Kootenai River White Sturgeon and Burbot Hatcheries Program

Preliminary Environmental Assessment

February 2013

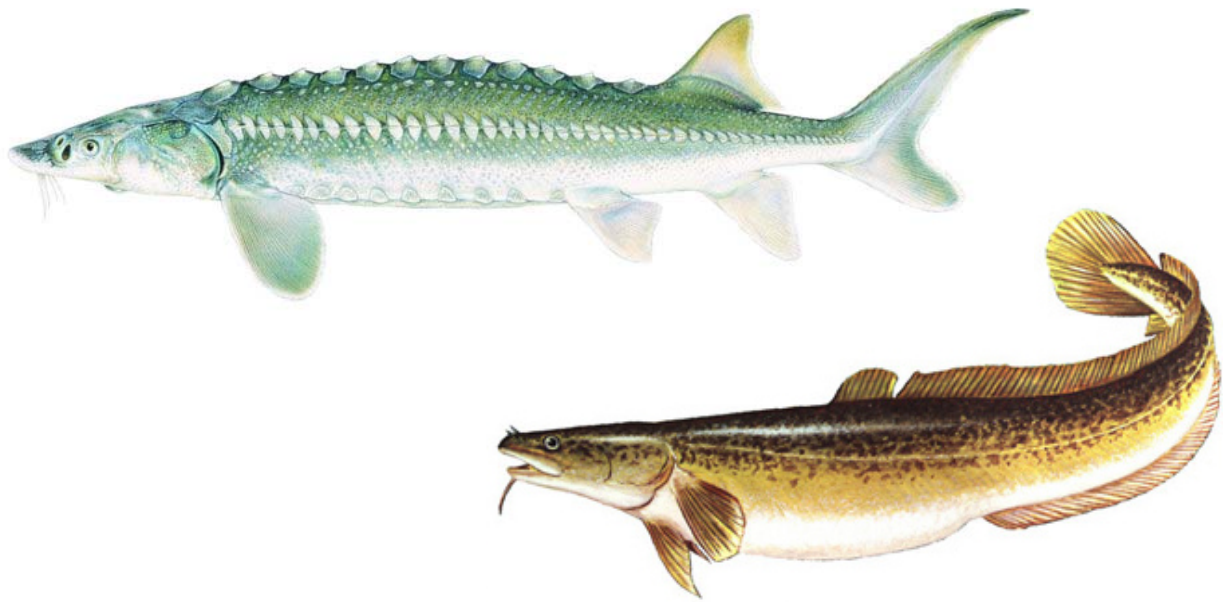

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Table of Contents

Chapter 1 Purpose of and Need for Action 1-1

1.1 Introduction 1-1

1.2 Need for Action 1-1

1.3 Purposes 1-2

1.4 Background Information 1-2

1.4.1 Northwest Power Act 1-2
1.4.2 Endangered Species Act 1-3
1.4.3 Kootenai River White Sturgeon Recovery Plan and Recovery Team 1-3
1.4.4 Kootenai River Native Fish Conservation Aquaculture Program 1-4
1.4.5 Kootenai River/Kootenay Lake Burbot Conservation Strategy 1-5

1.5 Issues Identified During Scoping 1-6

Chapter 2 Proposed Action and Alternatives 2-1

2.1 Proposed Action 2-1

2.1.1 Existing Tribal Hatchery Upgrades 2-1
2.1.2 Twin Rivers Hatchery 2-5

2.2 No Action 2-9

2.3 Alternatives Considered but Eliminated from Detailed Study 2-9

2.3.1 Natural Production Only 2-9
2.3.2 Implement Conservation Aquaculture at an Existing Facility 2-10

2.4 Comparison of Alternatives 2-11

Chapter 3 Affected Environment, Environmental Consequences, and Mitigation Measures 3-1

3.1 Introduction 3-1

3.2 Land Use and Recreation 3-1

3.2.1 Affected Environment 3-1
3.2.2 Environmental Effects—Proposed Action 3-2
3.2.3 Mitigation—Proposed Action 3-3
3.2.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action 3-3
3.2.5 Cumulative Effects—Proposed Action 3-3
3.2.6 Environmental Effects—No Action 3-3

3.3 Vegetation and Wetlands 3-3

3.3.1 Affected Environment 3-3
3.3.2 Environmental Effects—Proposed Action 3-7
3.3.3 Mitigation—Proposed Action 3-9
3.3.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action 3-10
3.3.5 Cumulative Effects—Proposed Action 3-10
3.3.6 Environmental Effects—No Action 3-10

3.4 Floodplains 3-10

3.4.1 Affected Environment 3-10
3.4.2 Environmental Consequences—Proposed Action 3-11

Table of Contents

Chapter 1 Purpose of and Need for Action 1-1

1.1 Introduction 1-1

1.2 Need for Action 1-1

1.3 Purposes 1-2

1.4 Background Information 1-2

1.4.1 Northwest Power Act 1-2
1.4.2 Endangered Species Act 1-3
1.4.3 Kootenai River White Sturgeon Recovery Plan and Recovery Team 1-3
1.4.4 Kootenai River Native Fish Conservation Aquaculture Program 1-4
1.4.5 Kootenai River/Kootenay Lake Burbot Conservation Strategy 1-5

1.5 Issues Identified During Scoping 1-6

Chapter 2 Proposed Action and Alternatives 2-1

2.1 Proposed Action 2-1

2.1.1 Existing Tribal Hatchery Upgrades 2-1
2.1.2 Twin Rivers Hatchery 2-5

2.2 No Action 2-9

2.3 Alternatives Considered but Eliminated from Detailed Study 2-9

2.3.1 Natural Production Only 2-9
2.3.2 Implement Conservation Aquaculture at an Existing Facility 2-10

2.4 Comparison of Alternatives 2-11

Chapter 3 Affected Environment, Environmental Consequences, and Mitigation Measures 3-1

3.1 Introduction 3-1

3.2 Land Use and Recreation 3-1

3.2.1 Affected Environment 3-1
3.2.2 Environmental Effects—Proposed Action 3-2
3.2.3 Mitigation—Proposed Action 3-3
3.2.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action 3-3
3.2.5 Cumulative Effects—Proposed Action 3-3
3.2.6 Environmental Effects—No Action 3-3

3.3 Vegetation and Wetlands 3-3

3.3.1 Affected Environment 3-3
3.3.2 Environmental Effects—Proposed Action 3-7
3.3.3 Mitigation—Proposed Action 3-9
3.3.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action 3-10
3.3.5 Cumulative Effects—Proposed Action 3-10
3.3.6 Environmental Effects—No Action 3-10

3.4 Floodplains 3-10

3.4.1 Affected Environment 3-10
3.4.2 Environmental Consequences—Proposed Action 3-11

3.4.3 Mitigation—Proposed Action....3-11
3.4.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-11
3.4.5 Cumulative Impacts—Proposed Action....3-12
3.4.6 Environmental Consequences—No Action Alternative....3-12

3.5 Geology and Soils....3-12

3.5.1 Affected Environment....3-12
3.5.2 Environmental Effects—Proposed Action....3-13
3.5.3 Mitigation—Proposed Action....3-14
3.5.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-14
3.5.5 Cumulative Effects—Proposed Action....3-14
3.5.6 Environmental Effects—No Action....3-15

3.6 Water Quantity and Water Quality....3-15

3.6.1 Affected Environment....3-15
3.6.2 Environmental Effects—Proposed Action....3-17
3.6.3 Mitigation—Proposed Action....3-20
3.6.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-21
3.6.5 Cumulative Effects—Proposed Action....3-22
3.6.6 Environmental Effects—No Action....3-22

3.7 Visual Resources....3-22

3.7.1 Affected Environment....3-22
3.7.2 Environmental Effects—Proposed Action....3-23
3.7.3 Mitigation—Proposed Action....3-24
3.7.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-25
3.7.5 Cumulative Effects—Proposed Action....3-25
3.7.6 Environmental Effects—No Action....3-25

3.8 Fish and Wildlife....3-25

3.8.1 Affected Environment....3-25
3.8.2 Environmental Effects—Proposed Action....3-27
3.8.3 Mitigation—Proposed Action....3-31
3.8.4 Unavoidable Impacts Remaining After Mitigation —Proposed Action....3-32
3.8.5 Cumulative Effects—Proposed Action....3-32
3.8.6 Environmental Effects—No Action....3-33

3.9 Cultural Resources....3-34

3.9.1 Affected Environment....3-34
3.9.2 Environmental Effects—Proposed Action....3-35
3.9.3 Mitigation—Proposed Action....3-36
3.9.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-37
3.9.5 Cumulative Effects—Proposed Action....3-37
3.9.6 Environmental Effects—No Action....3-37

3.10 Socioeconomics and Environmental Justice....3-37

3.10.1 Affected Environment....3-37
3.10.2 Environmental Effects—Proposed Action....3-38
3.10.3 Mitigation—Proposed Action....3-39
3.10.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-39
3.10.5 Cumulative Effects—Proposed Action....3-39
3.10.6 Environmental Effects—No Action....3-40

3.11 Noise....3-40

3.11.1 Affected Environment....3-40
3.11.2 Environmental Effects—Proposed Action....3-41

3.11.3 Mitigation—Proposed Action....3-42
3.11.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-42
3.11.5 Cumulative Effects—Proposed Action....3-42
3.11.6 Environmental Effects—No Action....3-42

3.12 Transportation....3-42

3.12.1 Affected Environment....3-42
3.12.2 Environmental Consequences—Proposed Action....3-43
3.12.3 Mitigation—Proposed Action....3-43
3.12.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-44
3.12.5 Cumulative Effects—Proposed Action....3-44
3.12.6 Environmental Effects—No Action....3-44

3.13 Air Quality....3-44

3.13.1 Affected Environment....3-44
3.13.2 Environmental Consequences—Proposed Action....3-45
3.13.3 Mitigation—Proposed Action....3-46
3.13.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-46
3.13.5 Cumulative Impacts—Proposed Action....3-46
3.13.6 Environmental Consequences—No Action Alternative....3-46

3.14 Climate Change....3-47

3.14.1 Affected Environment....3-47
3.14.2 Environmental Effects—Proposed Action....3-48
3.14.3 Mitigation—Proposed Action....3-49
3.14.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action....3-49
3.14.5 Cumulative Effects—Proposed Action....3-50
3.14.6 Environmental Effects—No Action....3-50

Chapter 4 Environmental Consultation, Review, and Permit Requirements....4-1

4.1 National Environmental Policy Act....4-1

4.2 Fish and Wildlife....4-1

4.2.1 Endangered Species Act....4-1
4.2.2 Fish and Wildlife Conservation Act and Fish and Wildlife Coordination Act....4-2
4.2.3 Migratory Bird Treaty Act and Federal Memorandum of Understanding....4-2
4.2.4 Bald Eagle and Golden Eagle Protection Act....4-2

4.3 Water Resources....4-3

4.3.1 Clean Water Act....4-3
4.3.2 Other Mandates and Orders....4-3

4.4 State, Area-wide, and Local Plan Consistency....4-3

4.5 Cultural and Historical Resources....4-4

4.6 Executive Order on Environmental Justice....4-4

4.7 Air Quality....4-5

4.8 Climate Change....4-5

4.9 Farmland Protection Policy Act....4-5

4.10 Hazardous Materials....4-6

4.10.1 The Spill Prevention, Control, and Countermeasures Rule....4-6
4.10.2 Comprehensive Environmental Response, Compensation, and Liability Act....4-6
4.10.3 Uniform Fire Code....4-6

4.10.4 Resource Conservation and Recovery Act 4-6
Chapter 5 Tribes, Agencies, and Persons Consulted 5-1
5.1 FEDERAL AGENCIES 5-1
5.2 STATE AGENCIES 5-1
5.3 TRIBES 5-1
5.4 LOCAL GOVERNMENTS 5-1
5.5 Land Owners 5-1
Chapter 6 Glossary of Terms 6-1
Chapter 7 References 7-1

List of Tables

Table 2-1: Comparison of Alternatives to Project Purposes 2-3

Table 2-2: Summary of Potential Impacts of the Proposed Action and No Action Alternative 2-4

Table 3-1: Acreage of impact in South Wetland 3-8

Table 3-2: Kootenai River, Average monthly discharge (01/01/1930 to 09/30/2011) 3-19

