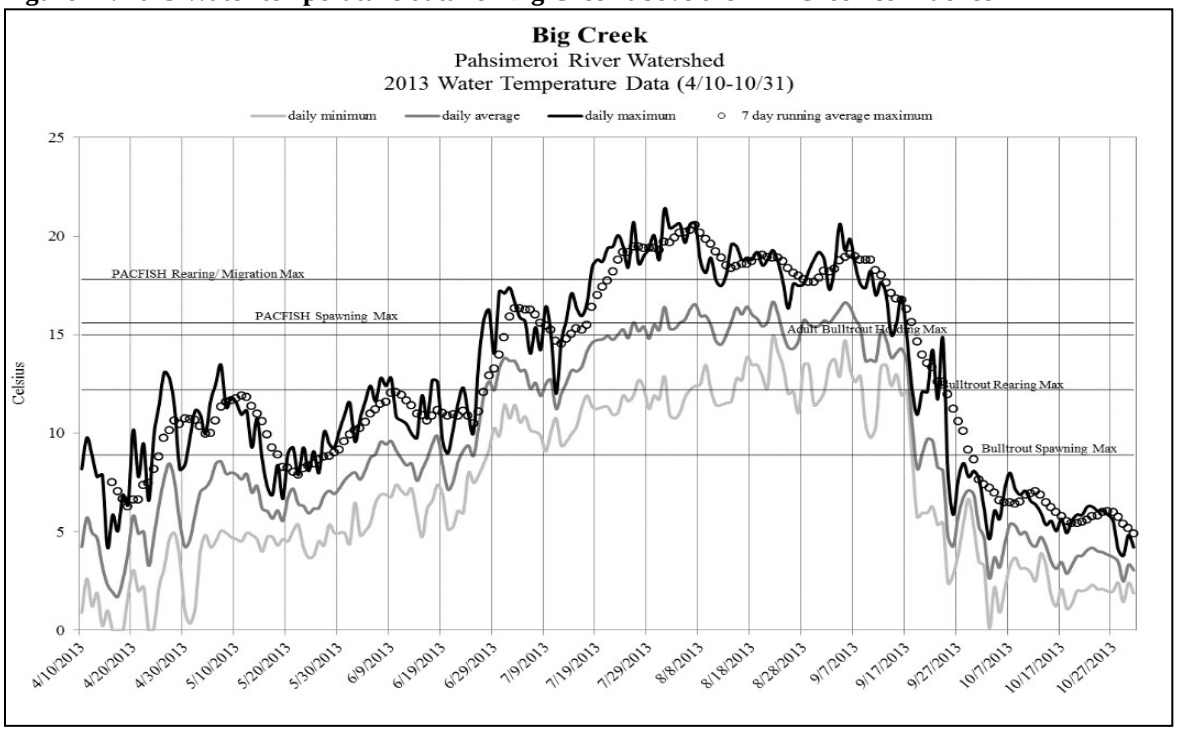


Figure 14. 2013 Water temperature data for Big Creek above the Mill Creek confluence



Based on the absence of ESA listed Chinook salmon and steelhead, no effects to those individuals would occur during project construction. Bull trout were present in the Pahsimeroi River in the project area in 2014; however the low-density observed reduces the potential for effects to individuals during project construction. The Proposed Action would result in long-term beneficial effects to both ESA listed fish (flow, temperature, refugia, habitat availability, etc.) if additional stream flow, fish habitat, and fish passage restoration efforts in the Pahsimeroi River subbasin resulted in their expansion into the project area. The potential for impacts to fish during future maintenance activities associated with the channel reconstruction or ROW have been considered, and are anticipated to be minimized to an insignificant level with stipulations and BMPs associated with the Proposed Action.

Direct Effects of the Proposed Action

- Increased streamflow in the Pahsimeroi River due to irrigation efficiency improvements and in Big Creek and possibly the Pahsimeroi River with the closure Hamilton ditch.
- Elimination of fish entrainment in the P-16 irrigation system with the installation of a NMFS Criteria screen at the P-16 POD.
- Restoration of surface water connection downstream of the P-16 diversion during low flow periods where the connection is currently intermittent. This reach should experience an increase in flow duration and quantity during the irrigation season.
- Increased instream flows in the Pahsimeroi River due to irrigation efficiency.
- Increased instream flows in Big Creek from the closure of the Hamilton ditch.
- Instream and riparian habitat disturbance associated with stream channel reconstruction and closure of the existing P-16 POD.
- Short-term contribution of sediment associated with construction activities, soil disturbance, and channel re-watering.
- Disturbance of fish individuals, potentially including rainbow trout, westslope cutthroat trout, bull trout, and whitefish, which may be present in the Pahsimeroi River during project construction.
- Impacts to fish in the Pahsimeroi River during channel dewatering. Fish salvage would be conducted by qualified IDFG fisheries biologists.

Indirect Effects of the Proposed Action

- Potentially beneficial decreases in water temperature associated with revegetation and an increase in instream flow that would convey water directly to a seasonally flow limited reach of the Pahsimeroi River.
- Potential increase in habitat and alternate refugia (resting areas and thermal cover) for fish currently in the Pahsimeroi River once the existing P-16 diversion is removed and the ditch closed.
- Increased potential for genetic exchange among fish currently in the Pahsimeroi River above and below the proposed project.
- Changes in existing water regimes, both ground and surface, on the flow limited Big Creek alluvial fan downstream of the Hamilton ditch diversion.
- Potential increase in habitat and alternate refugia (resting area and thermal cover) for fish in Big Creek downstream of the Hamilton ditch diversion.
- Increased potential for additional fish access to Big Creek from the Pahsimeroi River as Big Creek water would no longer be diverted into the Hamilton ditch and would remain for a longer period of time and greater downstream extent across the Big Creek alluvial fan.

- Potential for increased livestock utilization along Big Creek within the County Line Allotment.

The potential negative effects for fish, related to channel construction and issuance of a ROW for construction and maintenance of the proposed P-16 project, are anticipated to be temporary, short-term, and/or offset by project specific design criteria, construction BMPs, and ROW stipulations. The design criteria and BMPs are intended to reduce sediment entering streams and reduce the loss of buffering by riparian vegetation until disturbed areas are re-established.

Indirect effects that could potentially negatively impact fisheries in the Pahsimeroi River are associated with increased sediment. BMPs and design features associated with the Proposed Action would assure sediment inputs during project construction and maintenance would be minor. Increases in sediment input are anticipated during spring high flows until riparian vegetation is re-established, however it is anticipated that these would start at a level commensurate with the existing condition, and decrease in every subsequent year following implementation. These effects are expected to be within the normal range of sediment input from runoff events associated within the subbasin. Sediment controls established at time of construction would remain in place until vegetative treatments have recovered to reduce these potential effects of sedimentation.

The Pahsimeroi River downstream of the project reach is seasonally dry most years due to a combination of natural infiltration and anthropogenic flow alteration influenced by diversions. Therefore, salmonid use of this reach is expected to be limited to low-level migration and/or overwintering due to fluctuating water levels, poor instream habitat, elevated water temperatures, and surface fines. The 6.3 miles of Big Creek upstream of the Pahsimeroi River confluence, is often flow limited and typically dry due to natural infiltration and irrigation withdrawal.

Beneficial effects of the Proposed Action, including increased instream habitat and water availability, would serve to improve the overall existing conditions for threatened, endangered and sensitive fish, as well as other aquatic species in the Pahsimeroi River and Big Creek systems.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

The impacts from Alternative 1 also apply to this alternative. There are no direct impacts to federally listed fish species as a result of the Alternative 2 actions proposed for completion in the upland habitat. Restoration of 0.84 miles of riverbank downstream of the existing P-16 POD would accelerate establishment of streamside vegetation. Indirect effects of the action would be long-term as the riparian vegetation becomes established and contributes to streambank stability and water temperature reduction. Additional description of anticipated impacts to riparian vegetation, habitat, and water quality are further described in the *Wetlands and Riparian Zones* section of this document.

Alternative 3 – No Action, Direct/Indirect Impacts

Under this alternative, the Proposed Action would not be implemented. Diversion of decreed water rights at P-16 would continue to be accomplished by seasonal installation of the instream push-up dam. Big Creek water would continue to be diverted into the Hamilton ditch. Federally listed fish species occupancy of the project area would continue to be subject to water availability, and the opportunity for expansion of ESA listed fish species above Hooper Lane would be limited. Anadromous salmonids could not pioneer into this reach and bull trout use of

this reach would be expected to continue to be restricted to low-level migration and/or overwintering. All fish species, including ESA listed species, would continue to be entrained in the P-16 and Hamilton ditches.

Tribal Treaty Rights and Interests

Affected Environment

The Challis Field Office area falls within the traditional occupation area of the Shoshone-Bannock Tribes. The 1868 Fort Bridger Treaty, between the United States and the Shoshone and Bannock Tribes, reserves the Tribes' right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. In addition to these rights, the Shoshone-Bannock have the right to graze tribal livestock and cut timber for tribal use on those lands of the original Fort Hall reservation that were ceded to the federal government under the Agreement of February 5, 1898, ratified by the Act of June 6, 1900. Today, members of the Shoshone-Bannock Tribes continue to exercise reserved treaty rights within the BLM CFO area.

The federal government has a unique trust relationship with federally-recognized American Indian Tribes, including the Shoshone-Bannock Tribes. BLM has a responsibility and obligation to consider and consult on potential effects to natural resources related to the Tribes' treaty rights or cultural use. Resources or issues of interest to the Tribes that could have a bearing on their traditional use and/or treaty rights include: tribal historic and archaeological sites, sacred sites and traditional cultural properties, traditional use sites, fisheries, traditional use plant and animal species, vegetation (including noxious and invasive, non-native species), air and water quality, wildlife, access to lands and continued availability of traditional resources, land status, and the visual quality of the environment.

The project area would be located on unoccupied federal lands, therefore, tribal treaty rights, as defined, are applicable. To date, the BLM has received no project-specific concerns or issues from the Tribes, but potential impacts to important tribal resources are considered in order to partially fulfill the BLM's federal trust responsibility. Lacking specific concerns associated with treaty-reserved rights and interests, analysis regarding the current condition and nature of affected resources are not presented in this section. Instead, resources also known to be important to the Tribes are discussed under separate headings in this EA, including: *Noxious Non-Native Species, Soils, Fisheries, Wildlife and Migratory Birds, Vegetation, Water Quality, and Wetlands and Riparian Zones*.

Alternative 1 – Proposed Action, Direct/Indirect Impacts

There would be no changes in land status or access associated with the Proposed Action and the project area would retain its unoccupied federal land status. Therefore, the Shoshone-Bannock Tribes' right to access unoccupied federal lands to exercise reserved treaty rights and traditional uses would be unaffected.

The Proposed Action would, however, result in both adverse and beneficial impacts to some of the natural resources that the Tribes may require to exercise their reserved treaty rights. Minor, short-term adverse impacts would be associated with the construction of the pipeline and fence. The main irrigation pipeline, the spur pipeline, POD, conveyance ditch and maintenance road, and fish screen would disturb approximately 8.56 acres.

There would be approximately 0.59 acres of vegetation and soil disturbed by construction of the fence. The potential for the spread of noxious non-native species would increase slightly,

movement of wildlife could be impeded, and the fence would be visible on the landscape. However, the construction of the fence and other proposed changes in the management of the allotment would result in the long-term improvement of water quality, enhancement of the riparian area, and the improvement of fish and wildlife habitat. For a more detailed impact analysis relative to these resources, see the respective sections indicated above.

Because adverse impacts would be negligible and short-term in nature, the Proposed Action would not affect, influence, or contribute to any significant change or increase in cumulative effects. Improvements in riparian habitat and water quality would increase long-term regional productivity, thus imparting an incremental benefit to resources associated with tribal treaty rights and interests.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

In addition to those impacts listed in Alternative 1, this alternative proposes to reconstruct an existing pipeline, install an additional pipeline and two troughs to provide water in the central part of the allotment, conduct riparian restoration activities downstream of the P-16 POD, and fence an isolated parcel of BLM administered land near Furey Lane. An additional 2.67 acres of new ground would be disturbed by this alternative.

Because adverse impacts would be negligible and short-term in nature, the Proposed Action would not affect, influence, or contribute to any significant change or increase in cumulative effects. Improvements in riparian habitat and water quality would increase long-term regional productivity, thus imparting an incremental benefit to resources associated with tribal treaty rights and interests.