Table 3-3: Moyie River, Average monthly discharge (01/01/1930 to 12/31/2011) 3-19

Table 3-4: Annual Fish Production Biomass at Twin Rivers Hatchery 3-20

Table 3-5: ESA-Listed Species in Project Area 3-26

Table 3-6: Current and expected future Kootenai sturgeon production values with and without the Twin Rivers Hatchery 3-29

Table 3-7: Burbot Production to Date and Proposed 3-30

Table 3-8: Common Activities and Associated Noise Levels 3-40

List of Figures

Figure 2-1: Proposed Twin Rivers Hatchery and Kootenai Tribal Hatchery vicinity map 2-3

Figure 2-2: Proposed Tribal hatchery modifications 2-4

Figure 2-3: Twin Rivers Hatchery site plan 2-8

Figure 3-1: View looking toward main area to be developed for hatchery buildings 3-4

Figure 3-2: Looking northeast along Kootenai River intake pipeline route 3-4

Figure 3-3: South and west wetlands on the Twin Rivers property 3-5

Figure 3-4: Vegetation found in the South Wetland 3-6

Figure 3-5: Vegetation found in the West Wetland 3-7

Figure 3-6: Area of impact to the South Wetland 3-9

Figure 3-7: Moyie River at the Twin Rivers Canyon Resort 3-16

Figure 3-8: Kootenai River at the Twin Rivers Canyon Resort 3-19

Figure 3-9: Twin Rivers Canyon Resort Swimming Hole 3-23

Chapter 1
Purpose of and Need for Action

1.1 Introduction

Bonneville Power Administration (BPA) proposes to fund the Kootenai Tribe of Idaho (Tribe) to improve their Kootenai River Native Fish Conservation Aquaculture Program (aquaculture program). BPA has funded the Tribe's existing aquaculture program since 1991. The aquaculture program currently propagates Kootenai River white sturgeon (*Acipenser transmontanus*), which are listed as endangered under the Endangered Species Act (ESA) (16 U.S.C. 1531 et seq.). The Tribe's aquaculture program at the existing hatchery facility (Tribal Hatchery) currently provides the only significant source of recruitment of juvenile white sturgeon in the Kootenai River (Paragamian et al., 2009). The Tribe proposes to improve the program by upgrading their existing Tribal Hatchery and constructing a new hatchery for the production of Kootenai River white sturgeon and burbot (*Lota lota*).

This Environmental Assessment (EA) analyzes the effects of the Proposed Action to fund improvements to the aquaculture program and of the No Action Alternative. BPA prepared this EA pursuant to the National Environmental Policy Act (NEPA) (42 U.S. Government Code [USC]. 4321 et seq.) and the Council on Environmental Quality (CEQ) Implementing Regulations, which require federal agencies to assess the impacts that their actions may have on the environment. Major federal actions significantly affecting the quality of the human environment must be evaluated in an Environmental Impact Statement (EIS). BPA prepared this EA to determine whether funding the Tribe's aquaculture program would significantly affect the quality of the human environment and warrant preparing an EIS, or whether it is appropriate to prepare a Finding of No Significant Impact (FONSI).

This chapter of the EA discusses BPA's need to take action and the purposes that BPA seeks to achieve in addressing this need. It also provides the background information on BPA's responsibilities and the Tribe's goals for the aquaculture program, the decisions to be made, and public input on the proposal that has been received to date.

1.2 Need for Action

BPA must decide whether to fund the Tribe's proposal to upgrade an existing white sturgeon aquaculture facility and construct a new facility to expand the Tribe's white sturgeon and burbot artificial production programs.

Kootenai River white sturgeon are declining and considered a priority for recovery, having been listed as endangered under the ESA since 1994. Burbot are not listed under the ESA, but the U.S. Fish and Wildlife Service (USFWS), BPA, the Tribe, and other stakeholders developed a Conservation Strategy for Lower Kootenai River Burbot (Conservation Strategy). Current production of Kootenai River white sturgeon at the existing Tribal Hatchery is restricted by capacity limitations and adequate facilities for artificial burbot production do not exist.

1.3 Purposes

The purposes are goals to be achieved while meeting the need for the project. BPA has identified the following purposes, which it will use to help evaluate the alternatives considered in the EA:

- Act consistently with all applicable laws, regulations, and policies that guide the agency including the federal trust responsibility as embraced by BPA in its Tribal Policy;
- Support efforts to mitigate for effects of the Federal Columbia River Power System (FCRPS) on fish and wildlife in the mainstem Columbia River and its tributaries pursuant to the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Northwest Power Act) (16 U.S.C. 839 *et seq.*);
- Seek to further address obligations under Action 4.2 of the 2006 Libby Dam Biological Opinion as clarified in 2008 (USFWS 2006, 2008), which directs the BPA and U.S. Army Corps of Engineers to provide funding to expand white sturgeon adult holding and spawning capability; and
- Aid in reestablishing burbot.

In addition to the purposes BPA seeks to fulfill, the Kootenai Tribe also seeks a preferred alternative that would:

- Avoid or minimize adverse environmental impacts to the lower Kootenai River basin from aquaculture practices;
- Provide sufficient Kootenai River white sturgeon to support future Tribal treaty subsistence and cultural harvest and recreational fishery uses; and
- Reestablish a sustainable population of native burbot in the lower Kootenai River capable of supporting future Tribal treaty subsistence and cultural harvest as well as sport harvest.

1.4 Background Information

1.4.1 Northwest Power Act

BPA is a federal power marketing agency that is part of the U.S. Department of Energy (DOE). BPA's operations are governed by several statutes, such as the Northwest Power Act. Among other things, this Act directs BPA to protect, mitigate, and enhance fish and wildlife affected by the development and operation of the FCRPS. To assist in accomplishing this, the Act requires BPA to fund fish and wildlife protection, mitigation, and enhancement actions consistent with the Northwest Power and Conservation Council's (Council) Fish and Wildlife Program. Under this program, the Council makes recommendations to BPA concerning which fish and wildlife projects to fund.

The Council has a three-step process for review of artificial propagation projects (i.e., hatcheries) proposed for funding by BPA. Step 1 is conceptual planning, represented primarily by master plan development and approval. Step 2 is preliminary design and cost estimation, along with environmental review. Step 3 is final design review and construction. The Council's Independent Scientific Review Panel (ISRP) reviews the proposed projects as they move from one stage of the process to the next.

The Council established a statutory structure that "makes it clear that the [Council's] Fish and Wildlife Program was to be developed through a detailed and deliberate process of consultation with fishery managers who have great experience and expertise with fish and wildlife protection."[1] As mentioned previously, BPA's duties under the Northwest Power Act include protecting and mitigating impacts on fish and wildlife affected by the FCRPS dams and taking the Council's program into account to the fullest extent possible (16 U.S.C. Sections 839b(h)(10)(A) and (11)(A)(i)). Under NEPA, BPA must take an independent, hard look at a reasonable number of alternatives, yet the Northwest Power Act and the cases interpreting it encourage BPA to refrain from inventing its own mitigation plans that are not "consistent with" the Council's program.

To ensure compliance with NEPA and the Northwest Power Act, BPA typically implements ***mitigation***[2] in response to recommendations made by the Council. When a Council recommendation triggers NEPA, BPA implements the recommendation after seeking and examining other reasonable alternatives that meet BPA's stated purposes and need.

For this project, the Tribe submitted their Master Plan to the ISRP in 2009. The ISRP requested revisions and approved the Revised Master Plan for proceeding to Step 2 on October 14, 2010. On August 9, 2012, the Tribe submitted Step 2 documents and on September 28, 2012 the ISRP provided their review and found that the Tribe had fully addressed science review criteria associated with the white sturgeon and burbot programs for the Kootenai River Native Fish Conservation Aquaculture Program. On November 6, 2012, the Council's Fish and Wildlife Committee approved the Tribe's proposal and recommended it to the full Council for their approval. The Council approved the Tribe moving to Step 3 on December 4, 2012.

1.4.2 Endangered Species Act

In addition to Northwest Power Act obligations, BPA, as a federal agency, must comply with the ESA. As discussed above, biological opinions have been issued for the FCRPS that include a number of measures related to Kootenai River white sturgeon, which was listed as endangered under the ESA in 1994. Prior to listing, the Kootenai Tribe initiated a Kootenai sturgeon conservation aquaculture program near Bonners Ferry in 1988 to preserve an adequate demographic and genetic base for a healthy future population until ecosystem-based habitat restoration activities could be implemented. BPA has historically been a source of funding for activities of this program.

1.4.3 Kootenai River White Sturgeon Recovery Plan and Recovery Team

Following the listing of Kootenai white sturgeon, the USFWS established the Kootenai River White Sturgeon Recovery Team (Recovery Team) to advise the USFWS in the development and implementation of a recovery plan. The Recovery Team consists of members from USFWS, the Tribe, Idaho Department of Fish and Game (IDFG), other federal and state agencies, and a Canadian representative.

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[1] *Northwest Resource Info. Ctr. v. Council*, 35 F.3d 1371, 1388 (9th Cir. 1994).
[2] *Terms defined in Chapter 6, Glossary of Terms, are shown in bold, italicized typeface the first time they are used.*

The USFWS completed the Kootenai River White Sturgeon Recovery Plan (Recovery Plan) in 1999 (USFWS 1999). The Recovery Plan identified a long-term goal of down-listing and delisting Kootenai white sturgeon when the population becomes self-sustaining. Short-term objectives included reestablishing natural recruitment and preventing extinction through conservation aquaculture.

1.4.4 Kootenai River Native Fish Conservation Aquaculture Program

The Tribe's white sturgeon aquaculture program began in 1988 as an experimental program focused on understanding critical ecological and biological uncertainties, identifying limiting factors to white sturgeon natural production, and developing population restoration strategies. Following the listing of Kootenai white sturgeon (1994) and the development of the Recovery Plan in 1999, the Tribe began increasing their production of Kootenai white sturgeon at the Tribal Hatchery after nearly a decade of annual experimental flow measures at Libby Dam failed to restore natural recruitment.

The Tribal Hatchery lost a year class of white sturgeon in 1997 due to the failure of the hatchery chlorine filtration system. After this loss, the Tribe entered into an agreement with the British Columbia (B.C.) Ministry of Environment to develop a fail-safe facility for off-site hatching and rearing at the Kootenay[3] Trout Hatchery in Fort Steele, B.C. In addition, the Tribe received funding from BPA and Bureau of Indian Affairs (BIA) for a series of upgrades to the existing Tribal Hatchery in 1998, 1999, and 2007/2008 to address Tribal and Recovery Plan objectives to improve operations so that similar system failures are avoided.

In 2006, the USFWS Biological Opinion Regarding the Effects of Libby Dam Operations on the Kootenai River White Sturgeon, Bull Trout, and Kootenai Sturgeon Critical Habitat was published (Libby Dam BiOp) (USFWS 2006, clarified in 2008). The Libby Dam BiOp specifically acknowledges the need for continued operation of the Tribe's aquaculture program in Reasonable and Prudent Action (RPA) Component 4. Recognizing the critical role that the hatchery will continue to play for the foreseeable future, the Libby Dam BiOp directs BPA and U.S. Army Corps of Engineers in Action 4.2 to provide funding to expand adult holding and spawning capability at the Tribal Hatchery (USFWS 2006, clarified in 2008).

Kootenai River white sturgeon once sustained an important cultural and subsistence fishery for the Kootenai people. The Kootenai River also had an active sport fishery for white sturgeon that continued until 1983 (USFWS 1999). The population is declining (consistent annual recruitment has not been seen since the 1950s) and there has been no significant recruitment of young sturgeon observed since the early 1970s (Paragamian et al. 2005). The remaining wild population of large old fish is declining by about 2-8% per year (Beamesderfer et al. 2012b). Kootenai sturgeon numbers have already reached critically low levels where genetic and demographic risks are acute. Their long life span (estimated at 80+ years) may have forestalled extinction of this population. As of 1997, the adult population was estimated at 1,000 fish, with most individuals over 25 years old (Beamesderfer et al. 2012b).

Current production capacity of the combined Tribal Hatchery and the Kootenay Trout Hatchery in Fort Steele, B.C. (the fail-safe facility) is 12–18 families per year, with up to 5 families

[3] "Kootenay" is predominant spelling in Canada

currently produced annually at the B.C. facility[4]. The existing Tribal Hatchery occupies the maximum physical space available at the site with no room for expansion. The Tribal Hatchery is limited to a broodstock capacity of 24 adult fish because the hatchery lacks the space and tanks for holding broodstock, segregating sexes, and isolating ready females, and has a limited ability to regulate water temperature to control maturation of individual fish. In order to meet the near-term recovery objective of preserving native genetic and life history diversity by capturing and spawning significant numbers of representative broodstock, the Tribe is proposing to expand their conservation aquaculture program facilities to accommodate an increase in the number of captured broodstock from about 24 to up to maximum of 45 and an increase in the numbers of families produced from between 12-18 to a maximum of 30. The expanded program would produce the same number of juvenile sturgeon but would have the capacity to increase the number of juveniles produced if such increases are approved through consultation with the USFWS.

BPA is completing its environmental review, which includes issuance of this Preliminary EA. This Preliminary EA incorporates by reference the findings from both the 2010 Master Plan and the 2012 Step 2 Document and their appendices (KTOI, 2012). It also addresses the issues raised by the public during the public scoping period (Section 1.5).

1.4.5 Kootenai River/Kootenay Lake Burbot Conservation Strategy

Historically, the Kootenai River subbasin supported numerous and varied fisheries between Bonnington Falls and Kootenai Falls. Kootenai People traditionally targeted burbot during the winter spawning period as a source of fresh meat when other food resources were limited. Recreational burbot fisheries subsequently developed throughout the subbasin, primarily focused on local spawning aggregations. Burbot catches declined significantly after 1975. Despite numerous fishing regulations implemented to reduce threats to burbot, their numbers continued to decline to almost extirpation, and the fishery was closed in the early 1990s.

Burbot were proposed for ESA listing in 2000; however, the USFWS determined that this population was not eligible for listing because it did not comprise a ***Distinct Population Segment*** (68 Federal Register 11574). Although burbot was not ESA listed, the Tribe, along with the USFWS, agency partners, and additional stakeholders, proposed the Kootenai River drainage as a “pilot project” to develop, implement, and evaluate a Conservation Strategy for Lower Kootenai River Burbot (Conservation Strategy). The resulting Conservation Strategy was developed by the Kootenai Valley Resource Initiative (KVRI) Burbot Subcommittee and formalized through a Memorandum of Understanding signed in spring 2005 by 16 agencies and entities (including BPA).

Unlike sturgeon, efforts to culture burbot were minimal until the Tribe, B.C. Ministry of Forests Lands and Natural Resource Operations (B.C. MFLNRO, formerly known as the B.C. Ministry of Environment) and the University of Idaho (U of I) initiated a collaborative project to develop and assess burbot aquaculture feasibility and methods. The goal was to develop and establish methods for captive propagation of burbot for a conservation aquaculture program. The first wild broodstock for this project were collected for the Kootenai Tribe in 2003 by the B.C. MFLNRO.

[4] A family is the progeny produced by one male and one female sturgeon.

As part of the effort to develop burbot culture techniques, U of I researchers conducted trials in 2004 and 2005 that acclimated and spawned burbot in tanks and established methods to minimize overall spawning time. Evaluation of egg incubation techniques followed, identifying optimal facility requirements for this critical life stage. Next, larval feeding trials established a basis for the successful culture of this species and demonstrated the feasibility of transitioning burbot to a commercial diet. Successful techniques to preserve burbot semen were established in 2005 and 2006. Studies to determine burbot disease susceptibility have identified fungal control methods for eggs to improve embryo survival. Success of these small-scale research efforts enabled the Tribe, along with the BC MFNLRO and IDFG, to conduct the first experimental release of burbot into the Kootenai system in 2009.

The burbot program included in the Proposed Action is intended to produce and release sufficient numbers of burbot to support long-term population restoration objectives defined in the Conservation Strategy. Population-level monitoring and evaluation will be a key component of this program.

1.5 Issues Identified During Scoping

BPA conducted public scoping outreach for the Proposed Action through a public letter, a project website, and a public meeting. On October 13, 2011, BPA sent a letter to people potentially interested in or affected by the Proposed Action, including adjacent landowners, public interest groups, local governments, tribes, and state and federal agencies. The letter explained the proposal, the environmental process, and how to participate. The letter also explained that BPA would be taking comments on the proposed action beginning on October 14, 2011, and ending on November 14, 2011.

Comments received during the comment period, both written and oral, were considered in the environmental analysis of the Proposed Action. Comments received after the comment period ended were also considered in the environmental review. In addition, BPA created a webpage specifically for the Proposed Action with information about the project and the EA process (see http://efw.bpa.gov/environmental_services/Document_Library/Kootenai_Aquaculture_Program).

Two letters were received during the public scoping period and the following key concerns were raised. These topics have been addressed in appropriate sections in this EA and were also addressed in the Tribe's Step 2 Document, which was submitted to the Council in September 2012.

- Concerns regarding effluent from the hatchery and the facility's ability to meet the Total Maximum Daily Load for the Kootenai River Basin.
- Concerns related to impacts from construction on water quality in the Kootenai River.
- Concerns that the Master Plan did not adequately explain why the existing program and hatchery releases cannot result in 2,500-10,000 adult sturgeon, or preserve the existing wild genetic diversity.
- Concerns regarding why the Master Plan called for taking additional sturgeon broodstock to preserve the existing wild genetic diversity when 95% of wild population alleles have been incorporated into the existing program during its 20 years of operation.

- Concerns that the broodstock numbers and release targets called for in the Master Plan had not been thoroughly discussed with the Kootenai River White Sturgeon Recovery Team.
- Concerns that intentionally releasing large numbers of hatchery-origin Kootenai sturgeon into the ecosystem in order to test its carrying capacity may have detrimental effects to Kootenai sturgeon, other ESA listed species such as bull trout, and the ecosystem as a whole.
- Concerns that continued holding and spawning of broodstock at the existing facility would undermine one of the stated objectives of the new facility which is to alleviate the potential effect of hatchery effluent on migration and spawning behaviors of Kootenai sturgeon in the Kootenai River.

Following the completion of 30% design drawings (February 2012) a project update meeting was held to discuss additional impacts to the Twin Rivers Canyon Resort recreation facilities that could result from an expanded footprint of the hatchery. The Project Update Meeting was held at the Boundary County Library in Bonners Ferry, ID on May 30, 2012 and five people attended. The vast majority of the comments heard during the meeting were in favor of the project and the Tribe's efforts to recover white sturgeon and burbot in the Kootenai River. No concerns were raised regarding the potential impacts of revised facility designs to the Twin Rivers Canyon Resort's recreational facilities.

Chapter 2
Proposed Action and Alternatives

This chapter describes the Proposed Action, the No Action Alternative, and alternatives considered but eliminated from detailed study. This chapter also compares the Proposed Action and the No Action Alternative.

2.1 Proposed Action

The Proposed Action is for BPA to provide funding to the Tribe to upgrade its existing Tribal Hatchery and to construct a new Twin Rivers Hatchery for additional white sturgeon production and for experimental burbot production. Figure 2-1 shows the location of each facility along the Kootenai River in Boundary County, Idaho.

2.1.1 Existing Tribal Hatchery Upgrades

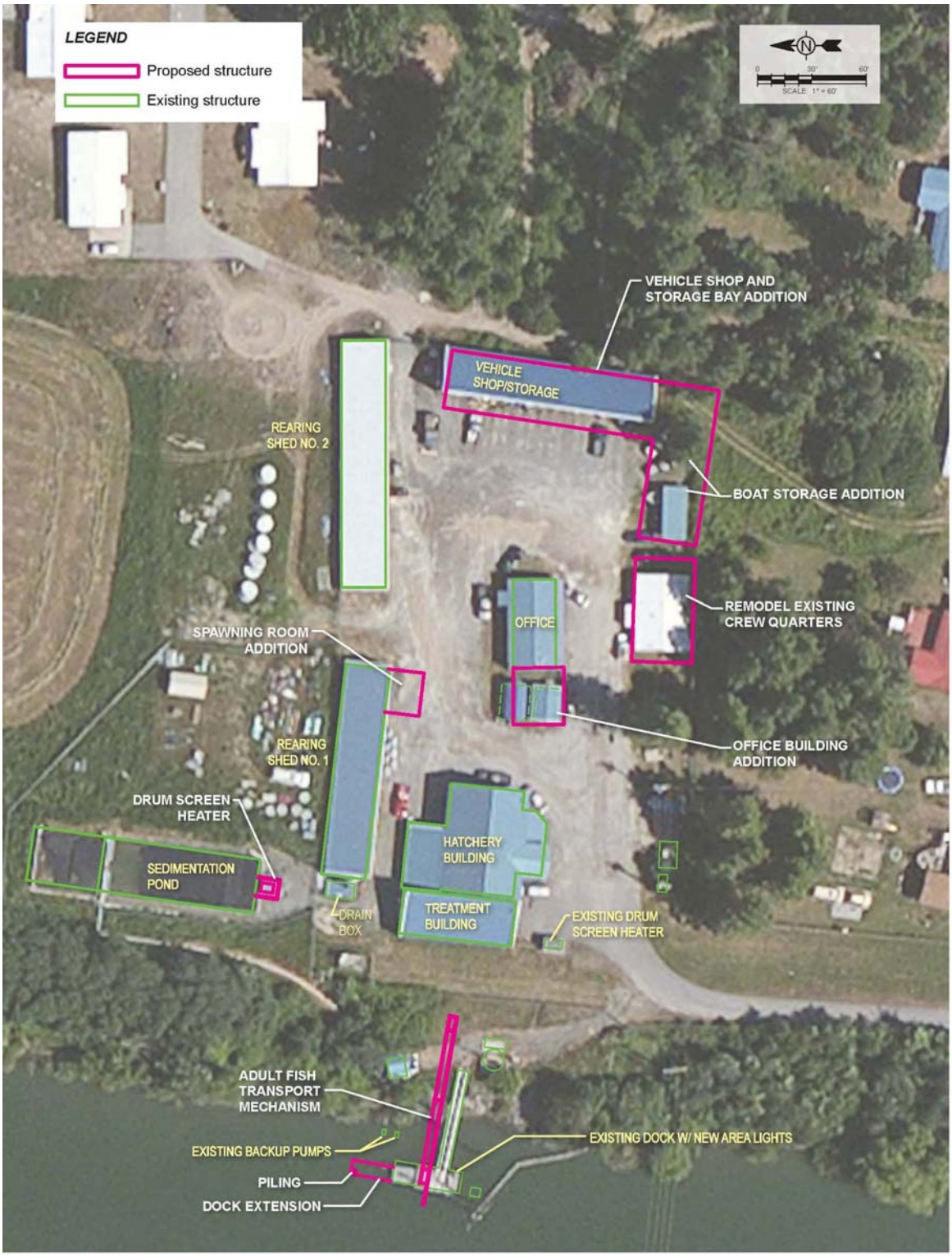
The Tribe's existing sturgeon hatchery is located on the Kootenai River about three miles west (downstream) of Bonner's Ferry, Idaho. Under the Proposed Action, improvements to the existing buildings, water supply, and water treatment systems would facilitate more efficient and safer production of juvenile white sturgeon. The quantity of fish produced would not change at the existing hatchery nor would the methods currently used to collect, spawn, and incubate juvenile white sturgeon. Under the Proposed Action, the Tribe would make the following upgrades to the existing Tribal Hatchery; all within the existing 1.5 acre facility footprint (see Figure 2-2):

- Install a 500-lb capacity crane and rail mechanism to transfer broodstock from dock to the hatchery
- Install a new 8' x 30' section of floating dock adjacent to the existing dock
- Construct a new 15'x24' addition to the rearing shed to house a new spawning room
- Remove two sheds to expand existing office building for additional office space and a new meeting room
- Install a water supply tempering facility to improve management of water heating and chilling during juvenile rearing in existing treatment building
- Add weather protection and de-icing systems to sediment pond to allow year-round operation of pond and drum filter
- Construct 400-square foot addition to the existing boat storage structure that will store fish feed and boats
- Replace twelve existing 10-foot-diameter rearing tanks with twenty-four new 8-foot tanks in existing hatchery building
- Remodel existing crew quarters
- Construct 120' x 8' addition to vehicle shop and storage bays and enclose existing facility

- Add a new 10 horsepower water pump, water supply intake screen cleaning system, heated drum screen enclosure, fire protection/alarm system, insulation and lighting upgrades, installation of sanitary wall panels in wet rooms, improve ventilation in rearing sheds, a concrete floor in rearing shed No. 2, and construct isolation walls for the water treatment electric room

Figure 2-1: Proposed Twin Rivers Hatchery and Kootenai Tribal Hatchery vicinity map

Figure 2-2: Proposed Tribal Hatchery Upgrades



2.1.2 Twin Rivers Hatchery

The proposed Twin River Hatchery would be located on a broad flat river delta at the confluence of the Moyie and Kootenai Rivers about 5 miles east (upstream) of Bonner's Ferry, Idaho (Figure 2-1). The land where the hatchery would be constructed is owned by the Tribe and is currently the location of the Twin Rivers Canyon Resort, a recreational campground that provides RV and tent camping sites. The area is accessed via an unpaved single-lane county road off Idaho State Highway 2 in Moyie Springs, ID. This 2-mile access road winds down a steep slope to the project location.