Alternative 3 – No Action, Direct/Indirect Impacts

Under this alternative the Proposed Action would not be implemented. Diversion of decreed water rights at P-16 would continue to be accomplished by seasonal installation of the in-channel push up dam. Water would continue to be diverted into the Hamilton ditch from Big Creek to meet the decreed irrigation water rights. Riparian habitats would not be enhanced, and there would be no long-term benefits to fisheries or wildlife. No action would result in no change to existing conditions and create no new impacts to tribal treaty rights and interests.

Vegetation Type, Communities, and Rangeland Resources

Affected Environment

Vegetation

The proposed project area occurs in the Dry Intermountain Sagebrush Valleys Level IV Ecoregion (17aa) in Idaho, which is described by McGrath (2002) as an: “ecoregion [that] contains stream terraces, floodplains, saline areas, and alluvial fans. Water availability and potential for cropland agriculture are low as this ecoregion lies in the rain shadow of high mountains, receives little mountain runoff, and is underlain by highly permeable valley fill deposits. Sagebrush grassland is widespread and contrasts with the open-canopied forests of more rugged and higher ecoregions.”

Dominant trees in the Pahsimeroi River subbasin are quaking aspen (*Populus tremuloides*) and black cottonwood (*Populus balsamifera* ssp.*trichocarpa*). Dominant shrubs are Geyer, Bebb, Booth, and coyote willows (*Salix geyeriana, S. bebbiana, S. boothii*, and *S. exigua*, respectively), water birch (*Betula occidentalis*), mountain alder (*Alnus incana*), red-osier dogwood (*Cornus*

stolonifera), woods rose (*Rosa woodsii*), chokecherry (*Prunus virginiana*), gooseberry (*Ribes sp*.), and currant (*Ribes sp*.). Slough grasses such as Nebraska and beaked sedge (*Carex nebrascensis* and *C. rostrata*), and Baltic rush (*Juncus balticus*) make up the dominant herbaceous species. Degraded riparian areas are dominated by Kentucky bluegrass (*Poa pratensis*), clover (*Trifolium sp*.), and dandelion (*Taraxacum officinale*).

Overstory vegetation on the upland habitat is made up of Wyoming big sagebrush (*Artemisia tridentata* ssp. *wyomingensis*), basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*), greasewood (*Sarcobatus vermiculatus*), rabbitbrush and shadscale saltbush (*Atriplex confertifolia*) with an understory of bluebunch wheatgrass (*Pseudoroegneria spicata)*, Sandberg bluegrass (*Poa secunda)*, sand dropseed (*Sporobolus cryptandrus)*, needle and thread grass (*Hesperostipa comata)*, Indian ricegrass (*Achnatherum hymenoides)*, and other wheatgrass species. Willow and cottonwood are found along the Pahsimeroi River and the P-16 ditch. There is very little herbaceous understory along the drainages due to the cobble substrate and lack of soil (BLM 2012b).

The BLM DMA (PAR-KA-01) is approximately 945 feet downstream of the proposed project site and is frequently dewatered due to irrigation diversions and natural infiltration characteristics of the stream reach. The site is on the valley floor and is currently accessible to livestock on the BLM County Line Allotment. Riparian plant species composition for the Pahsimeroi River at this location consists of mesic grasses and upland shrubs. A few single mature Geyer's and coyote willows comprise the woody species. As is commonly the case with variable water availability, there were few hydric species present along the reach. This assemblage of greenline vegetation resulted in a very early ecological status. These data suggest greenline vegetation is stable, but functioning at risk. However, variable water availability along this reach of the Pahsimeroi River drives the dominance of mesic species presence over obligate and facultative wetland species which require a constant water supply (BLM 2012b).

There are two groups of large cottonwood trees along the P-16 ditch, one about 600 feet from the entrance to the ditch and the other about 2,100 feet further down the P-16 ditch at the confluence with the Hamilton ditch. This unique habitat has developed as a result of the constant water supply that is maintained by the ditch during the growing season. Vegetation along the Hamilton ditch resembles the surrounding upland sagebrush and greasewood habitat. Little or no riparian habitat is present due to the seasonal supply of water and the natural flow loss across the alluvial fan that dominates this part of the Pahsimeroi River subbasin (BLM 2012b).

Rangeland Resources

One BLM permitted grazing allotment, the County Line Allotment (10,391 acres), covers the entire proposed project area. Grazing in the allotment is authorized for one permittee for 363 cattle from 5/5-6/15; permitted use is for 501 Animal Unit Months (AUMs). The allotment is managed as a single pasture that a duration of use for 45 days during the spring/early summer season. Livestock are typically attracted to and dispersed throughout the uplands at this time by succulent, herbaceous forage and several water sources. The northern portion of the allotment has the County Line Pipeline with 2 troughs occurring within the allotment. The pipeline had been non-functional, but in 2013 the rider and the BLM range technician were able to conduct maintenance to the pipeline and get water to both of the troughs within the County Line Allotment. Additional maintenance/reconstruction needs are expected to occur to keep this pipeline functional. The Hamilton Ditch currently runs through the center of the allotment. This is an open ditch that livestock and wildlife use for water. Water in this ditch is important to livestock distribution because the

allotment boundary is within a 2 mile radius, with other water sources within a mile of the ditch. Cattle can disperse out from this source and forage in the uplands. The western portion of the County Line Allotment has approximately 1.05 unfenced miles of the Pahsimeroi River and the associated ditch; this reach provides livestock water as well. Big Creek flows through the southern portion of the allotment, but because Big Creek is intermittent and the downstream extent of water is variable, it may not consistently provide livestock water across the entirety of the southern part of the allotment.

Historically, livestock were turned out from Big Creek Ranch near Big Creek and were allowed to disperse throughout the allotment. Use observations for the allotment have indicated light use (21-40%) on upland species at the upland key area CL-1 (Figure 12) monitoring site a half mile north of Big Creek.

Alternative 1 – Proposed Action, Direct/Indirect Impacts

The Proposed Action would impact 8.17 acres of upland sagebrush habitat (Table 2), and an additional 0.39 acres within the riparian area adjacent to the Pahsimeroi River, for a total disturbance area of 8.56 acres. Construction areas would be reclaimed immediately following construction either through transplanting, planting, or reseeding with a BLM approved seed mix.

Approximately 0.39 of riparian vegetation and habitat would be impacted along the Pahsimeroi River corridor (Table 2). The streambank, portions of the floodplain, and areas disturbed by construction would be revegetated according to the engineering specifications with more than 2,000 willow cuttings and approximately 80 riparian clumps harvested from the existing P-16 ditch. Newly planted vegetation is anticipated to establish within three to five years. Temporary impacts to vegetation vigor would occur within disturbed areas and along the newly constructed stream channel until the new system stabilizes. All other areas of disturbance would be reseeded with native grasses and forbs. Invasive species monitoring and treatment would take place on all impacted and surrounding areas. The rate of recovery of the disturbed areas will depend heavily on climatic patterns occurring in the years following construction.

Closure of the P-16 ditch would halt the supply of water during the growing season to the vegetation along the ditch. Run-off from spring snow melt and periodic rain events during the summer may provide limited water for the existing vegetation, but it is expected that over the next three to five years the herbaceous vegetation along the P-16 ditch would transition to an upland species composition similar to that of the surrounding area. The woody vegetation is expected to remain for 15 to 20 years, depending on the depth of the root systems and overland water supply. During this same time period, replacement woody vegetation would be developing in a more natural and sustainable manner along the Pahsimeroi River as a result of a more naturalized hydrograph, increased stream flow, and additional channel wetted days. Ultimately, implementation of the Proposed Action is anticipated to result in a transition in the location of riparian vegetation, but no net loss or gain of upland and riparian vegetation.

Abandonment of the P-16 ditch and fencing of the Pahsimeroi River in the vicinity of the POD would eliminate water sources in the southwestern corner of the allotment. In good water years, there would likely be water available near here from Big Creek, but in many years Big Creek could be dry in its lower reaches, leaving no water sources in this portion of the allotment. This alternative proposes placement of a spur trough located at: Boise Meridian, Idaho, T. 14 N., R. 22 E., Sec. 26, SENW (Figure 4). This trough is intended to mitigate for the water sources lost through removal of water in the P-16 ditch, and exclosure of the Pahsimeroi River in this area.

Installation of this trough would help to maintain appropriate distribution of livestock and utilization of range resources in this area.

As a result of implementation of the Proposed Action, the Hamilton ditch would no longer be available in the central portion of the allotment (Figure 8). The ditch is important because it consistently provides water in the central portions of the allotment. As described above, livestock disperse out from this central linear water source and is within a 2 mile radius of the allotment boundary with other inconsistent water sources within 1 mile of the ditch. Without this water source, it is likely that livestock distribution and utilization patterns would change, shifting use to other parts of the allotment where water is available. This could result in new areas of concentrated livestock use in these parts of the allotment.

Grazing suitability is dependent upon distance to travel to water (Holecheck 2004). Distances between 1 and 2 miles can reduce grazing suitability up to 50% and distances greater than 2 miles may no longer be suitable for grazing. Expected distribution maps were created using a model to show the expected use differences by livestock between the current available water locations and water locations that would be available under Alternative 1. The assumptions used in the model were consistent with those described in Holecheck 2004. With the current available water locations, 98% of the allotment is predicted to have moderate to concentrated livestock distribution, with the remaining 2% predicted to have light distribution. This means that the allotment would have fairly uniform use throughout the allotment with more concentrated use at or along the water sources. In contrast, under Alternative 1 without the Hamilton ditch as a water source, 66% of the allotment is predicted to have moderate to concentrated livestock distribution, with the remaining 34% predicted to have light distribution. The moderate to concentrated distribution would be around the two troughs associated with the County Line Pipeline, the new spur pipeline and trough on the west side of the allotment, and the southeast part of the allotment associated with Big Creek. The central portion of the allotment would have light use by livestock. Removal of the Hamilton ditch may result in future reductions in grazing capacity for the County Line Allotment.

Water would no longer be diverted from Big Creek into the Hamilton ditch, and the increased instream flow would enhance riparian vegetation diversity and vigor downstream. The extent of the beneficial effects would depend on overall runoff volume and the hydrologic regime (i.e., losing vs. gaining reaches) as the channel traverses the alluvial fan. Currently, Big Creek is not typically regarded as a reliable source of water for livestock, and livestock utilization along the stream has been low. If water availability becomes more reliable in Big Creek, livestock distribution and use may change in this part of the pasture resulting in additional utilization of the areas adjacent to the stream channel. If livestock use increases along Big Creek above the established grazing use criteria, approximately 4.4 miles of Big Creek in the southeast to south-central portions of the County Line Allotment may be excluded from livestock use through a let-down fence, as described in the Mill Creek Reconnect Project EA.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

In addition to those impacts listed in Alternative 1, this alternative would impact an additional 2.67 acres of upland sagebrush habitat. These areas would be seeded with native grasses and forbs. The upland sites would be monitored and treated for noxious weeds for two to five years until the new vegetation is established. Vegetation removal impacts would be negligible and short-term in nature and this alternative would not affect, influence, or contribute to any

significant change in rangeland resources. Impacts to vegetation within disturbed areas are anticipated to be similar to those described above under the Alternative 1.

Abandonment of the Hamilton ditch, and potential changes to livestock use patterns as a result would be mitigated by installation of the supplemental pipeline (Figure 8). Although this pipeline would attempt to replace a linear feature that spans the allotment with two troughs, it is anticipated that maintaining water within the central part of the allotment would help to reduce changes in livestock distribution and utilization expected under the Proposed Action Alternative. The troughs would be placed within previously disturbed areas, to the greatest extent possible. If this is not possible, then troughs are anticipated to result in 0.70 acres of vegetative disturbance each. The livestock distribution model described above predicts a small change in livestock distribution resulting from the replacement of the Hamilton ditch with a pipeline and two troughs. The moderate to concentrated livestock use is predicted to occur across 89% of the allotment, with 11% of the allotment predicted to have light distribution. The light distribution areas are predicted occur in southern portion of the allotment where Big Creek is intermittent and an unreliable water source. The remainder of the allotment would continue to have fairly uniform livestock distribution. Improvements in riparian habitat and water quantity within Big Creek and the Pahsimeroi River would increase long-term regional productivity, thus imparting an incremental benefit to rangeland resources.

The proposed stream restoration would enhance establishment of streambank vegetation. Indirect effects of the action would be long-term as the riparian vegetation becomes established over time, begins to contribute to streambank stability and water temperature reduction as stream-side vegetation matures and substrate composition improves from current conditions.