Under the Proposed Action the Tribe would construct the following (see Figure 2-2):

- A single story 33,360 square foot hatchery building
- A 7,260-square foot vehicle maintenance and storage structure
- Twenty outdoor 10-foot-diameter circular tanks for rearing burbot
- Surface water intakes, vaults, pump stations, and pipelines to supply surface water from the Moyie and Kootenai Rivers
- Two groundwater wells and a 6-inch underground pipeline
- Two concrete settling ponds approximately 30 x 60 feet by 3-feet deep
- An 18-inch diameter pipeline from settling ponds to Moyie River outfall
- A 1.5 mile overhead power line upgrade from Highway 2 to the new facility
- Septic system and drain field
- A temporary automated irrigation system
- Three residences for employees
- Surface improvements and guard rail installation to site access road

Hatchery Structures and Residences

The main hatchery building would house the broodstock spawning, incubation, and rearing facilities for both sturgeon and burbot. The building would also house program offices and a laboratory. The juvenile burbot would also have 20 outdoor rearing tanks that would allow burbot of like sizes to be placed together in an outdoor rearing environment.

The vehicle maintenance and storage structure would be constructed adjacent to the main hatchery building and be comprised of eleven 33- by 20-foot bays, with one bay enclosed, insulated and heated for use as a vehicle repair shop.

Just south of the main hatchery building, three new residences are proposed within the fenced hatchery area for operations personnel. Two of the residences would be constructed at the same time as the hatchery buildings. A third house would be constructed in the future, if needed.

Water Supply Intakes and Pipelines

Water for the new hatchery would be supplied from the Kootenai River, Moyie River and groundwater wells. Hatchery operations would require between 170 to about 1,250 gpm to throughout the year (Kootenai Tribe of Idaho, 2010). Groundwater and surface water sources would be mixed as needed to achieve desired temperatures necessary for the various species and life stages being produced. Water permits have been obtained from the State of Idaho Department of Water Resources for surface and groundwater withdrawals at the hatchery site (Permit No. 98•07913, 08/31/11).

Kootenai River water would enter a concrete intake structure through two cone-shaped stainless steel screens and be directed to a gravity fed pipeline and conveyed to a pump station at the river's edge. Because the north bank of Kootenai River has a very gradual slope in this location, the intake structure would be located approximately 80 feet from the water's edge to ensure the required water depth above the intake screens during the river's low-flow period in late summer. Seven 12-inch-diameter steel pilings would be installed just upstream of the intake to protect it from damage by floating debris. A small floating dock would be stationed between the seven pilings for service access.

The Kootenai River pump station would consist of a precast concrete circular vault that would be 12 feet in diameter and 27 feet deep. The line from the upstream intake structure would enter the pump station approximately 3 feet above the bottom. Three pumps would operate in the pump station allowing for pump rates based on river flow and demand. Water would be conveyed to the hatchery via a buried pipeline to the influent settling pond at the main hatchery building.

Moyie River water would enter a concrete intake structure located in a deep pool at the northern edge of the project site (Figure 2-3), then conveyed to the pump station and intake fish screens. The top of the intake vault would have a grated opening for maintenance access and a trash rack to keep rocks and large wood material from entering the intake structure. A 20-inch high-density polyethylene (HDPE) pipeline would convey water to the fish screens located just upstream of the pump station. The Moyie River pump station would be constructed on the outer edge of the dike along the edge of the river at the north end of the project site. A majority of the structure would be constructed in the bank. A small portion of the structure would extend beyond the edge of the dike where the pipeline from the intake vault enters the lower portion of the pump station. Because fish from the river would be able to enter the Moyie River intake structure, fish screens would be integrated into the pump station and connected to a pipeline that would transport unintentionally trapped fish back to the river. The configuration of the Moyie River pump station would be similar to that described for the Kootenai River pump station with water pumped to the influent settling pond via buried pipelines.

The water sources available at for the Twin Rivers Hatchery could also provide the opportunity to determine if imprinting juveniles at the Twin Rivers Hatchery can induce returning adult Kootenai white sturgeon to migrate above Bonners Ferry where more favorable spawning habitats exist.

Effluent Treatment Facilities

Hatchery effluent such as cleaning waste and backwash from rearing tanks and water filtration equipment would be treated using an effluent settling pond. The settling pond would be a dual

cell concrete structures (approximately 40 by 60 feet by 9 feet deep) located on the north perimeter of the site. Solids would be removed from the settling pond once a year and they would be disposed of by land application at an approved site. Liquids from the settling process would flow through an underground pipeline to an outfall pipe in the Moyie River. Because of the settling process, the effluent is expected to be very diluted with only trace amounts of food or fecal particles, hydrogen peroxide, and disinfectants used to clean holding tanks (Ireland, 2013 Pers. Comm.). EPA effluent limitation guidelines and standards for aquaculture facilities (40 Code of Federal Register [CFR] 451) apply to the discharge of pollutants from a concentrated aquatic animal production facility that produces 20,000 pounds of fish or more per year. Because the Twin Rivers Hatchery would produce less than 20,000 pounds per year, it is not subject to the effluent limitations guidelines and does not require a National Pollutant Discharge Elimination System Permit (NPDES).

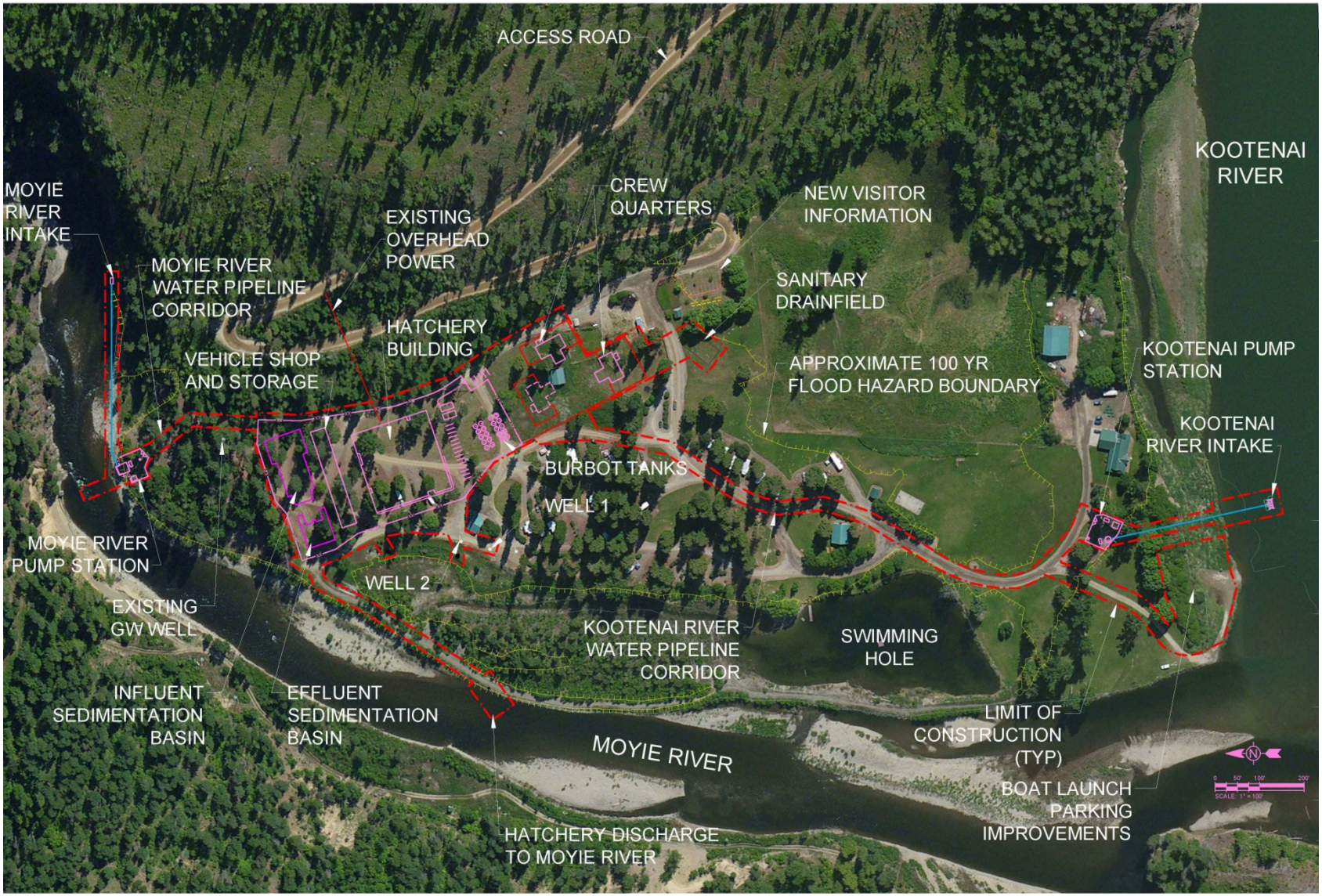
Kootenai Boat Launch and Parking Area

The existing parking lot at the earthen boat launch to the Kootenai River would be enlarged and graveled to accommodate use by Tribal biologists for juvenile out-planting and proposed monitoring and evaluation activities. The boat launch would also be used to receive boats transporting adult broodstock if water levels allow (high spring flows often inundate the Twin Rivers boat launch making it unusable).

Site Drainage

Stormwater run-off from paved areas and rooftops would be directed into vegetated swales or filter strips to remove pollutants.

Figure 2-3: Twin Rivers Hatchery site plan



Fish Transportation

Adult sturgeon captured in the Kootenai River as potential hatchery spawning candidates (broodstock) would first be held in a sturgeon stretcher filled with water on board a Tribal boat, which would transfer the fish to either the existing Tribal Hatchery or the Twin Rivers Hatchery. Stops would be made every 10 minutes to give the fish fresh water. If the fish would be taken to the Twin Rivers Hatchery, the existing boat ramp would be used if water levels allow. Once the boat reached the Twin Rivers boat launch it would be placed on a trailer with the fish still on the boat. A truck would then tow the boat and trailer to the Twin Rivers hatchery where the fish and stretcher would be removed from the boat by a rail system going into the building.

If high water renders the Twin Rivers boat launch unusable, the fish would be taken to the existing Tribal Hatchery and then transferred from the boat to a truck while remaining in the stretcher. The fish would be placed in a covered water-filled fiberglass tank mounted on the truck and then transported the 14 miles east to the Twin Rivers Hatchery. The fish would be given oxygen by a bottled oxygen system and water obtained from the Tribal Hatchery water system prior to transport. At an average speed of 30-40-mph, the travel time from Tribal Hatchery to Twin Rivers Hatchery is approximately 20 -30 minutes.

Once spawning is completed adult broodstock would either be released into the Kootenai River at the Twin River Hatchery location or transported back to the Tribal Hatchery and released.

2.2 No Action

Under the No-Action alternative, BPA would not provide funding to the Tribe to upgrade the existing Tribal Hatchery or construct a new hatchery for the production of Kootenai white sturgeon and burbot. The Tribe would continue to operate the existing Tribal Hatchery at the current location at the existing level of white sturgeon production and continue with the current level of burbot production. There would be no changes to the physical extent or current configurations of the facility.

The Twin Rivers Canyon Resort would also remain unchanged and continue to function as a recreational campground.

2.3 Alternatives Considered but Eliminated from Detailed Study

This section describes alternatives considered and the reasons BPA, in consultation with the Tribe, eliminated the alternatives from analysis in Chapter 3 of this EA.

2.3.1 Natural Production Only

Under the natural production only alternative the existing Tribal Hatchery and the fail-safe program at the Kootenay Trout Hatchery in B.C. would be closed. No fish would be collected for artificial propagation and the existing facility would be converted to other purposes.

Because there has been no measurable success at natural production of a Kootenai sturgeon year-class in the last 50 plus years (Paragamian et al. 2005) and the remnant wild population of sturgeon is in decline, this alternative would likely result in a continued decline of the adult white

sturgeon population in the Kootenai River. This alternative would not aid in the conservation of Kootenai River white sturgeon. Also under the natural production alternative, a large-scale burbot aquaculture program would not be initiated and so would not meet the project purpose (see Section 1.3) because burbot would remain extirpated in the Kootenai River basin. For these reasons the natural production only alternative was eliminated and is not evaluated further in this EA.

2.3.2 Implement Conservation Aquaculture at an Existing Facility

Under this alternative, existing facilities would be modified or expanded to accommodate the increased production of white sturgeon described in the Master Plan and the initiation of the large-scale burbot production. The existing facilities considered for this alternative were 1) the existing Tribal Hatchery near Bonners Ferry and 2) the Fort Steele Hatchery in B.C.

The existing Tribal Hatchery is bound by existing structures to the north and the west, and by the Kootenai River to the south, precluding facility expansion in these directions. The area west of the Tribal Hatchery is Kootenai Allotment 11. While Kootenai Allotment 11 is part of the Kootenai Reservation, it is not owned in its entirety by the Kootenai Tribe. Kootenai Allotment 11 consists of approximately 72% undivided trust interests and 28% undivided fee interests. The Kootenai Tribe owns many of the undivided trust and fee interests. However, there are also a number of undivided trust interests owned by Kootenai Tribal citizens and undivided fee interests owned by Canadian Kootenai (Canadian nationals belonging to either the Kootenai Tribe of Idaho or one of the constituent First Nations' communities of the Ktunaxa Nation Council in B.C.), as well as small undivided fee interests owned by non-Indians. Based on court cases, laws, regulations and policies, the Kootenai Allotments must be managed for the highest and best use and for the benefit of the allottees. Expanding operations further onto Kootenai Allotment 11 past the settling ponds and thereby removing the agricultural production currently in place would likely be inconsistent with highest and best use and benefit to the allottees. For these reasons expansion of the existing Tribal Hatchery was determined not feasible and is not assessed further in this EA.

The Kootenay Trout Hatchery in Fort Steel, B.C. is operated by the Freshwater Fish Society of British Columbia (FFSBC). The FFSBC partners with the Tribe to produce five fail-safe families as part of the Tribe's current conservation aquaculture program. In addition, the Fort Steele facility produces rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*O. Clarkii*), and brook trout (*Salvelinus fontinalis).* According to the FFSBS, the Fort Steele facility is currently operating at capacity so that any additional production of white sturgeon or burbot would require the conversion of existing facilities away from trout production and would likely result in a failure to meet provincial fish stocking commitments (B. Ludwig, BCFFS, pers. comm. with S. Ireland, KTOI, 2010). For this reason, increased production at the Kootenay Trout Hatchery was also determined not feasible and is not evaluated further in this EA.

2.4 Comparison of Alternatives

Table 2-1 compares how well the Proposed Action and the No Action Alternative would meet the project purposes as defined in Chapter 1.

Table 2-1: Comparison of Alternatives to Project Purposes

Decision Factor	Proposed Action	No Action
Act consistently with all applicable laws, regulations, and policies that guide the agency including the federal trust responsibility as embraced by BPA in its Tribal Policy.	Would be consistent with applicable laws, regulations, and policies, including the federal trust responsibility.	Would be consistent with applicable laws, regulations, and policies, including the federal trust responsibility.
Support efforts to mitigate for effects of the FCRPS on fish and wildlife in the mainstem Columbia River and its tributaries pursuant to the Northwest Power Act.	Would further support efforts to mitigate effects of the FCRPS.	Currently supports efforts to mitigate effects of the FCRPS, but would not increase efforts.
Seek to further address obligations under RPA 4.2 of the 2006 Libby Dam BO including directions to provide funding to expand adult holding and spawning capability.	Would increase funds to help expand adult holding and spawning capability	Improvements implemented in 2007/2008 provided additional capacity at the existing Tribal Hatchery, but no additional actions would be implemented to further address Action 4.2 of the 2006 Libby Dam Biological Opinion.
Aid in reestablishing burbot.	Would further aid in reestablishing burbot.	Currently aids in reestablishing burbot, but would not increase effort.

Table 2-2 compares the environmental impacts of the alternatives. This table represents the level of impact that would be expected to result after implementation of appropriate mitigation, listed in each resource section.

Table 2-2: Summary of Potential Impacts of the Proposed Action and No Action Alternative

Environmental Resource	Proposed Action	No Action Alternative
Land Use and Recreation	Upgrades at the Tribal Hatchery would not alter existing land uses or impact adjacent land uses or recreation; impacts would be **low**. Twin Rivers Canyon Resort recreational uses would be temporarily impacted for a season (April-October 2013) of closure during construction; temporary impacts would be low. Ten acres of the 50-acre camping resort would be converted to hatchery facilities; impacts would be **low-to-moderate**.	No land use or recreation changes; **no** impacts.
Vegetation and Wetlands	No vegetation or wetland communities exist at the Tribal Hatchery so upgrades would result in **no** impacts. Twin Rivers Hatchery would remove 66 mature trees, and 5 acres of shrubs and grassy area. Trees and shrubs would be replanted following construction; impacts would be **moderate**. Twin Rivers Hatchery would have a 0.31 acre of permanent wetland loss and 0.41 acre of temporary impact; impacts would be **low.**	N**o** impact to vegetation or wetlands as no new facilities would be constructed.
Floodplains	The Tribal Hatchery is located outside the ***100-year floodplain***; **no** impact. The Twin Rivers Hatchery intake structures would impact 0.01 acres of floodplain; impacts would be **low**.	N**o** impacts on floodplains.
Geology and Soils	With seismic criteria incorporated into design of both hatcheries, impacts from seismic ground shaking would be **low**. Construction soil disturbance, increased sedimentation, vegetation removal and grading would be mitigated with BMPs; impacts would be **low**.	Minor ongoing soil disturbance from recreational use and periodic maintenance activities; **no-to- low** impact**.**
Water Quantity and Water Quality	The Tribal Hatchery does not use groundwater and the water withdraws required for the Twin Rivers Hatchery would be accommodated by local groundwater; impacts would be **low.** Surface water impacts due to construction at either hatchery could result erosion turbidity and inadvertent spill contamination; with BMPs	Existing surface withdrawals at the Tribal Hatchery and groundwater withdrawals at the Twin Rivers Resort would continue and result in **low** groundwater and surface water quantity impacts.

Environmental Resource	Proposed Action	No Action Alternative
	impacts would be **low**. Surface water withdraws for Tribal Hatchery would not change. Twin Rivers Hatchery withdraws from Kootenai and Moyie rivers would be fraction of average water flows; water quantity impacts would be **low**. Effluent releases would be unchanged at Tribal Hatchery. Twin Rivers Hatchery effluent would be filtered through settling ponds and no NPDES permit would be required due to low fish production; impacts would be **low**.	
Visual Resources	Upgrades at the existing Tribal Hatchery would be similar to the existing structures and changes would not be noticeable; impacts would be **low**. During construction, the Twin Rivers Canyon Resort would be closed so visual impacts associated with construction equipment and activity would be **low**. Twin Rivers Hatchery would not be easily visible from the surrounding residents. Recreational users would see facilities partially screened by plantings; the hatchery facility from view. Overall impacts would be **low-to-moderate**.	There would be no visual changes; **no** impact.
Fish and Wildlife	Tribal Hatchery fish impacts would be due to in-water dock expansion work (noise, turbidity, potential spills); appropriate in-work windows and sediment and spill control mitigations would minimize potential impacts. The number of fish caught or released would not change. New crane and fish rail transport would benefit adult sturgeon through less stressful handling. Fish impacts would be **low**. Tribal Hatchery wildlife impacts would be due to construction noise disturbance (no habitat removal, as upgrades are within existing disturbed facility footprint); impacts would be **low** and temporary. Twin Rivers Hatchery in-water work (turbidity, noise, accidental spills) would be minimized with appropriate in-work windows and sediment and spill control mitigations; effluent water changes would be minimal; catching and releasing fish (both during isolation of work areas and for egg and sperm collection) would follow appropriate permit and handing protocols; fish habitat loss would be minor; and impacts of releasing fish into	No new impacts would occur; on-going existing facility operations may cause minor disturbances; impacts would be **low.**

Environmental Resource	Proposed Action	No Action Alternative
	the ecosystem (river ***carrying capacity*** and competition with existing fish) would be managed through tribal monitoring and evaluation and USFW consultation. Effects from transporting adult sturgeon to the Twin Rivers Hatchery from the Tribal Hatchery via truck would be minimized by mitigation measures agreed to in the Tribes Section 10 permit. Production would help recover populations of white sturgeon and burbot in the Kootenai River. Overall fish impacts would be **low-to-moderate**. Twin Rivers Hatchery wildlife impacts would result in some loss, modification, and degradation of habitat through removal trees and vegetation for 10 acre facility footprint. No EA-listed wildlife species would be impacted and tree planting mitigation would lessen habitat impacts. Impacts would be **low.**	
Cultural Resources	No historic properties identified at either hatchery site; the potential for impacts during construction is **low.**	No new ground disturbance; **no** impact.
Socioeconomics and Environmental Justice	Existing temporary lodging could absorb the approximate 20 construction workers; the 4 additional full-time workers would not have little effect on local population and would likely live out of the project area or at houses at the hatcheries; there would be a slight increase in local jobs and local expenditures; impacts would not disproportionately affect ***environmental justice populations***. Overall impacts would be **low.**	There would be no change to ongoing **low** impact due to operation and maintenance activities.
Noise	At the existing Tribal Hatchery heavy equipment would not be needed to make the required upgrades. As a result, noise generated during construction would likely be slightly higher than existing background levels so noise impacts at the existing Tribal Hatchery would be **low**. Because no new sources of noise are included in the planned upgrades at the existing Tribal Hatchery there would not be any change in noise levels. At the Twin Rivers Canyon Resort the closest residences are more than 3,000 feet from the proposed construction zone. Therefore, it is unlikely the temporary construction noise would be discernible at the closest off-site residences and	Ongoing operation and maintenance activities could result in **low** noise impacts.

Environmental Resource	Proposed Action	No Action Alternative
	noise impacts on residents would be **low**. The operation of equipment at the Twin Rivers Hatchery would result in impacts to recreationalists. These impacts would be mitigated by the use of acoustical enclosures that would reduce ambient noise levels to near-background levels and impacts would be **low.**	
Transportation	At both locations, the Proposed Action has the potential to result in direct short-term impacts on transportation from increased traffic generated by construction vehicles carrying construction materials to and from the Tribal Hatchery and the proposed Twin Rivers Hatchery. Potential traffic delays would likely be brief and infrequent. Therefore, transportation impacts during construction at both locations would be **low**. The proposed upgrades at the existing Tribal Hatchery would not result in any additional trips by hatchery staff so traffic impacts would be **low**. The proposed Twin Rivers Hatchery would result in additional daily trips along Highway 2 as staff travel to and from work each day. Because of the infrequent nature of these trips and the relatively higher volume of traffic on area highways, operational traffic impacts would be **low**.	Ongoing operation and maintenance activities would continue to result in **low** transportation impacts.
Air Quality	Construction activities at both hatcheries could temporally increase dust and particulate levels in localized areas; impacts would be **low.** Operation and maintenance would create vehicle emissions from employee traffic and fish transport; impacts would be localized and **low**.	Ongoing maintenance activities would continue to result in **low** air quality impacts.
Climate Change	Long-term ***greenhouse gas*** (GHG) emissions would be a fraction of Council on Environmental Quality's (CEQ) evaluation threshold; impacts would be **low**. The Twin Rivers Hatchery has feasible options to compensate for potential future decreases in water supply caused by climate change; potential impacts of future climate change would be **low**.	Some minor emissions related to ongoing maintenance activities would continue and impacts continue to be **low**.