Alternative 3 – No Action, Direct/Indirect Impacts

The No Action Alternative would have impacts on vegetation types and communities, or upland sagebrush resources within the proposed project area. Existing vegetation composition and vigor, grazing patterns, and forage resources in the County Line Allotment would remain as described in the affected environment. Riparian habitats would not be enhanced through the proposed actions under Alternatives 1 and 2, and there would be no long-term benefits to fisheries or wildlife. No action would result in no change to existing conditions and create no new impacts to the Pahsimeroi River or Big Creek. The proposed project area would continue to be subject to water availability under the influence of natural infiltration and anthropogenic flow alteration influenced by the P-16 diversion. Water would continue to be diverted into the Hamilton ditch from Big Creek to meet the landowners decreed irrigation water rights.

Visual Resources

Affected Environment

The proposed project area is located in the Northern Rocky Mountains physiographic province, but dominated by basin and range topography. The proposed project area is located on the valley floor of the Pahsimeroi River, near the town of Patterson, Idaho. This watershed is surrounded and dominated by the Lost River mountain range to the west and the Lemhi mountain range to the east. The area consists of low gradient alluvial benches and semi-arid upland foothills that are dominated by sagebrush, with the Pahsimeroi River and associated riparian vegetation snaking through the center of the valley. Emerging from the foothills at relatively regular intervals are somewhat rudded mountain canyons with persistent streams, most of which are

diverted for irrigation projects or naturally infiltrate before reaching the Pahsimeroi River, leaving broad and dry alluvial fans. There are a number of two-track roads in the project area, fencing along private lands and between grazing pastures, multiple ditches and diversion points, and some above-ground piping.

The proposed project area is viewed as middle ground from the Pahsimeroi road, which is inferior to (below the level of) the proposed project area.

The proposed project is located in a Visual Resource Management (VRM) Class II designation. Under VRM Class II, the level of change to the characteristic landscape should be low, and management activities may be seen, but should not attract the attention of the casual observer (BLM 1999).

Alternative 1 – Proposed Action, Direct/Indirect Impacts

In the short-term, there would be moderate contrasts to the landform, structural, and vegetative features of the characteristic landscape. These short-term contrasts come primarily from the staged materials, relocation of soils, a temporary river crossing, and vegetation removal and disturbance associated with the diversion relocation and placement of buried pipeline.

Visual contrasts related to alterations in the landform would result from soil movement and relocation associated with the backfill of the P-16 ditch, closure of the current point of diversion, and channel realignment at the reconstructed point of diversion. The ground disturbance caused by heavy equipment would be noticeable, both in color and line, but only in the short-term. Most on the ground alterations would be noticeable from close proximity, and would become increasingly less evident to the casual observer as exposed soils weather and riparian plantings establish. There would be weak contrasts to most of the elements of the landform and structural features, though these contrasts fall within the limits of VRM Class II objectives.

In the long-term, there would continue to be weak contrasts to the landform and structural features near the proposed project area; however, certain alterations to the currently visible structures present on the landform would persist into the future. The proposed fish screen, access roads, and 3,215 feet of fence would remain visible, even if only at a local level. These alterations would not be out of character for the localized viewshed, and would likely only be viewed by a small number of observers who travel the primitive road intentionally to see them.

As a result of dewatering the P-16 and Hamilton ditches and increasing flow into the Pahsimeroi River, vegetation would die along the dewatered ditches, and vegetative presence along the Pahsimeroi River would likely increase. The dewatering of the P-16 ditch, primarily, may result in the death of a number of cottonwood trees, and result in a change in color for the meandering strip of vegetation. Eventually the dead vegetation would fall and decompose. For the casual observer, the death of this vegetation would be within character of the surrounding landscape, and would be substantially unnoticeable as a change upon the landscape. As neighboring vegetation along the Pahsimeroi River receives additional water and begins to grow, the visible riparian strip would remain present (though relocated) at its natural location.

The Proposed Action would not contribute to any alterations in the viewshed that would be out of character for the current landscape. The Proposed Action is expected to improve the overall natural appearance of the area through channel reconstruction, revegetation, and the return of water to the natural stream system. All anticipated contrasts would be within the limits of VRM Class II objectives.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

All visual impacts associated with Alternative 1 would also occur under Alternative 2. Visual impacts would be the same as Alternative 1, with the addition of several features. Under Alternative 2, two sections of pipeline would be placed underground by a bulldozer with a ripping shank. This method slices the pipeline into the soil, and the altered (similar to being tilled) soil and vegetation falls back on top of the buried pipeline. The result would be disturbance of vegetation in a strip that may be noticeable until the soils settle and vegetation recovers. These alterations, however, are expected to be unnoticeable to the casual observer – increasingly so in the long-term. Three troughs would also be replaced under this alternative, resulting in little change to the current structures visible on the landscape. Two new troughs would be added along the supplemental pipeline, and would result in two locations with a decrease in vegetative presence around two trough structures. Other structural contrasts would occur from the placement of 1,313 feet of new 4-strand wire fence along Furey Lane. This fence would be connected on both ends to existing fences, and would not substantially alter the visual landscape. All alterations to the structural, landform, and vegetative characteristics of the landscape, as proposed under this alternative, would match the current character of the landscape within which they would sit, and would be within the limits for VRM Class II objectives.

This alternative would not contribute to any alterations in the viewshed that would be out of character for the current landscape. The proposed actions are expected to improve the overall natural appearance of the site through channel reconstruction, revegetation, and the return of water to the natural stream system. All anticipated contrasts would be within the limits of VRM Class II objectives.

Alternative 3 – No Action, Direct/Indirect Impacts

Under this alternative, there would be no changes to the existing characteristic landscape.

Water Quality: Surface and Ground

Affected Environment

The Clean Water Act (CWA) requires the State of Idaho to identify water quality limited surface waters and develop a plan to restore beneficial use support to these waters. This review is published by IDEQ approximately every two years, and is known as the Integrated Report. The most current approved IR is the 2012 IR, which was approved by EPA on July 11, 2014 (IDEQ 2014a). Waters not specifically designated in the Idaho water quality standards are undesignated waters which are generally protected for cold water aquatic life use and primary or secondary contact recreation until designated. All waters of the state are also designated for agricultural and industrial water supplies, wildlife, and aesthetics. Designated beneficial uses for the Pahsimeroi River are domestic water supply, cold water aquatic life, salmonid spawning, primary contact recreation, and special resource water. An evaluation of water quality in the Pahsimeroi River Subbasin was conducted by IDEQ in 2001; the results are presented in the Pahsimeroi River Subbasin Assessment and Total Maximum Daily Load (TMDL; IDEQ 2001). The TMDL assessment was based on the 1998 303(d) list prepared by IDEQ and approved by the EPA in 2000.

Of particular importance in the Pahsimeroi River subbasin are the water quality criteria for sediment and the relationship between water quality standards and intermittent waters. Because of the intermittent nature of many streams in the subbasin, the TMDL addresses the applicability

of the water quality standards to intermittent streams. Water quality standards in Idaho apply to intermittent waters only during periods of optimum flow sufficient to support the beneficial uses for which the intermittent water body has been designated. In the case of the Pahsimeroi River subbasin, most intermittent waters have not been designated and are protected for the default uses of cold water biota and secondary contact recreation. Optimum flow is described as at least one cfs for cold water aquatic life and at least five cfs for recreation uses. When flows drop below these threshold values, water quality standards no longer apply to the water body (IDEQ 2001).

Major tributaries to the Pahsimeroi River include Little Morgan, Morse, Falls, Patterson, Big, and Goldburg creeks which drain the western slopes of the Lemhi Range; and Lawson, Sulphur, Meadow, Grouse, and Doublespring creeks which drain the eastern slopes of the Lost River Range. Because of extensive irrigation diversions and large natural infiltration losses to the coarse alluvium of the valley, these tributaries contribute surface water directly to the Pahsimeroi River only during periods of high surface water runoff (Young and Harenberg 1973). Some tributaries rarely, if ever, connect to the mainstem Pahsimeroi River (Grouse, Doublespring, Patterson, and Little Morgan Creeks).

The surface and groundwater of the Pahsimeroi River subbasin are so interrelated that, although they may be described separately, for most practical purposes they constitute a single resource. Any use or control imposed on one is eventually reflected on the other. The Pahsimeroi River and its tributaries lose most of their water to alluvial fans, and consequently to the groundwater system.

The alluvial aquifer of the Pahsimeroi River Basin is recharged chiefly by infiltration losses from surface streams and irrigation canals and ditches as they cross the coarse valley-fill materials. Recharge to the alluvium also occurs by infiltration of applied irrigation water and precipitation on the valley floor (Williams et al. 2006).

The Pahsimeroi River is a productive, low gradient, highly sinuous, spring-fed stream. The approximate 50 mile length of the Pahsimeroi River can be stratified into four primary reaches from the headwaters to the confluence with the Salmon River near Ellis, Idaho as shown in Table 10 (Williams et al. 2006). The Pahsimeroi River from Big Creek downstream to Furey Lane is part of the mid-valley losing reach, (IDEQ 2014b, Meinzer 1924, Young and Harenberg 1973, Williams et al. 2006) and the loss of surface flow can be attributed both to natural infiltration and irrigation withdrawal.

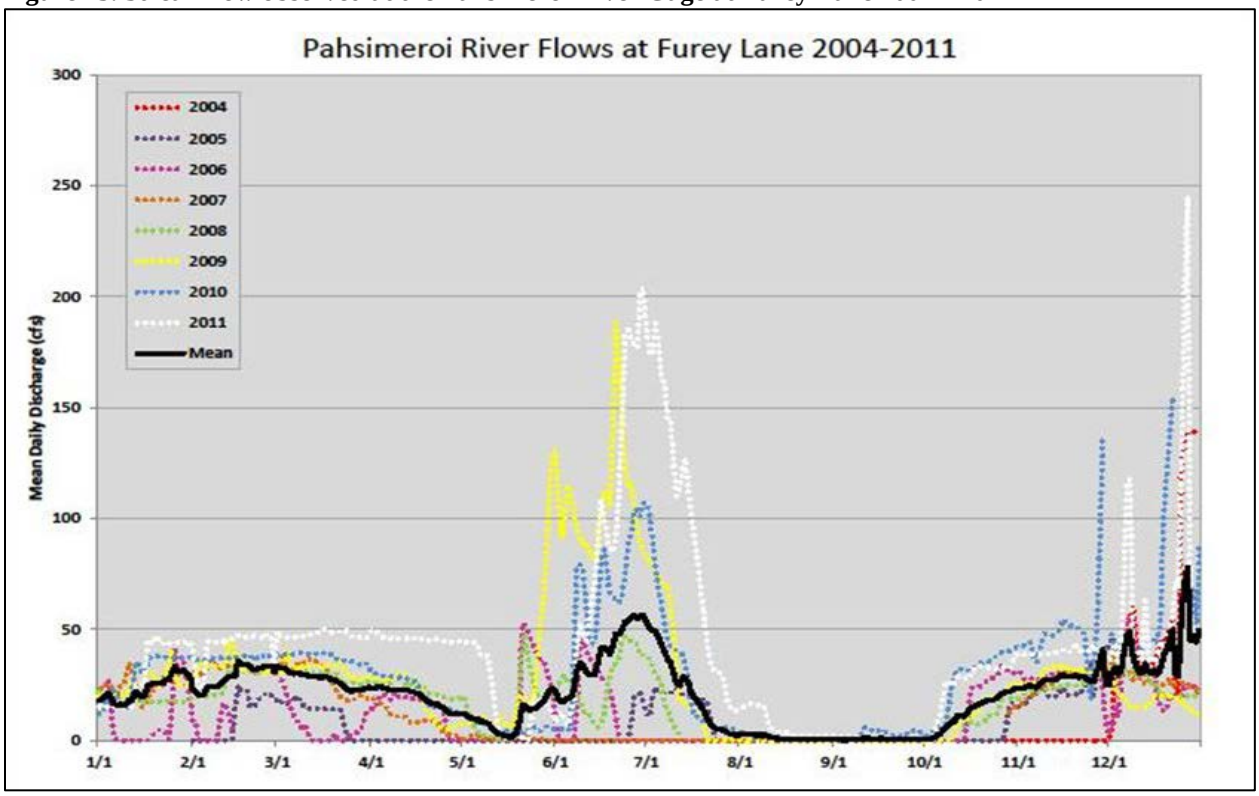
Table 11. Reach Stratifications of the Pahsimeroi River

Reach	General Characterization	Length
Headwaters	Losing reach	17.9 miles
Springs	Gaining reach of extensive springs	5.7 miles
Mid-valley	Losing reach	7.9 miles
Lower	Gaining low gradient floodplain reach	18.5 miles

The nearest streamflow gage to the project site is operated by IDWR and is located in this mid-valley losing reach at the Furey Lane road crossing, downstream and approximately 2.4 linear miles northwest of the P-16 POD. The Pahsimeroi River is dewatered at Furey Lane annually and has zero flow typically beginning in early August and continuing through part of October, when some irrigators stop diverting water and the stream begins to flow in the reach near Furey Lane (Figure 15). Although most water rights are authorized for diversion beginning on April 1, the majority of irrigators don't begin diverting at that time, as evidenced by the gradual decline in flow volume between April 1 and May 1 (Figure 15).