Chapter 3
Affected Environment, Environmental Consequences, and Mitigation Measures

3.1 Introduction

This chapter evaluates the potential impacts of the Proposed Action Alternative and No Action Alternative on human and natural resources to determine whether either alternative has the potential to cause significant environmental effects. For each resource, the chapter describes the existing environment that could be affected by the alternatives, the potential environmental impacts of the alternatives, and mitigation measures that may help reduce or avoid impacts.

Four impact levels were used—high, moderate, low, and no impact— to describe impacts from construction and operation and maintenance activities. High impacts are considered to be significant impacts. Typically, low impacts can be largely mitigated. Moderate impacts can usually be partially mitigated.

Cumulative impacts are also evaluated. Cumulative impacts are impacts that could occur when considered in addition to other past, present, and reasonably foreseeable future actions. Other such actions in the project vicinity that are considered in the cumulative impact analysis include actions being conducted or proposed by the Tribe in addition to the proposed hatchery. Projects or actions that are considered in the cumulative impacts analysis include the Kootenai River Habitat Restoration Project, the Kootenai River Ecosystem Project, IDFG's fish monitoring/tagging program, ongoing agriculture practices, and nearby forestry activities.

3.2 Land Use and Recreation

3.2.1 Affected Environment

The existing Tribal Hatchery is located on trust lands within the Kootenai Reservation approximately three miles east of Bonners Ferry, ID. The hatchery covers approximately 1.5 acres of cleared land and is bordered by agricultural fields to the west, tribal residences and the Tribe's administrative building to the north, tribal residences to the east, and the Kootenai River to the south. There are no recreation opportunities at the existing Tribal Hatchery.

The proposed Twin Rivers Hatchery would be located on land owned by the United States in trust for the benefit of the Kootenai Tribe of Idaho and is currently used for the Twin Rivers Canyon Resort, a seasonal campground and RV park. While local zoning regulations do not apply to trust lands, the Twin Rivers Canyon Resort area is zoned Rural Residential. The campground has 66 campsites and is open April 1st - October 31st. Services at the campground include showers, restrooms, laundromat, and a convenience store. There are also several day-use recreational activities at the campground, which are listed below.

Recreational amenities at the Twin Rivers Canyon Resort campground include a playground, basketball court, softball diamond, volleyball courts, horseshoe pits, and a day use picnic area with pavilion. The pavilion area is used for weddings, family reunions, and other social gatherings. The Twin Rivers Canyon Resort provides one of four boat launches on the Idaho portion of the Kootenai River and the only launch on the Kootenai River between Bonners Ferry and the Idaho-Montana border. A popular element of the Resort for campers and local residents is the swimming hole. Both the swimming hole and boat launch are important river amenities to the local community because there is very little access for the public along the river as it passes through Boundary County.

Of the 66 campsites at the Twin Rivers Canyon Resort, there are 26 full hook-up sites with direct sewer, water and electrical service; 24 partial hook-up sites with water and electricity; and 16 primitive tenting sites.

3.2.2 Environmental Effects—Proposed Action

Upgrades to the existing Tribal Hatchery would occur within its existing footprint and would be consistent with the existing use of the property. Because there would be no change to the existing land use or impacts to the surrounding land uses or to any recreational facilities, there would be ***no*** land use or recreation impacts due to the upgrades to the existing Tribal Hatchery.

Construction of the Twin Rivers Hatchery would convert approximately 10 acres of the 50 acre site from camping and recreational uses to the hatchery facility. The majority of the Twin Rivers Canyon Resort would remain unchanged and could continue to operate. In addition, the Twin Rivers Hatchery would provide visitors educational information on the history of Kootenai white sturgeon and burbot in the Kootenai River. Because of the small amount of land being converted from campground uses, the land use impacts would be **low**.

During construction the Tribe would close the Twin Rivers Canyon Resort for one summer season (April-October 2013) (Ireland; 2012, Personal Comm.). Day use facilities such as the swimming hole, boat launch, and pavilion would also be closed during this time. The closure of the Twin Rivers Canyon Resort would cause campsite users to relocate to other campgrounds for that summer season. However, there are other RV parks and campgrounds in Boundary County and along the Kootenai River. Boundary County residents who visit the Twin Rivers Canyon Resort for day use activities, like the swimming hole and boat launch, would also need to relocate to different locations during the summer of 2013. Because campers would likely find other overnight locations in the area for the summer and impacts to day-use recreationalists would be for be for one season, temporary construction impacts to recreation would be **low-to-moderate.**

Once completed, the Twin Rivers Hatchery would result in the loss of 30 campsites: 14 partial hookup and all 16 of the tent sites. Usage of the Twin Rivers Canyon Resort over the past several years indicates that the most popular sites have been the full hook up sites for RV campers (Hoisington; Personal Comm., 2012). People who drive their RVs to the Twin Rivers Canyon Resort request those sites first and occupy the partial hook up sites only when all of the full hook-up sites are occupied (Hoisington; Personal Comm., 2012). Over the past several years the tent camping sites have experienced less than 10% occupancy. While some users would likely be impacted by the loss of the tent camping sites, they are a small percentage of the users that

regularly visit the Twin Rivers Canyon Resort (Hoisington, Personal Comm., 2012). Therefore recreational impacts caused by the operation of the proposed hatchery would be **low to moderate**.

3.2.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe would implement the following mitigation measures to avoid or minimize impacts on land use and recreation.

- Post a construction schedule in the local newspapers, public places (such as libraries, post offices, and local government buildings), and at the Twin Rivers Canyon Resort to inform recreationists of construction activities and campground closures.
- Provide contact information of contractor liaisons and Tribal staff at the construction site for any concerns or complaints during construction.
- Install permanent signage at the Twin Rivers Canyon Resort describing efforts to help restore the native fish of the Kootenai River.

3.2.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

The Twin Rivers Hatchery would result in the temporary loss of recreational opportunities for one season during construction, as well as a permanent loss of 30 campsites.

3.2.5 Cumulative Effects—Proposed Action

There are no major construction projects or other development projects planned in the project vicinity that would have potential impacts to existing land uses or recreational activities. Therefore, the contribution of the Proposed Action to cumulative impacts on land use and recreation would be **low**.

3.2.6 Environmental Effects—No Action

Under the No Action Alternative, no improvements to the existing hatchery would be made and the new hatchery would not be built. On-going maintenance activities would continue at the existing hatchery and at the Twin Rivers Canyon Resort but there would be **no** effect on land uses or recreation.

3.3 Vegetation and Wetlands

3.3.1 Affected Environment

The existing Tribal Hatchery has a small patch of grass but the surface is composed primarily of a gravel parking lot with no notable vegetation and no wetland areas. The property is bounded to the south by the Kootenai River and a 30-foot flood control levee. Vegetation along the levee has been cleared to allow for river access made possible by the Tribe’s existing dock.

A field survey was conducted at the Twin Rivers Canyon Resort on August 31, 2011 to identify vegetation and potential wetlands. Potential wetland areas were delineated, as provided in the U.S. Army Corps of Engineers Wetland Delineation Manual and the Western Mountain, Valleys and Coast Region Supplement (USACE, 1987, 2010).

Along both the Kootenai and Moyie Rivers, the ***ordinary high water mark*** for each river was surveyed by TetraTech and Associated Earth Sciences (2012b).

Figure 3-1: View looking toward main area to be developed for hatchery buildings.

Upland

Upland vegetation at the Twin Rivers Canyon Resort is comprised predominantly of coniferous trees, turf grasses, and weedy forbs. Because the site is used as a campground, vegetation on the property is managed for that use with large areas mowed of grass lawns. Vegetation is not dense but rather patches of trees and shrubs occur across the site, mostly to provide privacy between the individual campsites (Figure 3-2). The most common trees are Douglas fir (*Pseudotsuga menziesii*), ponderosa pine (*Pinus ponderosa*), western red cedar (*Thuja plicata*), and black cottonwood (*Populus trichocarpa).* Common shrubs include oceanspray (*Holodiscus discolor*), mock orange (*Philadelphus lewisii*), and rose (*Rosa spp.).*

Figure 3-2: Looking northeast along Kootenai River intake pipeline route.

Wetlands/Riparian

Based on the results of the field survey conducted on August 31, 2011 and review of the National Wetland Inventory (NWI) database, three wetland areas were identified: a ***palustrine emergent marsh (PEM)*** along the Moyie River shoreline on the west side of the site (West Wetland), a ***palustrine scrub-shrub wetlands (PSS)*** on the south side of the site (South Wetland), and another PSS wetland on the east side (East Wetland) (Figure 3-3). The East Wetland is located well outside the proposed construction activities so are not included in this analysis. In addition, the Kootenai River, Moyie River, and the swimming hole are mapped in the NWI database as ***riverine wetlands (POW)***.

Figure 3-3: South and west wetlands on the Twin Rivers property.

The South Wetland is about 4.64 acres and extends across the southern boundary of the Twin Rivers property along the Kootenai River. Reed canarygrass (*Phalaris arundinacea*) dominates the area along the river and a band of red-osier dogwood (*Cornus sericea*, or *C. stolonifera*) grows just upland of the river (Figure 3-4). Beyond the red-osier dogwood, the land slopes up to the upland terrace that is landscaped and maintained as a grassy picnic area.

The West Wetland is dominated by Alder (*Alnus* spp.) and willows (*Salix* spp.) along with a mix of native and non-native forbs and grasses, including knapweeds (*Centaurea* spp.), goldenrod (*Solidago canadensis*) common tansy (*Tanacetum vulgare*), and reed canarygrass (Figure 3-5).

Figure 3-4: Vegetation found in the South Wetland

Rare, Threatened, and Endangered Plant Species

The only plant species listed under the ESA known to occur in Boundary County is the whitebark pine (*Pinus albicaulis*). The whitebark pine occurs in the mountains of the Western United States and Canada, specifically in areas of the Sierra Nevada, the Cascade Range, the Pacific Coast Ranges, and the northern Rocky Mountains. The whitebark pine is typically the highest-elevation pine tree of these mountains, marking the tree line. Whitebark pine occurs at higher elevations than the existing and proposed hatcheries and was not observed during the vegetation survey.

Figure 3-5: Vegetation found in the West Wetland

3.3.2 Environmental Effects—Proposed Action

Uplands

Improvements at the existing Tribal Hatchery would not result in the loss of any existing vegetation and therefore, there would be **no** impact on vegetation.

The Twin Rivers Hatchery would be constructed in the more wooded northern portion of the Twin Rivers Canyon Resort in an area that is currently occupied by campsites or grass fields (Figure 3-1). Construction of the facility would require the clear an approximate 10 acre area. A total of 66 trees would be removed: 20 western red cedars, 11 larches, 9 grand firs, 5 Douglas firs, 1 fir, 7 white pines, 10 ponderosa pines, 2 black cottonwoods, and 1 poplar. In addition, shrubs and grasses in the area would also be removed. The loss of 66 trees would be mitigated by the planting of 100 trees around the site following completion of the hatchery facility. In addition, soil disturbance during construction activities could cause the spread or establishment of noxious or invasive plant species (knapweed, tansy, reed canarygrass). Although disturbed areas would be developed or revegetated and mitigation measures would help control potential weed establishment or spread, the overall impacts on upland vegetation would be **moderate** until the newly planted trees reach maturity.

Wetlands/Riparian

There would be **no** impact to wetlands due to the upgrades at the existing Tribal Hatchery because there are no wetlands on site.

At the Twin Rivers Hatchery site, the West Wetland would be avoided and would not be impacted, but the South Wetland, which is about 4.64 acres, both permanent and temporary impacts would occur (Figure 3-6).