The river is heavily influenced by anthropogenic activities, principally irrigation, and therefore has an atypical hydrographic profile. The river typically experiences at least two peaks in the hydrograph, rather than a single peak streamflow event that would be more typical in a snowmelt driven watershed. In good water years, there is usually a peak in the early to mid-summer months as snowmelt from the high elevations in the subbasin provides water to the system, and another peak in the hydrograph in the early winter as a result of the cessation of irrigation allowing water back into the main channel, supplementing flow.

Figure 15. Streamflow observed at the Pahsimeroi River Gage at Furey Lane 2004 – 2011



Big Creek is one of the largest tributaries to the Pahsimeroi River with a drainage area of approximately 70 square miles (Meinzer 1924). The headwaters of Big Creek include the North and South Forks of Big Creek located on the Salmon-Challis National Forest. Below the forest boundary there are several irrigation canals that divert a large portion of Big Creek flows. In some years Big Creek provides surface flow to the Pahsimeroi River during high water, however because of irrigation diversions and natural infiltration losses in the deep floodplain alluvium, Big Creek does not maintain perennial flow, and is typically dry below the county road bridge by mid-summer. Flow measurements taken by the IDEQ on Big Creek in the summer of 1995 and by BLM in the summer of 2014 document this loss of perennial flow (IDEQ 2001). Several restoration projects have either been completed or are planned to enhance flows in Big Creek, with the ultimate goal of providing additional connectivity with the Pahsimeroi River (BLM 2014 b, BLM 2014c).

Surface Water

Water quality has been an issue of concern in the Pahsimeroi River subbasin since the combined effects of warm season grazing, exotic plant species, and irrigation diversions have synergized with the natural infiltration of stream flows to limit the production and survival of native fish.

The 2012 IR describes the current status of waterbodies across the State of Idaho. The IR separates the Pahsimeroi River into multiple assessment units (AUs) from the reach in the vicinity of the Proposed Action downstream to the confluence with the Salmon River. The Pahsimeroi River, from the Big Creek mouth downstream to the confluence with the Salmon River (27.7 miles) has designated beneficial uses of cold water aquatic life, domestic water supply, primary contact recreation, and salmonid spawning.

From the mouth of Big Creek to the mouth of Patterson Creek (17.43), all of the AUs are 303d listed as not supporting cold water aquatic life with numerous causes of impairment, including sedimentation/siltation, low flow alterations, particle distribution (embeddedness), water temperature, and other undetermined causes. These AUs have not been assessed for the other designated beneficial uses for which they are designated (IDEQ 2014a).

From the mouth of Patterson Creek to the confluence with the Salmon River (10.27 miles) all of the AUs in this reach are 303d listed as not supporting cold water aquatic life and salmonid spawning, with sedimentation/siltation and water temperature determined as the causes of the impairment. These AUs are listed as fully supporting their designated beneficial use of primary contact recreation (meaning that bacterial contamination is not impairing the waterbody). These AUs have not been assessed for the domestic water supply beneficial use (IDEQ 2014a).

Assessments by IDEQ have identified that water quality is limited by deposition of sediment in the stream channel due to stream bank erosion and reduction of riparian vegetation. IDEQ has developed recommendations for the reduction of stream bank erosion and water temperature within the Pahsimeroi River that would ultimately result in beneficial use support through improving stream bank stability and increasing riparian vegetation (IDEQ 2014b).

IDEQ has not designated beneficial water uses for Big Creek. As an undesignated water it would be protected for cold water aquatic life use, primary or secondary contact recreation, wildlife, aesthetics, and agricultural and industrial water supplies. Big Creek, from the confluence of the North and South Forks to the Pahsimeroi River (12.37 miles) is 303d listed as a

water quality limited stream for sedimentation/siltation, low flow alterations, and other unspecified causes (IDEQ 2014a). Big Creek is dewatered annually by irrigation diversions and natural surface flow loss across the alluvial fan.

In 2013, IDEQ completed an Addendum to the Pahsimeroi River Subbasin Review and TMDL. This addendum and five year review was submitted to the EPA in January 2014, and was approved by EPA on April 10, 2014. In this updated review IDEQ proposes to delist Big Creek for sediment and nutrients, but leave it listed for low flow alteration (IDEQ 2014b). If these recommendations are approved by the EPA, the reaches would be delisted effective with EPA approval of the 2014 Integrated Report. IDEQ does not recommend preparing a TMDL for Big Creek to restore full support of beneficial use, due to its limited capability to transport sediment and other pollutants.

Water quality in the vicinity of the P-16 diversion is currently impacted by the existing P-16 diversion. On an annual basis, the irrigators must install a push-up dam diversion in order to divert their decreed water rights; this is typically completed with heavy equipment operated within the active channel. Early in the year, this diversion often requires several episodes of maintenance as high flows degrade its effectiveness. Each time the diversion is maintained; sediment is mobilized into the channel, and often transported great distances downstream due to the timing of the maintenance. Once flows have receded, the water rights (18.72 cfs) allow for the diversion to capture the entirety of the flow within the Pahsimeroi River, since the volume of flow during the late summer and early fall is less than the decreed rights. The resultant dewatering of the river below the diversion limits the ability of riparian vegetation to establish or expand, thereby reducing the benefits that functioning riparian vegetation provides to water quality (channel shading, floodplain storage, and improved bank stability).

Groundwater

Groundwater recharge to the Pahsimeroi River Subbasin aquifer is primarily through irrigation, streamflow, and canal losses. Groundwater discharge occurs mainly through mountain front and valley springs, evapotranspiration, base flow to streams, and subsurface outflow through the mouth of the basin (Young and Harenberg 1973). Reports from Young and Harenberg (1973) and Meinzer (1924) suggest the Pahsimeroi River gains significantly from groundwater from its confluence with Patterson Creek through to its mouth.

Meinzer (1924) reported depth to the alluvial water table along the Pahsimeroi River fluctuates ten or more feet over the course of a year, with the largest fluctuations occurring near losing reaches and irrigated tracts. The water table rises rapidly in the spring, augmented both from snowmelt and streamflow contributions. Irrigation withdrawals are highest in June through September, and lowest in November through early May. The water table is at or near the surface of the valley floor from near the mouth of the Pahsimeroi River to approximately 8.7 miles downstream of the P-16 POD for most of the year (Meinzer 1924). The slope of the water table from the valley axis to the range front through this area is steep, and the water table slope decreases closer to the Hooper Lane area, about 6.7 miles downstream of the proposed project area. The water table several miles above Hooper Lane drops to approximately 45 to 100 feet below the land surface (varies seasonally) through the proposed project area and returns to the surface or near surface in the mid-basin spring complex in the area of the base of the Doublesprings fan and the mouth of Goldburg Creek.

Several groundwater studies have evaluated the relationship between groundwater and surface water in Big Creek. Meinzer (1924) estimated that groundwater recharge along Big Creek represented 12% of the streamflow per mile. In November 1971, Young and Harenberg (1973) performed a seepage run on Big Creek below the confluence of the North and South Forks and determined that surface water losses through the alluvium were approximately 2.6 cfs per mile. Preliminary flow surveys by BLM in Big Creek in 2014 indicated that during some parts of the year the stream loses as much as 50 cfs from the county bridge to the mouth (~6 miles). These groundwater studies also noted that Big Creek has gaining and losing reaches influenced by groundwater, but the stream primarily loses water in the lower six miles of Big Creek, which includes the reach within the County Line Allotment.

Alternative 1 – Proposed Action, Direct/Indirect Impacts

Erosion and Sedimentation

Water quality effects, both negative and beneficial, are anticipated as a result of implementation of the Proposed Action. Proposed in-channel work would be completed in dry conditions, with turbidity pulses occurring during cofferdam and flow bypass installation and removal and during installation and removal of the temporary stream crossing. Cofferdams would be emplaced in the Pahsimeroi River channel to dewater the reach in the vicinity of the reconstructed POD, and in order to construct a temporary crossing. All in-channel activities would take place when the discharge in the Pahsimeroi River is 20 cfs or less to allow for minimal downstream transport of any mobilized sediment. Following the initial increase in sediment and turbidity associated with installation of the cofferdams and bypass pipe, the system is expected to pass clear water around the construction site for the duration of instream construction activities. After in-channel work is complete, the reconstructed channel would be “prewashed” into the existing P-16 ditch, minimizing the transportation of sediment downstream in the Pahsimeroi River. Additionally, following the “prewashing”, water would slowly be reintroduced to the channel to limit erosion and/or mobilization of fine sediments from the new channel. Performing in-channel work in a dewatered zone will significantly reduce the amount of sediment that would be mobilized and transported downstream of the construction area.

Water quality effects related to sediment would also occur during the removal of the instream push-up dam diversion. Although this action would be performed by the proponents under the authority of their water right, impacts are disclosed herein because removal will occur in conjunction with other proposed activities that require a BLM decision. The existing push-up dam would be removed by the landowners/applicants using equipment operating from the bank above the high water mark. Any excess gravels from the push-up dam that were not removed at the end of the irrigation season would be removed from the stream channel when river flows are at seasonal lows to reduce sediment input. The gravel would be placed as fill in the P-16 ditch during closure.

Direct impacts to water quality in the form of increased sedimentation are anticipated as a result of instream construction. The impacts will be short term, and would represent an increase over the existing sedimentation occurring as a result of annual diversion maintenance. In the long-term, implementation of the Proposed Action would decrease the amount of erosion and sedimentation occurring in this reach of the Pahsimeroi River. Once the new diversion structure is operational, the water right holders will no longer need to enter the Pahsimeroi River multiple times each year with heavy equipment to construct, maintain, and remove the push-up dam to

divert their decreed water rights, decreasing the sediment load that is delivered each time that structure is maintained. Additionally, the potential risk of petroleum product contamination would be eliminated since there would be no need to enter the channel with heavy equipment.

Sediment from construction activities outside of the active channel and in the uplands will be prevented from entering stream channels during precipitation events by placement of erosion control structures such as straw waddles, erosion mats, and silt fences, as necessary. Erosion control structures would be left in place until disturbed areas are revegetated. Following the conclusion of ground disturbing activities, all disturbed sites would be revegetated or reseeded with a BLM approved seed mix, and monitored and treated, if necessary, for invasive species.

Any adverse impacts to water quality related to sedimentation and turbidity during construction are expected to be minimal and of short duration. Numerous BMPs are incorporated into the project design to limit any potential adverse effects to water quality to the greatest extent possible. It is anticipated that the project design criteria and BMPs would decrease adverse effects from sedimentation to near background levels, and no significant effects to water quality as a result of implementation would result.

Flow Restoration and Revegetation

The Proposed Action is expected to have a beneficial effect on the water quality of the Pahsimeroi River through water savings of nearly 15 cfs below the P-16 diversion. The duration and downstream extent of flow benefits is unknown, and is dependent on natural infiltration characteristics in this section of the Pahsimeroi River.

Large woody vegetation that currently exists at the project site and along the existing P-16 ditch, combined with more than 2,000 willow cuttings and approximately 80 riparian clumps used to revegetate riparian areas would prevent erosion and provide water quality benefits in the short-term. The Proposed Action is consistent with the water quality goal established in the Pahsimeroi TMDL to reduce streambank erosion and water temperature within the Pahsimeroi River Subbasin (IDEQ 2001).

The Proposed Action is expected to extend the descending limb of the annual hydrograph peak, thus mimicking natural conditions. Additional instream flow and a lower water temperature would provide beneficial effects to federally listed fish in the form of additional time for passage and resting refugia. Increased duration of flow would also allow for expansion of newly planted riparian vegetation, increasing streambank stability and improving water quality. The long-term effects of increasing riparian vegetation include improved streambank stability, decreased erosion, floodplain development, and canopy cover, all of which improve water quality.

The Proposed Action would have similar beneficial effects on the water quality and flow regime in Big Creek. The landowners would be able to operate their entire irrigation system using Pahsimeroi River water, and would no longer divert Big Creek water into the Hamilton ditch. Both seasonal surface and natural subsurface flows from Big Creek to the Pahsimeroi River would increase. Increased streamflow in Big Creek may enhance the riparian vegetation and improve streambank stability downstream of the Hamilton ditch. Sediment input into the Pahsimeroi River from Big Creek would be reduced as a result of a more natural hydrograph.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

Alternative 2 includes all of the actions and their impacts as described in Alternative 1, plus several other actions intended to address issues resultant of implementation of the Proposed Action. Adverse impacts to water quality under Alternative 2 would be identical to those described above.

The reach of the Pahsimeroi River downstream of the existing POD is lacking in riparian vegetation from reduced flows due to irrigation diversions and natural infiltration. Under Alternative 2, BLM, with possible assistance from volunteers or cooperating partners, would complete streambank restoration work in the existing Pahsimeroi River channel alignment below the P-16 diversion. Restoration work would include construction and placement of willow trenches, fascines, stakes, and possible wetland sod transplanting. The anticipated increase in streamflow would accelerate bank stabilization and growth of the newly planted vegetation. The long-term effects of increasing riparian vegetation include improved streambank stability, decreased erosion, floodplain development, and canopy cover, all of which improve water quality.

A 4-wire wildlife friendly fence would be constructed along the southern border of a 120 acre isolated parcel of BLM administered land adjacent to Furey Lane for 1,313 feet (Figure 8). This would exclude livestock access to approximately 0.65 miles of the Pahsimeroi River, allowing recovery/development of riparian habitat and associated improvements in streambank stability, and reducing bank erosion and stream sedimentation.

The pipeline reconstruction, supplemental pipeline construction, replacement of three troughs, and installation of two new troughs would take place in upland habitat. These disturbance areas are located considerable distances from any stream channels, and the vegetative buffer provided by these distances would prevent sediment from these activities from entering stream channels.

All of the actions proposed under Alternative 2 are proposed in the uplands, or are not anticipated to negatively impact water quality. Therefore, no additional adverse impacts to water quality are anticipated from the actions proposed under Alternative 2. Beneficial impacts to water quality are anticipated to result from restoration actions and installation of the exclosure fence along Furey Lane.

Alternative 3 – No Action, Direct/Indirect Impacts

Under the No Action Alternative there would be no change in the current condition of the stream channels or flow regime of the Pahsimeroi River downstream of the P-16 diversion or Big Creek downstream of the Hamilton ditch diversion. The instream push-up dams would continue to be constructed annually using heavy equipment operated within the active channel, disturbing approximately 2,000 ft^2 of stream channel and mobilizing unquantified volumes of sediment into the streams. The Pahsimeroi River would continue to be dewatered annually during the irrigation season. Water would continue to be diverted into the Hamilton ditch from Big Creek to meet the decreed irrigation water rights, contributing to the annual dewatering that occurs below this diversion. The proposed project area would continue to be subject to water availability under the influence of natural infiltration and anthropogenic flow alteration influenced by diversions. The No Action Alternative would not result in new impacts to water quality within the proposed project area, but it would also not allow for improvements to water quality that would be realized in the long-term under Alternatives 1 and 2.

Wetlands and Riparian Zones

Affected Environment

Narrow bands of wetland and riparian habitat are present along the banks of the Pahsimeroi River, Big Creek, and the P-16 and Hamilton ditches. The DMA PAR-KA-01, located approximately 945 feet downstream of the existing P-16 POD, is used to monitor the Pahsimeroi River channel and its associated riparian vegetation. Riparian plant species composition at the DMA consists of mesic grasses and upland shrubs. A few single aged mature Geyer's and narrow leaf willows comprise the woody species. Few hydric species are present along the reach, which is typical for riparian areas limited by water availability. Monitoring data indicate the abundance and diversity of hydric species at the DMA are at a very early ecological seral status, suggesting that the greenline vegetation is stable, but functioning at risk.

The gradient at the DMA is about 1%. Wolman pebble counts (n = 200) yielded 36% surface fines over small gravel substrates (D84 = 37 mm), which is in line with similar sites subject to irrigation diversions and natural infiltration actions across alluvial fans (BLM 2012a; Williams et al. 2006; Young and Harenberg 1973). During the 2010 MIM survey the reach was noted to possess a channel free of woody debris, with few relatively deep pools and clear water (BLM 2012a). During a site visit in August 2013, the channel downstream of the P-16 diversion contained no flowing surface water, only disconnected shallow pools.

The Pahsimeroi River was sampled by the CFO in 2010 and 2013 using the MIM method at DMA PAR-KA-01(downstream) and in 2012 at DMA PAR-KA-02 (upstream). Wolman pebble counts from DMA PAR-KA-01 in 2010 yielded 36% surface fines < 6.0 mm over gravel substrate (estimated D_{84} = 37 mm) (Table 12). At the same site in 2013, surface fines were 39% (estimated D_{84} = 44 mm), indicating little change between the sampling dates. The lack of perennial flows reduces riparian vegetation and can impact bank stability, which may contribute to excessive fine sediment. Wolman pebble counts from DMA PAR-KA-02 (upstream site sampled in 2012) yielded 33% surface fines < 6.0 mm over gravel substrate (estimated D_{84} = 53 mm). This site has perennial flows and stable, well-vegetated streambanks, which should reduce the input of fine sediments. Given the similarities between these sites, either substrate fines are within background levels or localized streambank conditions do not account for all sources of sediment inputs that may be affecting this reach of the Pahsimeroi River. MIM data for the Pahsimeroi River DMAs are presented below.

The DMA on Big Creek, BGC-KA-02, located upstream of the Hamilton ditch diversion, was assessed using the MIM protocol in 2010 and 2013 (Table 13). Wolman pebble counts yielded 8% and 6% surface fines in 2010 and 2013, respectively (estimated D_{84} = 134 mm and 117 mm, respectively). Gradient at the reach is 3%, which is conducive to larger substrate sizes and fewer fines. These data do not represent the potential contribution of fine sediment that Big Creek could have on the Pahsimeroi River, due to the distance from the Pahsimeroi River (~8 miles) and the dewatered and naturally intermittent streamflows. Big Creek enters the Pahsimeroi River between the Pahsimeroi DMA sampling sites. MIM data for the Big Creek DMA are presented below.

Table 12. MIM Data for the Pahsimeroi River near the Project Area

MIM Attributes	MIM Site (Year)		
	PAR-KA-01 (2010)	PAR-KA-01 (2013)	PAR-KA-02 (2012)
Streambank Stability[1]	24%	70%	87%
Streambank Alteration	4%	2%	2%
Streambank Cover	29%	59%	73%
Woody Use[2]	0%	20%	46%
Fine Sediment[3]	36%	39%	33%
D_{50} (Sample size)[4]	16mm (200)	19mm (210)	20mm (200)
D_{84} (Sample size)[4]	37mm (200)	44mm (210)	53mm (200)
Greenline Width	6.98 m	6.88 m	4.58 m
Dominant Greenline Species	Mesic Grasses	Red Top	Sedges
Residual Height (Year End)	9.8"	6.4"	24"

[1] Target 90% for fish bearing streams (CFO RMP, BLM 1999).
[2] At PAR-KA-02, woody use was most likely due to wildlife (e.g., moose), not livestock.
[3] less than 6 mm intermediate diameter (b-axis).
[4] Particle sizes (D_{50} and D_{84}) were estimated from categorical size class data.

Table 13. MIM Data for Big Creek upstream of the Project Area

MIM Attributes	MIM Site (Year)	
	BGC-KA-02 (2010)	BGC-KA-02 (2013)
Streambank Stability[1]	67%	75%
Streambank Alteration	0%	0%
Streambank Cover	66%	63%
Woody Use[2]	20%	10%
Fine Sediment[3]	8%	6%
D_{50} (Sample size)[4]	53mm (200)	50mm (230)
D_{84} (Sample size)[4]	134mm (200)	117mm (230)
Greenline Width	10.7 m	10.3 m
Dominant Greenline Species	Kentucky Bluegrass	Kentucky Bluegrass
Residual Height (Year End)	7.0"	9.8"

[1] Target 90% for fish bearing streams (CFO RMP, BLM 1999).
[2] Woody use could be due to wildlife browsing (e.g., moose or elk) instead of livestock.
[3] Less than 6 mm intermediate diameter (b-axis).
[4] Particle sizes (D_{50} and D_{84}) were estimated from categorical size class data.

There are two groups of large cottonwood trees along the P-16 ditch, one about 600 feet from the entrance to the ditch and the other about 2,100 feet further down the P-16 ditch at the confluence with the Hamilton ditch. This unique habitat has developed as a result of the constant water supply that is maintained by the ditch during the growing season.

Seasonal dewatering of Big Creek on its alluvial fan downstream of the Hamilton ditch has selected for mesic and xeric vegetation over hydric herbaceous species based on soil moisture.

Mature woody species persist due to their ability to maintain contact with moisture. However, these conditions typically limit recruitment of young woody species.

There is sufficient instream flow in Big Creek for sediment transport during the early season. Sediment transport from incidental dry channel use is deferred until the next season's snowmelt-driven high flows. The combination of natural flow infiltration and irrigation loss results in substantially decreased flows or complete dewatering, thereby selecting for mesic and xeric plant assemblages, limiting support of listed salmonid spawning, rearing, and foraging primary constituent elements (BLM 2014c).

The Hamilton ditch conveys water from Big Creek about 7.6 miles across the upland sagebrush habitat of the County Line Allotment to where it joins the P-16 ditch. There is very little riparian habitat along the ditch banks because of the natural gravel and sandy soils of the area. The ditch passes through an alluvial fan dominated by dry upland sagebrush habitat and is subject to natural infiltration moving the water away from the surface and into the groundwater (Young and Harenberg 1973).

For additional information on BLM monitoring methodology for uplands and streams within the proposed project area, see the 2012 *Final Biological Assessment for Ongoing Grazing Actions in the Pahsimeroi River Section 7 Subwatershed* (BLM 2012a) and *Multiple Indicator Monitoring (MIM) of Stream Channels and Streamside Vegetation Technical Reference 1737-23 (Revised)* (BLM 2011b).

Alternative 1 – Proposed Action, Direct/Indirect Impacts

Approximately 0.39 acres of riparian and wetland habitat would be directly impacted by the Proposed Action. These areas would be adversely impacted in the short term by removal of vegetation, excavation, dewatering, and placement of fill. Long-term beneficial impacts include increased riparian vegetation to provide sediment filtering, canopy cover, bank stability, and decreased scour and velocity during periods of high flow.

It is anticipated that the riparian habitat that exists along the P-16 and Hamilton ditches will eventually become decadent due to the lack of water availability during the growing season. Some of the larger woody species may be able to survive because they may have adequate root structure to access shallow groundwater, however, many of the forbs and hydric grasses (rushes and sedges) are likely to die as a result of ditch abandonment. In contrast to this, the increased availability of water within the Pahsimeroi River and Big Creek would likely contribute to improved riparian species abundance, diversity, and vigor along these natural channels. Overall, implementation of the Proposed Action would benefit natural riparian channels through streamflow augmentation, improvement and subsequent stabilization of the channel morphology in the vicinity of the reconstructed POD, and planting of vegetation along the Pahsimeroi River streambank within the construction areas. Approximately 2,000 willow cuttings and 80 riparian vegetation clumps removed from the P-16 ditch would be planted to provide short-term bank stability, and increase the rate of colonization along the impacted streambank, stream crossing, and ditch closure site. Revegetation would increase the baseline habitat indicators of plant species presence, abundance and diversity at DMA PAR-KA-01. Monitoring would be conducted by BLM to identify the amount of improvement compared to pre-construction numbers.

Increased streamflow in the Pahsimeroi River and Big Creek would support establishment of riparian vegetation. The amount of time for riparian development would depend on numerous factors, including the length and duration of the wetted channel downstream of the proposed P-16 diversion and downstream of the Hamilton ditch in Big Creek. It is anticipated that with revegetation and a sustained supply of water, the riparian habitat along the Pahsimeroi River would become stable within two to five years.

Installation of 3,215 feet of 4-wire fence and posts to exclude livestock from riparian habitat would disturb approximately 0.59 acres of ground. Livestock exclusion will prevent early grazing on establishing plants and degradation of recovering riparian areas, and will hasten recovery of riparian habitat in the proposed project area. The area would be monitored and treated for noxious and invasive non-native species following implementation.

Sediment from upland construction activities would be prevented from entering riparian areas during precipitation events by deployment of erosion control structures when necessary. Erosion control structures would remain in place until the reseeded vegetation becomes established.

Alternative 2 – BLM Alternative, Direct/Indirect Impacts

Alternative 2 includes all of the actions described in Alternative 1, plus several other actions intended to address issues resultant of implementation of the Proposed Action. Reconstruction of the County Line Allotment pipeline, construction of the supplemental pipeline, and installation of 1,313 feet of 4-wire fence along the Furey Lane road would disturb soils in upland habitat. Sediment from upland construction activities would be prevented from entering riparian areas during precipitation events by deployment of erosion control structures when necessary. Erosion control structures would remain in place until the reseeded vegetation becomes established.