The Kootenai River intake would require about 0.09 total acres of trenching through the South Wetland for pipe placement (Table 3-1). Only an estimated 0.02 acres of impact would be permanent due to the addition of the pipe. The majority of pipeline impacts on wetlands would be temporary due to the trenching and because the pipeline would not be expected to affect the hydrology of the wetland, reed canarygrass would likely re-establish atop the pipeline route and the area would continue to provide some wetland functions (e.g., biological support).

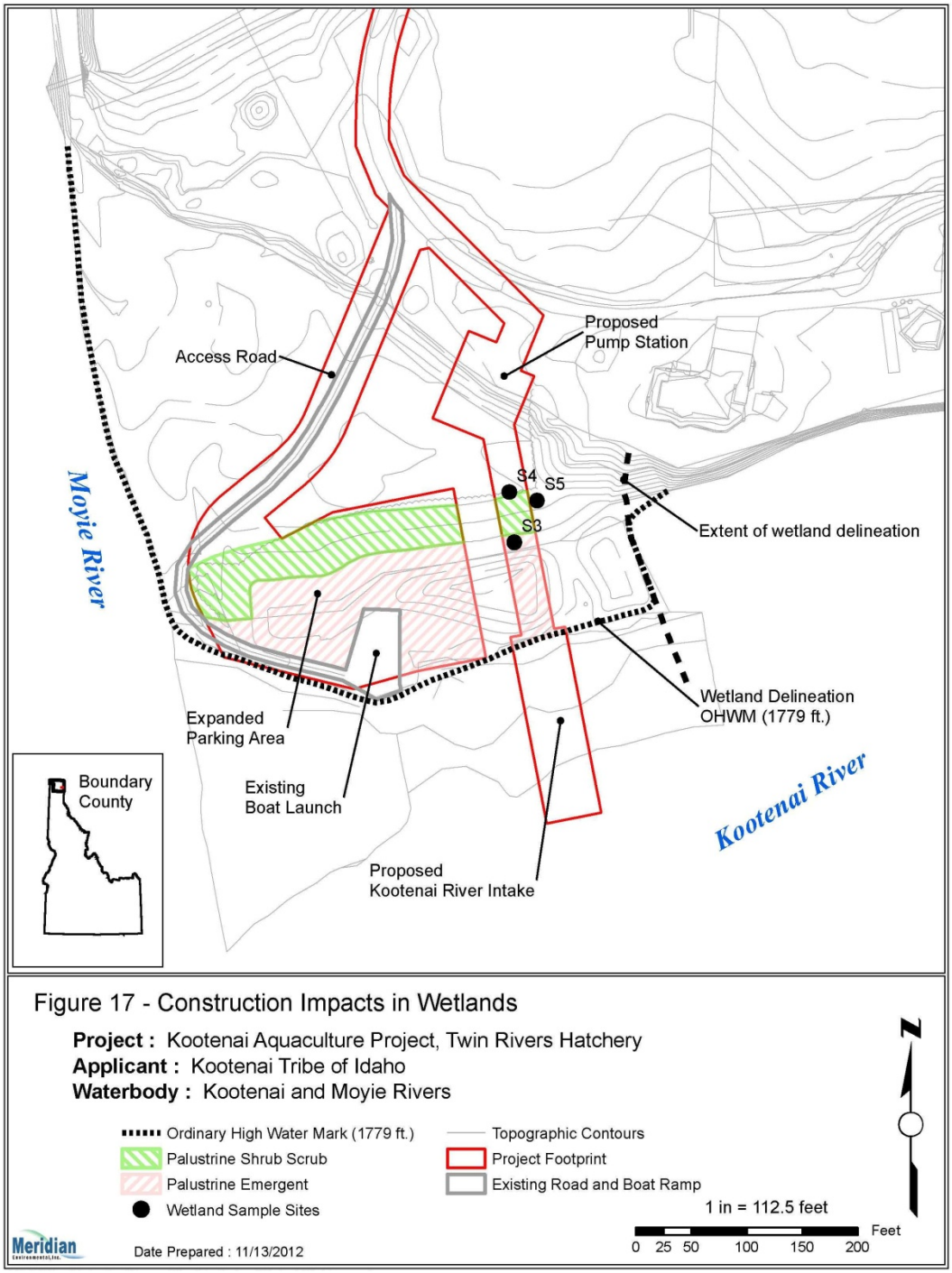
The construction of the boat launch parking area would impact a total of about 0.63 acres of the 4.64 acre South Wetland (15.5%) (Figure 3-6, Table 3-1). About 0.29 acres would be permanently impacted by the gravel parking lot and would no longer provide the wetland functions it currently provides. The remaining 0.34 acres would be disturbed and cleared. This area would be reseeded with herbaceous wetland species such as red-osier dogwood and willow, and therefore would likely continue to provide wetland functions.

Table 3-1: Acreage of impact in South Wetland

Project Feature	Construction Activity	Area of Disturbance (acres)		
		Temporary	Permanent	Total
Kootenai Pipeline	Trench and backfill	0.07	0.02	0.09
Boat Ramp Access/Parking Area	Clear, grade, surface with gravel	0.34	0.29	0.63
Total		0.41	0.31	0.72

Because the hatchery would impact less than an acre of the 4.64 acre South Wetland that is degraded and dominated by non-native reed canarygrass and would not impact the other numerous wetlands surrounding the site, overall impacts to wetlands would be **low**. Prior to any construction activities, the Tribe would obtain a Section 404 Clean Water Act permit for impacts on wetlands under the jurisdiction of the U.S. Army Corps of Engineers, as appropriate.

Figure 3-6: Area of impact to the South Wetland



3.3.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe would implement the following mitigation measures to avoid or minimize impacts on vegetation and wetlands.

- Plant 100 new trees in and around the Twin Rivers Resort and Hatchery to replace the trees that would be removed.
- Restrict activity and traffic to construction areas to limit unnecessary disturbance of native plant communities and reduce the spread of non-native species and noxious weeds.
- Identify clearing limits on all construction drawings and on site using high-visibility construction fencing.
- Revegetate temporarily disturbed areas (including wetlands) with appropriate native species using seed mixes that meet the requirements of federal, state, and county noxious control regulations and guidelines.
- Take actions to control potential noxious weed infestations (treat known infestations before ground disturbance, ensure construction equipment is free of weeds and weed seeds, clean equipment and vehicles after working in infested areas, maintain weed-free staging areas, implement post-construction noxious weed as-needed).
- Implement BMPs during construction to minimize adverse effects on wetlands (e.g., limit wetland disturbance areas; flag or stake wetland boundaries; refuel machinery and store fuels away from wetlands; develop and implement erosion and sedimentation control plan).

3.3.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

After mitigation measures have been implemented, up to 0.31 acre of a 4.64 acre emergent wetland would be permanently affected under the Proposed Action.

3.3.5 Cumulative Effects—Proposed Action

While the Proposed Action would contribute to cumulative impacts on wetlands along the Kootenai River, implementation of the mitigation measures described in Section 3.3.3 would reduce these impacts. In addition, because the impacted wetland area contains largely non-native plant species and offers little habitat value, cumulative impacts on wetlands from the Proposed Action would be **low**.

3.3.6 Environmental Effects—No Action

Under the No Action Alternative, improvements to the existing Tribal Hatchery would not be made. On-going maintenance activities would continue without any effect on existing vegetation. The proposed Twin Rivers Hatchery would not be built. Therefore, there would be **no** impacts on vegetation or wetlands.

3.4 Floodplains

3.4.1 Affected Environment

A floodplain is an area near a river or a stream that floods when the water level reaches flood stage. The 100-year floodplain is used and is defined as any area determined by the Federal Emergency Management Agency (FEMA) to have a 1% chance of flooded during a given year.

The Tribal Hatchery is bordered by the Kootenai River to the south and there is a flood control levee between the hatchery and the river. The height of the levee is 1,780 feet above sea level and as a result, FEMA identifies the area as outside the 100- year floodplain (FEMA, 1982a).

The Twin Rivers Canyon Resort is bordered by the Kootenai River to the south and the Moyie River to the west. The most recent FEMA map showing floodplains in this area was issued August 2, 1982 and shows the entire project area as within the 100-year floodplain (FEMA, 1982b). During the project design process a site survey was conducted that evaluated the elevation of project area. The site survey showed that the elevation of most of the Twin Rivers Canyon Resort is located at elevation of 1,786 feet, which is above the 100-year floodplain (Tetra Tech, 2012b) (Figure 2-3).

3.4.2 Environmental Consequences—Proposed Action

Because the Tribal Hatchery is not located within floodplain boundaries, the proposed upgrades at the hatchery would have **no** impact on floodplains.

The only portions of the Twin Rivers Hatchery that would be constructed in the 100-year floodplain are the two intake structures along the Moyie and Kootenai Rivers, a total of about 0.01 acres. Because of the relatively small footprint of these structures compared to the size of the rivers, these structures are not expected to alter the base flood levels for either river (Tetra Tech, 2012b). All but the two intake structures would be located outside the 100-year floodplain and so the impacts on floodplains associated with construction activities or the placement of new structures would be **low**.

Water discharges from the proposed hatchery to the Moyie River are not anticipated to increase the flow of the Moyie or Kootenai Rivers beyond existing high flows. Therefore, there would be no additional potential for flooding due to the water discharges.

3.4.3 Mitigation—Proposed Action

In addition to general mitigation measures identified for vegetation and wetlands, geology and, water quantity and quality, in Sections 3.3.3, 3.5.3, and 3.6.3, the following mitigation measures have been identified to avoid or minimize potential impacts to floodplains from the Proposed Action:

- Deposit and stabilize all excavated material not reused in an upland area outside of floodplains.
- Install erosion-control measures prior to work in or near floodplains.
- Avoid construction within floodplains to protect floodplain function, where possible.

3.4.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Two intake structures would be located within the 100-year floodplain.

3.4.5 Cumulative Impacts—Proposed Action

Construction of the Twin Rivers Hatchery would include the placement of two intake structures in the 100-year floodplain. Over the past two years, the Tribe's Kootenai River Habitat Restoration Program (see Section 3.8.5) has created and restored new habitat for Kootenai white sturgeon one mile downstream of the Twin Rivers Canyon Resort. This restoration work has reconnected more than two miles of the Kootenai River to its historical floodplain. The placement of two intake structures at the Twin Rivers Hatchery would impact the 100-year floodplain but this impact would be less than the beneficial impacts on floodplains resulting from the Kootenai River Habitat Restoration Program projects. Therefore, the cumulative impact of the Proposed Action and other past, present, and reasonably foreseeable projects on floodplains would be **low**.

3.4.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, the existing hatchery would not be modified and there would be no changes at the Twin Rivers Canyon Resort because the Twin Rivers Hatchery would not be built. There would be **no** impacts on floodplains and no increased risk of flooding associated with the No Action Alternative.

3.5 Geology and Soils

3.5.1 Affected Environment

Regional Geology

Both the existing Tribal Hatchery and the Twin Rivers Hatchery site are mapped on the Boundary County soil survey, which is within the Northern Rocky Mountains Geographic Province. Between 100,000 and 11,000 years ago the Cordilleran Ice Sheet covered most of the valley areas in the region with only the higher mountain peaks exposed. Much of the surface materials and topography existing today resulted from these glacial episodes. The craggy, jagged peaks were eroded by alpine glaciers, and mountain valleys were filled with ***moraine*** and ***outwash deposits***. The continental ice sheet extended as far south as Coeur d'Alene Lake, leaving thick deposits of ***glacial till*** and silt as well as ***erratic boulders*** transported to the area and deposited as the ice melted. The continental glaciers also scoured some areas, leaving slick, polished ***bedrock*** exposed at the surface. (NRCS, 2005)

Seismic Faults

There are no known ***seismic faults*** in Boundary County and the Boundary County Comprehensive Plan states that the county is included within Seismic Zone 2 as delineated in the Uniform Building Code. Seismic Zone 2 indicates that a moderate damage risk could be experienced in this area should an earthquake occur (Boundary County, 2008).

Local Surface Soils

At the existing Tribal Hatchery the soils are predominantly silt loams of the Farnhamton series, a very deep and moderately well drained soil typically found on natural levees and floodplains. This

soil is used mostly for the production of wheat, barley, oats, alfalfa, clover seed, and pasture (Weisel 2005).