Fence construction on Furey Lane is designed to prevent unauthorized activities (grazing, agriculture, etc.) from occurring on BLM CFO administered land along this reach of the Pahsimeroi River. This section of the Pahsimeroi River is lacking in riparian vegetation, due largely to the absence of water during the growing season. Excluding livestock would allow the riparian vegetation to recover without impacts from unauthorized grazing.

The 0.84 mile reach of the Pahsimeroi River downstream of the existing POD to the private land boundary is lacking in riparian vegetation due to the limited availability of water. Alternative 2 would implement non-invasive stream restoration activities such as the placement of willow trenches, fascines, stakes, and wetland sod transplants along the banks adjacent to the channel. Increased streamflow, anticipated as a result of implementation of the Proposed Action, would support an increase in riparian species abundance, diversity, and vigor. The activities proposed under Alternative 2 would hasten the recovery of riparian habitat. Over time, the increase in riparian vegetation would improve the functionality of the riparian corridor in this reach of the Pahsimeroi River, with all the correspondent benefits to other resources.

Alternative 3 – No Action, Direct/Indirect Impacts

The No Action Alternative would have no new impacts on riparian and wetland types and communities within the proposed project area. Existing riparian vegetation composition and vigor, grazing patterns, and forage resources would remain as described in the Affected Environment section earlier in this document. Riparian habitat would not have the potential to realize the benefits of an increased duration of flow in either the Pahsimeroi River or Big Creek. The Pahsimeroi River and Big Creek would continue to be subject to water availability under the

influence of natural infiltration and anthropogenic flow alteration influenced by the P-16 and Hamilton ditch diversions.

CUMULATIVE IMPACTS OF PROPOSED ACTION AND ALTERNATIVES

Cumulative impacts are defined as "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes other such actions. Cumulative impacts can result from individually minor, but collectively significant actions taking place over a period of time" (40 CFR§ 1508.7). Significance of cumulative impacts cannot be avoided by terming an action temporary or by breaking it down into small component parts (40 CFS Sections 1508.7, 1508.27(b)(7).

The BLM NEPA Handbook (H-1790-1) recommends an approach to NEPA's required cumulative effects analysis that starts with the identification of preliminary issues for analysis. Generally, the Handbook presents several steps in the cumulative effects analysis that, for each of these issues for analysis, the cumulative effects assessment should:

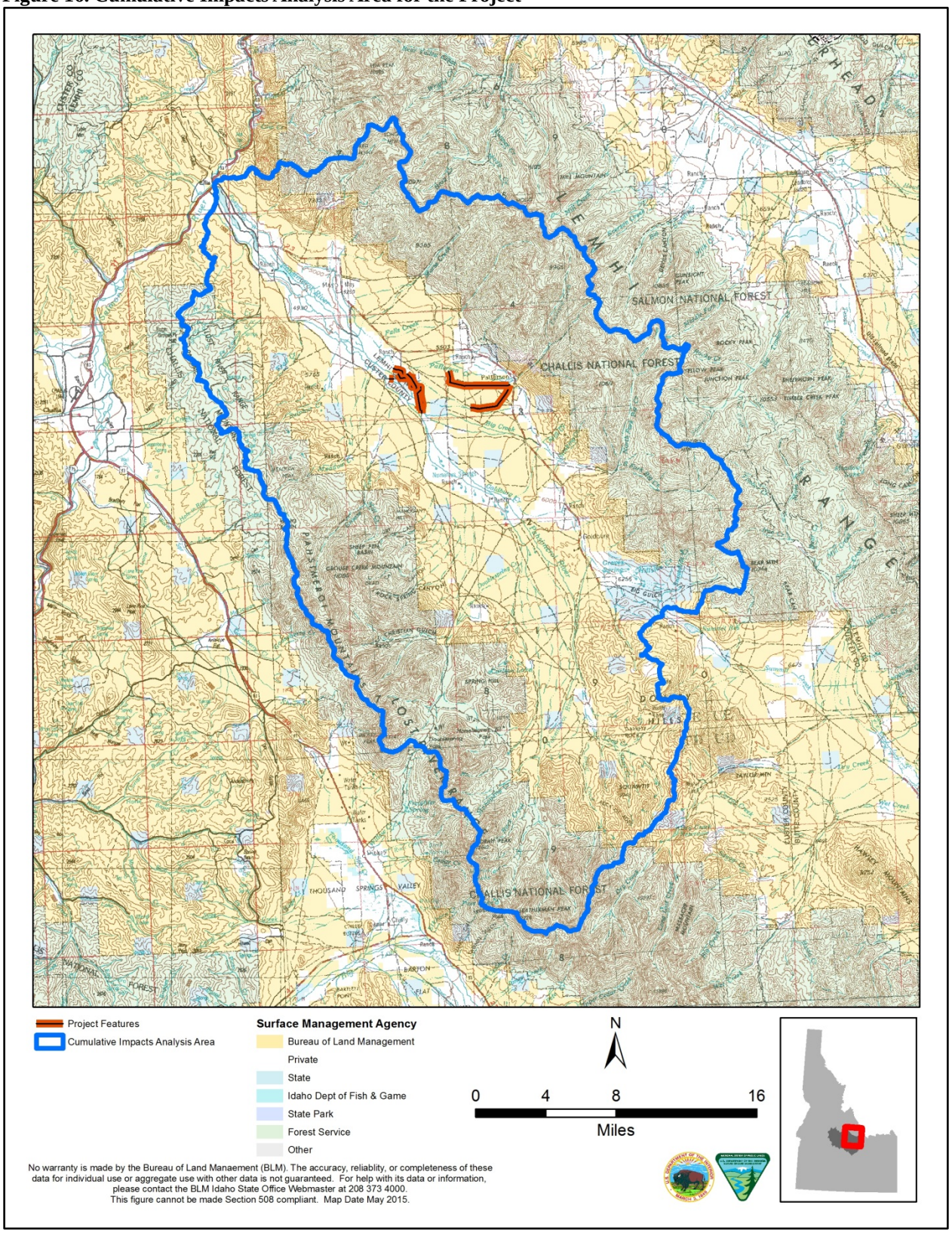
- Determine the geographic scope for the impacts analysis;
- Determine the temporal scope for the determination of past actions that contribute to cumulative impacts;
- Describe the effects of past and present actions within the geographic and temporal scope;
- Describe the effects of reasonably foreseeable actions within the geographic and temporal scope;
- Describe the interaction among the combined effects of the past, present, and reasonably foreseeable actions;
- Describe the interaction among the combined effects of the past, present, reasonably foreseeable actions with the effects of the proposed action and alternatives;

Determine, as appropriate, if mitigation should be considered.

Cumulative impacts analysis for each resource impacted by the alternatives included a review of both the incremental contribution of past, present, and reasonably foreseeable actions, and if those impacts, when analyzed cumulatively, would be significant. Due to the infeasibility of quantitative analysis for many of the affected resources, cumulative effects are discussed qualitatively in the sections below.

The Pahsimeroi River subbasin was chosen as the Cumulative Impact Area of Analysis (CIAA; Figure 16) for this analysis. Guidance from CEQ (1997) indicates that watersheds are commonly used for CIAA boundaries, and the watershed boundary is particularly appropriate for this analysis as activities occurring both up and downstream of the project could contribute to the cumulative impacts resultant of implementation of any of the alternatives. The Pahsimeroi River subbasin includes approximately 531,909 acres in both Lemhi and Custer counties. There are approximately 220,373 acres of BLM land, 246,721 acres of USFS lands, 45,489 acres of private land, 19,326 acres managed by the State of Idaho, including 200 acres managed by the Idaho Department of Fish and Game.

Figure 16. Cumulative Impacts Analysis Area for the Project



The CIAA has been impacted by European American settlement since at least 1869 (Meinzer, 1924), with the highest level of impacts to the subbasin occurring from land use conversion to agriculture, and the associated diversion of streamflow for irrigation. Other anthropogenic impacts include fire suppression, road construction, livestock grazing, development of homes and towns, mineral development, and timber harvest. These activities have combined to impact the natural environment within the CIAA, resulting in a reduction in native vegetation and increased non-native plants, fragmented aquatic and wildlife habitat, reduced flow of instream water, and increased evapotranspiration and disturbed soils.

In the subbasin, resources including vegetation, wildlife, and invasive species are in constant flux between disturbance and re-colonization or reclamation as land use activities and management change. Table 14 describes the past, present, and reasonably foreseeable actions that have occurred, or are occurring within the CIAA that have the potential to contribute to cumulative impacts as a result of implementation of any of the Alternatives.

Past, Present, and Reasonably Foreseeable Actions

Past, present, and reasonably foreseeable actions that have, or are anticipated to impact lands within the CIAA include livestock grazing, private land agriculture and associated water diversion, vegetation treatments, infrastructure, recreation, and restoration projects (Table 14).

Table 14. Past, Present, and Reasonably Foreseeable Actions within the P-16/Furey Lane Water Conservation and Reconnect Project CIAA

Type of Activity	Past and Present	Reasonably Foreseeable
Livestock Grazing and Range Improvements	Within the CIAA there are 49 active grazing permits or leases (24 BLM, 14 USFS, and 11 State of Idaho). Many of the private lands in the lower portions of the subbasin are also utilized for livestock grazing, particularly during the winter months. There are approximately 360 miles of rangeland fence, 111 miles of stockwater/wildlife pipelines with 221 troughs, and 107 stock ponds.	**BLM**- renewing/modifying grazing permits as they expire. Allotments that are planned for permit renewal, along with planned year of renewal are: Patterson Creek, Spud Creek (Pah), Falls Creek, Mahogany Creek, Hamilton, and Lower Goldburg allotments in 2016 Allison Creek Allotment in 2017. **USFS** – no projected changes to grazing permits. **State** – renewing/modifying leases as they expire. Approximately 0.85 miles of rangeland fence, approximately 4 miles of stockwater/wildlife pipeline, and 2 new troughs.
Land Use Conversion	Private lands in the CIAA totaling 29,107 acres are irrigated for hay and are typically grazed by livestock at some period during the year.	Use of private lands within the CIAA is not anticipated to change.

Type of Activity	Past and Present	Reasonably Foreseeable
Vegetation Treatments	The BLM conducts weed treatment activities on approximately 25 acres annually within the CIAA. Weed treatments on other lands are completed by private landowners, USFS, or Lemhi and Custer county weed crews. Combined treatments within the CIAA average 350 acres annually. There have been about 6,500 acres of seeding that have occurred. There have been 125 acres treated as vegetation restoration through means of a land imprinter, used to break up the soil surface and improve the infiltration of water.	These weed reduction treatments are expected to continue on an annual basis for the foreseeable future. Approximately 4,849 acres may be treated with a land imprinter. 700 acres are directly proposed under an ongoing range permit renewal; another 4,149 acres may be treated in the future.
Infrastructural Development	122 miles of powerlines 15 miles of ATV trails 774 miles of primitive (4WD) roads 137 miles of improved (2WD) roads 88 miles of closed roads 161 miles of USFS roads 6 community mineral material sites (sand, gravel, stone, etc.). There are at least 164 known diversions that have been inventoried on BLM land. There are also numerous other diversions that exist on private land and lands managed by other agencies. Currently, irrigation diversion plays a major role in the availability of water, and as a result habitat fragmentation is an issue within the subbasin. Restoration and irrigation efficiency improvements have removed seven diversions within the subbasin.	There are no new or proposed powerlines, ATV trails, or roads. Government agencies, landowners, and non-government organizations would continue to work toward implementing projects in the subbasin that screen diversions, improve water delivery, and conserve instream flow in the foreseeable future. At this time, there are plans to facilitate removal of the P-15 diversion, located downstream of the Project.
Dispersed and Developed Recreation	There is a variety of dispersed recreation occurring on BLM, USFS, and IDL managed lands in the CIAA. Most of this activity centers around hunting seasons, and includes dispersed camping sites and OHV use on existing roads and trails.	There is no new recreation development planned for the foreseeable future. Dispersed recreation is expected to remain at similar levels for the foreseeable future.
Restoration and Reclamation Projects	14.8 miles of stream fenced 2.5 miles of instream habitat projects 92.9 cfs of streamflow conserved 3,066 acres placed under conservation easement 22 passage barriers removed 27.3 miles of habitat accessibility added 17 fish screens installed 7 diversions removed	Proposed restoration projects in the subbasin are anticipated to result in the following: Conservation of 12 cfs Removal of 3 barriers Installation of 2 fish screens Removal of one diversion

Environmental Baseline of Past, Present, and Reasonably Foreseeable Actions

Each of the past, present, and reasonably foreseeable actions (Table 14) contribute an incremental environmental effect that can be described using the same indicators as those in the Environmental Consequences section presented previously in this document. The accumulated effect(s) of these actions on each resource provides the baseline environmental impacts within the CIAA. The contribution of each of the alternatives, when combined with this baseline, describes the cumulative impact on the resource for each respective alternative.

Economics and Social Values

The CIAA is located in central Idaho, and includes portions of Lemhi and Custer counties. The combined population is approximately 12,000, with an average household income of $36,832. Homeownership rates in both counties are slightly higher than the state average, and many people who reside in these counties plan to stay long-term. Historically, the economies of the counties were tied to mining and logging activities, which resulted in highly variable economic and population statistics. Today, the principal economic sectors include agriculture/ranching, mining, construction, government, and services/retail. Within the CIAA, the local economy is heavily dependent on ranching and agriculture, and the sparse population base doesn't support significant retail/service industries, mining, or logging.

Past and present actions have resulted in approximately 45,000 acres within the CIAA becoming private lands. Many of these lands consist of small ranching operations that have been in the same family for multiple generations. People who reside in the valley cite the slower pace of life, nearly non-existent crime rate, high levels of interpersonal trust and interaction, continuation of the ranching way of life, and the scenic vistas as reasons for residing within the valley.

Ranching is an important part of the history, and is currently an integral part of the economy within the CIAA. Ranchers working within the Pahsimeroi subbasin face many unique challenges, including increasing scrutiny of agricultural/grazing practices, increasing environmental regulation as a result of ESA listings of species within the subbasin, and continual evolution of small, family owned ranches to larger tracts of land that are owned, managed, and sometimes subdivided by corporations or hobby ranchers from outside the valley. As ranches are sold within the valley, less property is available for livestock grazing, which may result in increased costs and decreased viability of maintaining ownership for smaller operations. Small towns such as May, Patterson, and Challis are unique places with a shared relationship with nearby farm and ranchlands. Within the reasonably foreseeable future, it can be expected that small ranches would continue to succumb to decreasing feasibility of operation, and could be sold to larger entities. As a result, more private lands within the CIAA could be converted from agriculture and grazing to subdivided parcels, or hobby type operations. Additionally, in the last two decades, riparian restoration projects have become a larger part of the local economy, and this trend is anticipated to continue.

Invasive, Non-Native Species

The BLM currently monitors and/or treats approximately 25 acres annually within the CIAA for invasive species. Additionally, private landowners, the USFS, and Lemhi and Custer County Cooperative Weed Management Departments also assist with the management of invasive species on federal, state and private lands within the subbasin. Herbicide treatments across all jurisdictional boundaries average 350 acres per year in the CIAA.

Historic and present land use activities, including agriculture, grazing, and transportation infrastructure, have contributed to the current level of invasive species presence in the CIAA. While there are invasive species present within the CIAA, typically they are not pervasive, confined to disturbance footprints, and are most evident along transportation corridors and ATV/OHV trails. The presence of invasive species within the CIAA is anticipated to continue at or near current levels for the foreseeable future. Continued treatment is likely to make progress at known invasive species sites, however continued land use activities, and increasing recreation, particularly with ATVs/OHVs is expected to generate new areas where invasive species become established. An accurate acreage of known infestations across all ownerships is not currently available due to a lack of inventory data from private lands.

Soils

Past and present land use activities, including transportation and recreation, have impacted soils within the CIAA. Varying levels of soil compaction and increased erosion are associated with these activities, and the level of impact is typically well correlated with the amount of use, i.e. roads that are heavily used experience greater levels of erosion and compaction than roads that are rarely traveled, and the same is true for other disturbed sites such as fence lines and livestock/wildlife trough locations. Although soils within the CIAA have been impacted to varying degrees, these impacts are typically not pervasive, confined to disturbance footprints, and are most evident along transportation corridors and ATV/OHV trails. Current land use activities, including grazing and recreation, including the use of road infrastructure and are anticipated to continue at current levels.

Threatened, Endangered, and Sensitive Wildlife including Migratory Birds

Past and present actions within the CIAA have impacted wildlife to varying degrees, depending on species, primarily through the conversion of habitat and displacement. As lands have been converted from native vegetation to agricultural or other uses, wildlife habitat has decreased or become fragmented. However, most wildlife species are adaptable, and many species within the CIAA have adjusted to these land use changes. Resident elk and deer now include low elevation agricultural fields as part of their winter (and in some cases summer) range, and likely have benefited from the nutritional value of the crops. Other activities, including the use of lands within the CIAA for recreation, can displace wildlife for short time periods. Activities that impact wildlife are expected to continue at current levels, with the exception of recreation, which would likely continue to increase annually as more people discover the recreational attributes of the subbasin. Overall, wildlife species have adapted to the past, present, and reasonably foreseeable activities that have occurred, or are likely to occur, within the CIAA.

Threatened, Endangered, and Sensitive Fish, Fisheries

The legal framework for water diversions for irrigation in Idaho began in the 1840's. The first Euro-American settlements in the Pahsimeroi subbasin occurred in 1869 (Meinzer 1924). The land patent system encouraged people to "reclaim" as much land as possible. As a result, the trend was for settlers to turn as much water onto irrigated fields as possible. With the Pahsimeroi subbasin being water limited, this system ultimately resulted in the adjudication of the water rights within the valley during the early parts of the 1900's. It was during this time period that the Pahsimeroi Valley water district was organized to administer water rights which had been decreed within the subbasin. It is important to note that, historically, water was only administered during times of scarcity which allowed water users to divert as much water as they

could during times of high water. The formation of the water district limited water development because afterwards only “high water” was available for new diversion works in the subbasin.

In 1987, the State of Idaho commenced the Snake River Basin Adjudication, which reviewed and adjudicated all water rights which were tributary to the Snake River, including the Pahsimeroi River. The majority of water rights within the subbasin were confirmed through adjudication, and as a result continued operation and maintenance of historic ditches and points of diversion are likely to continue in the foreseeable future. Due to the continuance of irrigation practices, the Pahsimeroi River and many of its tributaries will continue to be heavily diverted and hydrologic disconnection will continue to be exacerbated. In contrast, there has been considerable effort over the last two decades to implement irrigation efficiency and consolidation projects, as well as stream restoration activities, which should in the foreseeable future result in improvement of habitat and benefits to aquatic resources.

Private and public land management activities including the diversion of water for irrigation, agriculture and livestock grazing, diversion infrastructure, culverts, low water fords, and entrainment of aquatic species into irrigation infrastructure have impacted fish within the CIAA to varying degrees. Additionally, the subbasin has many streams that are limited by the natural infiltration of water, which in some cases is exacerbated by anthropogenic activities. Past restoration activities, including the removal of migration barriers, limiting impacts from agricultural/grazing activities, and decreasing the rates of water diversion through infrastructure improvement and irrigation consolidation have beneficially impacted the fisheries resource within the CIAA. Land use within the CIAA is expected to continue in the same manner and level as in the past. However, it is anticipated that future restoration activities would continue to improve aquatic habitat quality, quantity, and accessibility within the CIAA.

Tribal Treaty Rights and Interests

The CIAA is comprised of approximately 532,000 acres, of which 220,373 acres are BLM-managed and 246,721 acres are managed by the USFS Salmon-Challis National Forest. All of these federally managed lands, unless specifically and legally withdrawn, meet the definition of unoccupied lands. Through the 1868 Fort Bridger Treaty, the rights of the Shoshone-Bannock Tribes to hunt, fish, gather, and exercise other traditional uses and practices on these unoccupied lands are specifically reserved. The federal government has a unique trust relationship with federally-recognized American Indian Tribes including the Shoshone-Bannock Tribes, and has a responsibility and obligation to consider and consult on potential effects to resources related to the Tribes’ treaty rights or cultural use.

Past and present actions within the CIAA have impacted the Tribes’ ability to exercise their reserved treaty rights. Access to federally managed unoccupied lands is necessary for the Shoshone-Bannock Tribes to be able to practice their reserved treaty rights. The ability to access important areas for hunting, gathering, and fishing have been and can be impaired by federal land sales, land transfers, and issuance of land use permits. The fragmentation, disturbance and destruction of native habitat, long-standing horse, cattle and sheep grazing, and the diversion of water into ditches have all impacted the distribution and abundance of animal species, including anadromous and resident fish, greater sage-grouse, bighorn sheep, deer, and elk, that are known to be of great importance to the Tribes for a multitude of reasons. Livestock grazing practices, water diversions, the sale or transfer of federal lands into private ownership and subsequent road development (both planned and user-created) have also facilitated the spread of invasive and

noxious weeds. This proliferation of non-native species has also directly and indirectly impacted populations of native plants and animals important to the Tribes.

Vegetation Type, Communities, and Rangeland Resources

Past and present land use and management has impacted vegetation across the CIAA. The conversion of native vegetation to cultivated lands under irrigation has resulted in a decrease in acreage of native vegetation, and a subsequent decline in the abundance of native species across lands where this has occurred. Historic grazing management (prior to 1950) resulted in widespread impacts to vegetation, including large areas of bare ground. Changes in grazing management over the last seven decades has repaired much of that damage, however there are still areas where vegetative impacts related to past activities is evident. Even with the past and present impacts, much of the vegetation across the landscape is in near native conditions, and exists as it would without the impacts of anthropogenic development. Across the CIAA, the more evident impacts to vegetation exist but are not pervasive, confined to historic or existing disturbance, and are most apparent along roads and ATV/OHV trails. Reasonably foreseeable actions include proposed vegetation treatment of 700 acres in the upper Pahsimeroi, with the potential for similar vegetation treatments to occur on an additional 4,149 acres within the CIAA. Ongoing management of invasive species is expected to continue, and in locations where treatment is successful, conversion back to native vegetation is expected. It is expected that past activities, including the continual evolution of grazing management practices, would continue to occur across the CIAA.

Water Quality – Surface and Ground

Past and present land use and management has impacted water quality across the CIAA. The primary and most influential impact on water quality remains the diversion of water associated with agricultural production. These impacts are often exacerbated in the Pahsimeroi River subbasin, due to the tendency of many streams to lose substantial portions of their flow to infiltration. When streams are dewatered, either through natural or anthropogenic processes, they lose their capability to support robust riparian vegetation, which can result in decreases in bank stability, and increases in sedimentation and water temperature. Other activities within the subbasin have also impacted water quality, including agriculture and ranching, public lands livestock grazing, transportation infrastructure and recreation, and restoration activities. Reasonably foreseeable actions that may impact water quality include continued improvements of grazing management practices and implementation of restoration projects. Other current proposals, if implemented, would result in additional conservation of instream flow and removal of diversion structures that contribute sediment to the Pahsimeroi River and impact water quality. Other activities that are contributing to the cumulative baseline water quality within the CIAA are expected to continue at current rates.

Wetlands and Riparian Zones

Dewatered streams and the resultant limited riparian habitat vigor and extent has likely been a part of the landscape within the Pahsimeroi River subbasin since the last glacial maxima. Past and present anthropogenic impacts have likely exacerbated the dewatering of streams and contributed to the current state of habitat connectivity and riparian area and wetland quality. The diversion of water for agriculture has been ongoing for nearly 150 years, and is expected to continue at, or near historic rates. Livestock grazing historically had much greater impacts on riparian areas in the past than it does today, however some streams are still recovering from past

grazing management activities, and some of those streams are hindered in their recovery by water availability. The continued evolution of grazing management is expected to facilitate the recovery of riparian areas and wetlands that were impacted by past management activities, although the rates of recovery are highly variable and dependent on many factors outside management influence (climate, for example). Restoration activities have been occurring within the subbasin for approximately the last two decades, and have been most prevalent in the lower portions of the watershed (below Hooper Lane). These actions have improved habitat across the CIAA, and have increased the amount of available habitat by nearly 30 miles. These activities are anticipated to continue at rates similar to what has occurred in the past.

Contribution of the Alternatives to Cumulative Impacts

The following sections present the cumulative impacts anticipated when the alternatives proposed are combined with the baseline impacts presented in the previous section.

Economics and Social Values

Proposed Action

The Proposed Action would not impact social values within the CIAA, as irrigation, agriculture, and crop production would continue to occur as they have in the past, and there would be no change to any aspect of social behavior of the human environment as a result. The Proposed Action could have minor beneficial economic impacts for the proponents; however these benefits would not be likely to impact the overall economic climate within the CIAA. The opportunity for economic benefits to local contractors exists, as those contractors would be afforded the opportunity to bid on construction work associated with implementation; however these benefits would be of small scale and relatively short duration, and would not cumulatively impact the economies of Lemhi or Custer counties. Abandonment of the P-16 ditch could have minor adverse impacts to the property owners of the properties where the ditch currently provides live water and sustains riparian habitat, however, these properties have not ever possessed river frontage as an amenity, and therefore impacts to the listed amenities would not cumulatively impact property values within the CIAA., In consideration of all of the impacts anticipated from implementation of the Proposed Action, when viewed in context of the existing baseline, implementation of this alternative is not anticipated to have cumulative impacts on either social or economic values within the CIAA.

BLM Alternative

Implementation of the BLM Alternative would have the same economic and social impacts as the Proposed Action, therefore selection of this alternative is not anticipated to have cumulative impacts on either social or economic values within the CIAA.

No Action Alternative

Under the No Action Alternative, there would not be either beneficial or adverse social or economic impacts. The social and economic climates would continue as they are currently; therefore no cumulative impacts are anticipated to occur as a result of this alternative.

Invasive, Non-Native Species

Proposed Action

The Proposed Action would create new disturbance over approximately 8.56 acres, both within the riparian corridor and across upland habitats. Project design criteria and BMP implementation (limiting the area of disturbance, washing of vehicles/equipment prior to construction, etc.) would limit the potential for establishment of invasive species. Further, implementation and treatment of disturbed areas following implementation would ensure that any invasive species that are introduced and/or established in disturbed areas would be treated, killing them and removing the potential that those plants would be allowed to contribute to spreading of invasive species across the CIAA. Therefore, cumulative impacts to invasive, non-native species are not anticipated as a result of the Proposed Action.

BLM Alternative

Although this alternative would result in additional disturbance of slightly less than three acres over that anticipated under the Proposed Action, the same design criteria and BMPs would be implemented, including post implementation monitoring and treatment. Therefore, cumulative impacts to invasive, non-native species are not anticipated as a result of this alternative.

No Action Alternative

Under this alternative, there would be no acreage disturbed, and no heavy equipment would be used in the proposed project area for construction. Therefore, impacts related from invasive, non-native species would continue at current levels.

Soils

Proposed Action

The Proposed Action would create new disturbance over approximately 8.56 acres, both within the riparian corridor and across upland habitats. Project design criteria and BMP implementation (limiting the area of disturbance, ceasing operations during periods of heavy precipitation, etc.) would limit the potential for impacts to soil resources. Further, a portion of the proposed area of disturbance is already disturbed and any impacts to soil related to compaction have likely already occurred and are therefore part of the baseline condition. Any impacts that could occur after all proposed project design criteria and BMP implementation are realized would be localized and of minor spatial extent and duration, and would likely not be discernable above the existing conditions at the CIAA scale. Therefore, cumulative impacts to soils are not anticipated as a result of the Proposed Action.

BLM Alternative

Although this alternative would result in additional disturbance of slightly less than three acres over that anticipated under the Proposed Action, the same design criteria and BMPs would be implemented, including post implementation monitoring and treatment. Therefore, cumulative impacts to soils would not likely be measurable above the existing conditions at the CIAA scale. Therefore, cumulative impacts to soils are not anticipated as a result of this alternative.

No Action Alternative

The No Action Alternative would maintain the existing soil impacts within the CIAA.

Threatened, Endangered, and Sensitive Wildlife and Migratory Birds

Proposed Action

At the CIAA scale, the Proposed Action would have little effect on the baseline conditions resultant from the past, present, and reasonably foreseeable actions that have, or will, occur. The proposed project footprint would be approximately 8.56 acres, and therefore would have an infinitesimal impact on wildlife at the CIAA scale. There would be the opportunity for displacement of wildlife near the construction areas, but those impacts would be minor and of short term duration. Project design criteria, including the timeframe when construction would occur, would work to further limit any negative impacts that may occur to wildlife. Therefore, cumulative impacts to wildlife, including migratory birds, are not expected as a result of the Proposed Action.

BLM Alternative

Although this alternative would result in the disturbance of approximately three additional acres, it would have little effect on the baseline conditions resultant from the past, present, and reasonably foreseeable actions that have, or will, occur. The project footprint would be approximately 11.23 acres, and therefore would have an infinitesimal impact on wildlife at the CIAA scale. There would be the opportunity for displacement of wildlife near the construction areas, but those impacts would be minor and of short term duration. Project design criteria, including the timeframe when construction would occur, would work to further limit any negative impacts that may occur to wildlife. Therefore, cumulative impacts to wildlife, including migratory birds, are not expected as a result of the BLM Alternative.

No Action Alternative

The No Action Alternative would maintain the existing habitat conditions within the CIAA, therefore no cumulative impacts are expected.

Threatened, Endangered, and Sensitive Fish, Fisheries

Proposed Action

The Proposed Action would result in an incremental improvement to habitat quality and quantity within the CIAA. This project would contribute to other past, present, and reasonably foreseeable projects to decrease habitat fragmentation from dewatering, remove migration barriers, eliminate fish entrainment, and improve water quality. There are a multitude of limitations for fish within the Pahsimeroi River Subbasin, and the limitations on their extent and abundance cannot be solved with one project, or on very short time scales. This project would contribute cumulatively to improve resident and anadromous fish populations, designated critical habitat for Chinook salmon, and EFH within the CIAA.

BLM Alternative

This alternative would provide the same cumulative beneficial impacts as the Proposed Action.

No Action Alternative

The No Action Alternative would maintain existing habitat conditions, and would not affect the past, present, and reasonably foreseeable cumulative impacts, nor would it contribute to restoration of anadromous and resident fish populations and habitats, improvement of designated critical habitat for Chinook salmon, or improvement of EFH within the CIAA.

Tribal Treaty Rights and Interests

Proposed Action

Under the Proposed Action, expected adverse impacts would be negligible and short-term in nature; the Proposed Action would not affect, influence, or contribute to any significant change or increase in cumulative effects. Improvements in riparian habitat and water quality would increase long-term regional productivity, thus imparting an incremental benefit to resources associated with tribal treaty rights and interests.

BLM Alternative

This alternative would provide the same cumulative beneficial impacts as the Proposed Action.

No Action Alternative

The No Action Alternative would maintain the existing conditions within the CIAA; therefore no cumulative impacts are anticipated as a result of this alternative.

Vegetation

Proposed Action

At the CIAA scale, the Proposed Action would have little effect on the baseline conditions resultant from the past, present, and reasonably foreseeable actions that have, or will, occur. The proposed project footprint would be approximately 8.56 acres, and therefore would have an infinitesimal impact on vegetation at the CIAA scale. Therefore, cumulative impacts to vegetation are not expected as a result of the Proposed Action.

BLM Alternative

Although this alternative would result in the disturbance of approximately three additional acres, it would have little effect on the baseline conditions resultant from the past, present, and reasonably foreseeable actions that have, or will, occur. The proposed project footprint would be approximately 11.23 acres, and therefore would have an infinitesimal impact on vegetation at the CIAA scale. Therefore, cumulative impacts to vegetation are not expected as a result of the BLM Alternative.

No Action Alternative

The No Action Alternative would maintain the existing vegetative baseline conditions, therefore cumulative impacts to vegetation are not expected as a result of this alternative.

Water Quality – Surface and Ground

Proposed Action

The Proposed Action would result in an incremental improvement to water quality within the CIAA. This Proposed Action would contribute with other past, present, and reasonably foreseeable projects to increase instream flows, and would remove the need for installation of the instream push-up dam diversions on both the Pahsimeroi River and Big Creek. Overall, the flow augmentation anticipated under the Proposed Action would allow for improvement in riparian species abundance, diversity, and vigor within the CIAA, which would increase bank stability and decrease sedimentation and water temperatures. There are a multitude of impacts to water quality within the Pahsimeroi River Subbasin, and the limitations on their extent and abundance cannot be solved with one project, or on very short time scales. The Proposed Action will

provide a cumulative improvement to improve water quality within AUs of the Pahsimeroi River and Big Creek; however the contribution is unlikely to be immeasurable in reference to the existing conditions, and would therefore be insignificant from a cumulative perspective.

BLM Alternative

Cumulative impacts from implementation of the BLM Alternative would be similar, however this alternative includes additional fencing that would limit livestock access to additional stream miles along the Pahsimeroi River. Although these additional beneficial impacts to water quality may not be discernable from those of the Proposed Action at the CIAA scale, they would represent an incremental improvement over that alternative.

No Action Alternative

The No Action Alternative would maintain the existing water quality, and would not reduce the current cumulative impacts to water quality in the CIAA.

Wetlands and Riparian Zones

Proposed Action

The Proposed Action would result in an incremental improvement to riparian areas and wetlands within the CIAA. The Proposed Action would contribute to other past, present, and reasonably foreseeable projects to increase instream flows, and would increase the probability for riparian species expansion along the Pahsimeroi River and Big Creek. Overall, the flow augmentation anticipated under the Proposed Action would allow for improvement in riparian species abundance, diversity, and vigor within the CIAA, which would increase bank stability and improve stream and riparian area function. Although these beneficial impacts to the riparian area in this reach may not be discernable at the CIAA scale when compared to the existing conditions, they would represent an incremental improvement in the subbasin. There are a multitude of limitations to riparian areas within the Pahsimeroi River subbasin, and the issues in the subbasin cannot be solved with one project, or on very short time scales.

BLM Alternative

Cumulative impacts from implementation of the BLM Alternative would be similar, however this alternative includes additional fencing that would limit livestock access to additional stream miles along the Pahsimeroi River. Although these additional beneficial impacts to the riparian area in this reach may not be discernable from those of the Proposed Action at the CIAA scale, they would represent an incremental improvement over that alternative.

No Action Alternative

The No Action Alternative would maintain existing conditions, and would not contribute to restoration of the riparian vegetation within the CIAA.

CONSULTATION AND COORDINATION

On December 13, 2013 the BLM-Challis Field Office sent written correspondence to the Shoshone-Bannock Tribes notifying Fort Hall Business Council Chairman Nathan Hall and tribal technical staff of the opportunity to consult and comment on the P-16 Furey Lane Water Conservation and Reconnect proposed project. Because the project was in the early stages of NEPA analysis, the letter provided a description of the proposed project (including maps), a timeline for the analysis process, and a list of potential issues and possible outcomes. To date, the BLM CFO has received no communication from the Business Council or tribal technical staff regarding this proposed project. The BLM-Challis Field Office will again invite the Shoshone-Bannock Tribes to consult and comment on this proposed project following the completion of the draft EA.

Multiple efforts were made to consult and coordinate with individuals, organizations, and agencies during the development of resource issues and alternatives analyzed in this document. The BLM CFO conducted internal scoping initially during three project proposal preplanning meetings, held between October 2013 and January of 2014. This project proposal was also reviewed and ranked by the Upper Salmon Basin Watershed Program Technical Team on September 4th, 2013. The Technical Team consists of representatives from the Idaho Office of Species Conservation, IDFG, Shoshone-Bannock Tribes, NRCS, Lemhi Soil and Water Conservation District, BLM, Salmon-Challis National Forest, NMFS, USFWS, The Nature Conservancy, Trout Unlimited, IDWR, Idaho Department of Environmental Quality, Custer SWCD, and the U.S. Bureau of Reclamation. The priority ranking was 105 (“high”) based on significant beneficial impacts to habitat limiting factors for instream flow and physical fish barriers at the project area scale and the larger reach scale of the middle Pahsimeroi River from Hooper Lane to McCoy Lane.

On December 13, 2013, the project was uploaded to the BLM e-Planning site. A public scoping letter was prepared by the BLM CFO and was initially placed on the e-planning site on the same date. Written feedback, in the form of four letters which were generally in support of the project proposal, were received between January 10 and 13, 2014.

The BLM CFO began ESA Section 7 Consultation with the NMFS and the USFWS using streamlining procedures at the March 25, 2014 Salmon-Challis Level 1 Team meeting. Prior to the February 25, 2015 Salmon-Challis Level 1 Team meeting, the BLM CFO submitted a draft BA (dated 2/11/2015) for the proposed project. During the February 25, 2015 meeting, the Level 1 Team consisting of Fisheries Biologists from the BLM, SCNF, NMFS, and USFWS, reached consensus that the proposed project was likely appropriate for implementation under the recently completed ESA consultation for programmatic restoration activities in Idaho (NMFS No.: WCR-2014-832). Design review by NMFS engineers was also conducted. On May 7, 2015 NMFS provided acknowledgement that if the project is implemented consistent with the programmatic's design criteria and its mandatory terms and conditions, no additional ESA consultation is required by the BLM (the designated lead Federal action agency) or other Federal agencies involved in the project. On May 13, 2015 the USFWS provided similar acknowledgement that the project is appropriate for implementation consistent with (USFWS No.: 01EIFW00-2014-F-0456).

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