A soil survey conducted at Twin Rivers Canyon Resort found two soil types, native sands and silts and deeper native gravel with sand soil (Strata Inc., 2010). The native sands and silts found in the upper 3 to 9 feet were likely deposited during seasonal flooding and sediment deposition. The deeper native gravels were found from 3 to 18 feet below the surface and are likely the result of glacial outwash deposits combined with sediments from the Moyie River deposited during flood events.

Steep Slopes

The Tribal Hatchery site is on level ground with no areas of steep unstable slopes.

The Twin Rivers Hatchery site is level with no areas of steep unstable slopes. The site is located at the base of a steep slope and is accessed via an unpaved road that winds down approximately 500 feet from the plateau on which Moyie Springs, Idaho is located.

3.5.2 Environmental Effects—Proposed Action

The Kootenai Tribe of Idaho has adopted the construction standards contained in the Uniform Building Code published by the International Conference of Building Officials and the codes and standards of the American Public Works Association, which must be followed in the design and construction of both the upgrades at the existing Tribal Hatchery and at the proposed Twin Rivers Hatchery (Kootenai Code, Chapter 14 [Kootenai Building Safety Act]). In doing so, the Kootenai Tribe standards are identical to Boundary County standards and the Tribe and County work closely to ensure building safety. Because the appropriate seismic criteria would be incorporated into the design and subject to design review, impacts from seismic ground shaking would be **low**.

Construction activities at both existing Tribal Hatchery and the Twin Rivers Hatchery sites would result in direct and indirect impacts to soils. Direct impacts would occur as a result of direct soil disturbance, leading to increased dust and the loss of soils (through removal, erosion, or dust), or soil compaction. Indirect impacts could occur as a result of temporary vegetation removal and grading that could lead to increased erosion over time. Loss of plant cover and movement of soil could disrupt biological functions (due to soil disturbance or vegetation removal). New facilities would require removal and compaction of soils for foundations, parking lots, and other impermeable areas, which would essentially remove those soils from production during the life of the project. Erosion would occur if soils were left bare or were slow to revegetate, including nutrient retention and recycling, and thus could reduce productivity, at least temporarily. Mitigation measures would help lessen erosion and soil loss impacts. With the implementation of BMPs discussed in Section 3.5.3, direct impacts to geology and soils would be **low**.

Indirect impacts from project construction could include minor sheet erosion and the creation of some small channels. If soils were left bare or were slow to revegetate, minor gullying and other erosion could occur. Eroded soils could enter nearby surface waters and degrade water quality. With the implementation of BMPs discussed in Section 3.5.3, indirect impacts would be **low**.

Wastewater disposal from the proposed hatchery office building and the on-site residences would be disposed of by expanding the existing septic system and constructing new septic systems. Two soil types, native sands and silts and deeper native gravel with sand soil, are found at the Twin

Rivers Canyon Resort (Strata Inc., 2010). The Twin Rivers Canyon Resort's existing septic system has worked successfully with these soils. The Tribe would submit an application to Panhandle Health District for system expansion**.** With the implementation of proper design considerations, the potential impact on geology and soils would be **low**.

3.5.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe would implement the following mitigation measures to avoid or minimize impacts on geology and soils.

- Prepare and implement an Erosion and Sedimentation Control Stormwater Pollution Prevention Plan for construction activities to minimize erosion and soil loss (e.g., use silt fences, straw bales, interceptor trenches or other perimeter sediment management devices that would be maintained as necessary throughout construction).
- Use proper seismic and septic system location-specific designs.
- Use appropriate shoring for all excavation conducted during facility construction as required by applicable federal, tribal, state and local regulations.
- Conduct peak construction activities during the dry season (between June 1 and November 1), as much as possible, to minimize erosion, sedimentation, and soil compaction.
- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance, where practicable.
- Design and construct access roads to minimize drainage from the road surface directly into surface waters and direct sediment-laden waters into vegetated areas.
- Reseed disturbed areas and monitor seed germination and implement contingency measures as necessary until stabilization has been achieved.
- Inspect and maintain access roads and other facilities after construction to ensure proper function and nominal erosion levels.
- Implement dust abatement during construction.

3.5.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Although implementation of construction BMPs and mitigation would reduce the potential for increased erosion, some increased levels of temporary erosion would be expected during and immediately after construction. Long-term impacts remaining after mitigation would be limited to normal sedimentation from paved surfaces, soil compaction, and some erosion of formerly vegetated ground.

3.5.5 Cumulative Effects—Proposed Action

The other activities that can be expected to cumulatively affect geology and soils in the Kootenai River basin are farming and grazing and activities implemented through the Tribe's Kootenai River Habitat Restoration Program. Because of the small area being disturbed and the

implementation of BMPs and mitigation measures described in Section 3.5.3, the contributions to cumulative geology and soil impacts would be **low**.

3.5.6 Environmental Effects—No Action

Under the No Action Alternative, the existing Tribal Hatchery would not be modified and the proposed Twin Rivers Hatchery would not be built, so there would be **no** impacts on geology and soils or increased risk from seismic activity.

3.6 Water Quantity and Water Quality

3.6.1 Affected Environment

Groundwater

One of the main geographic features of Boundary County is the Purcell Trench, a large valley that runs north-south through the center of the county. The trench originates near the Canadian border and runs south into Bonner County. Boundary County's main aquifers are located beneath this trench and receive their water from precipitation that falls in the mountains and on the valley floor and then percolates downward and flows slowly toward the Kootenai basin. In the east-central portion of the county where the Kootenai River has eroded its valley through the Cabinet-Purcell Mountain Range, groundwater likely flows southward from the Purcell Range and northward from the Cabinet Range (Boundary County, 2008).

Various geologic features of the Purcell Trench interrupt this regional groundwater flow and separate the basin into smaller subbasins that have locally different groundwater flow patterns. These subbasins may have slightly different aquifers, water tables and water chemistry.

The Moyie River Groundwater Basin includes all of the groundwater that follows the course of the Moyie River, which flows southward out of Canada to its confluence with the Kootenai River near Moyie Springs, Idaho. The Moyie River occupies a narrow canyon formed by the Moyie Fault, which has fractured the Pritchard Formation and made the rock more susceptible to erosion. The Moyie River follows this belt of fractured rock and has built a narrow floodplain that consists primarily of coarse gravel and boulders. The gravel yields groundwater at flow rates of 35 or more gallons per minute (gpm) at very shallow depths (50 feet or less). The aquifer is recharged by runoff from the mountains that border the valley, as well as by infiltration from the river itself. A few wells obtain their water from the Pritchard Formation at depths of more than 100 feet, such as the public water systems of Eastport, ID, Good Grief, ID, and the Feist Creek Resort in Bonners Ferry, ID. The Idaho Department of Environmental Quality (IDEQ) does not differentiate the Moyie River underground water basin from the Kootenai Valley Flow System (Boundary County, 2008).

Surface Water

Moyie River

The Moyie River originates in southeast B.C. It flows northeast and east, collecting many headwater streams, before turning south and entering Moyie Lake. The river exits Moyie Lake to the south, flowing south and west by the village of Yahk, B.C. and Yahk Provincial Park before entering Idaho at Kingsgate, B.C. and Eastport, Idaho.

In Idaho, the Moyie River and its tributaries lie almost entirely within Kaniksu National Forest and flows nearly due south, emptying into the Kootenai River near Moyie Springs, Idaho, several miles east of Bonners Ferry. Near its mouth, the Moyie River tumbles over Moyie Falls. Near the falls is Moyie Dam, constructed in 1949. The average annual flow in the lower Moyie River is 680 cfs, with monthly average flows ranging from 96 cfs (September) to 3,050 cfs (May)

Figure 3-7: Moyie River at the Twin Rivers Canyon Resort

Kootenai River

The Kootenai River is the second largest Columbia River tributary in terms of runoff volume and the third largest in terms of watershed area (10.4 million acres; approximately 16,180 square miles) (Knudson 1994). Nearly two-thirds of the Kootenai River's 485-mile-long channel and almost 70% of its watershed is located within B.C. The Montana portion of the subbasin makes up about 23% of the watershed, while the Idaho portion is about 6.5% (Knudson, 1994).

From headwaters in southeastern B.C. the Kootenai River flows southward into northwestern Montana where Libby Dam, forming Lake Koocanusa, impounds it. Downstream from Libby Dam, the river flows into Idaho, and then turns north, entering B.C. and Kootenay Lake. The river exits the West Arm of Kootenay Lake at the town of Nelson and flows westward to its confluence with the Columbia River at Castlegar, B.C. The average annual flow in the lower Kootenai River (below Libby Dam) 13,824 cfs, with monthly average flows ranging between 6,810 (March) and 32,600 cfs (June).

Figure 3-8: Kootenai River at the Twin Rivers Canyon Resort

3.6.2 Environmental Effects—Proposed Action

The proposed project could potentially affect water quantity and quality due to withdraws for hatchery operations, sedimentation and turbidity from upland and in-water work construction, inadvertent spills of toxic substances (e.g., oil, gasoline, chlorine), and/or hatchery effluent.

Groundwater

The existing Tribal Hatchery does not use groundwater and would not require groundwater for the proposed upgrades so there would be no impacts on groundwater.

At the Twin Rivers Hatchery, the volume of water needed for hatchery operations would vary based on the needs of the various life stages for the sturgeon and burbot being produced there. The Tribe has estimated that the Twin Rivers Hatchery would need between 170 to about 1,250 gpm to accommodate all of their operations throughout the year (Kootenai Tribe of Idaho, 2010). The Tribe would mix water from groundwater and surface water sources as needed as a means of achieving the temperatures necessary for the various species and life stages being produced. The Tribe secured a water permit from the State of Idaho Department of Water Resources approving their request for surface and groundwater withdrawals necessary to operate the Twin Rivers Hatchery on August 31, 2011 (Permit No. 98•07913). The permit is for 4 cubic feet/ second (about 1,800 gpm).

In April 2010, three test wells were installed at the Twin Rivers Hatchery site to determine if the existing aquifer was sufficient to provide the amount of groundwater necessary for juvenile sturgeon and burbot production. Groundwater well #1 had a maximum pumping rate of roughly 83

gpm due to the minimal water column (16 feet) remaining over the top of the well at that pumping rate. Groundwater well #2 and Groundwater well #3 had a significant amount of water column remaining above their well screen assemblages at pumping rates of 224 and 325 gpm, respectively (Lindsay, 2010). Additional analysis showed that Groundwater well #2 and Groundwater well #3 may be capable of being pumped concurrently at a rate of approximately 400 gpm (combined rate of 800 gpm) and still have significant available water column left to account for seasonal groundwater fluctuations and potential well interference effects, assuming that the well pumps are installed near the top of the well screen assemblages (Lindsay, 2010).

The expected groundwater withdrawals to meet hatchery demand have the potential for direct impacts on the existing aquifer by lowering the groundwater levels in the vicinity of the proposed hatchery. Although periodic pumping during peak hatchery demand could temporarily result in lowering groundwater levels on a localized basis, the depth of the water column over each of the two wells when they are pumped at a rate of 400 gpm suggests the amount of water that would be pumped by each well would not cause a long-term decline in groundwater levels. Therefore impacts on the regional groundwater supply would be **low.**

Surface Water

The ground disturbance at the Tribal Hatchery would have a limited impact because the hatchery grounds have previously been developed and in-water work would be limited to driving one 16-inch piling to support the new dock extension. Work at the proposed Twin Rivers Hatchery would be more extensive, with a new ten acre disturbance footprint in addition to access road improvements, and in-water work for intake and effluent structures and pipes. Potential turbidity impacts would also be dependent on weather conditions (if storm events occurred during construction or prior to stabilization of disturbed soils). Several factors would minimize the potential for water quality impacts at both sites during construction; the hatchery sites are relatively flat, most construction would occur during the dry season, and sediment control BMPs would be implemented to minimize the potential for runoff to enter surface waters. For in-water work, appropriate work areas would be isolated during construction and BMPs implemented to lessen potential turbidity. Because of these conditions, the potential for temporary impacts on surface water quality from construction would be **low-to-moderate** depending on weather conditions.

Inadvertent spills of fuel or oils from construction equipment or substances stored on site for hatchery operations could impact water quality if the spills occurred in the water or reached water from upland areas. With appropriate prevention and spill control BMPs, the potential for inadvertent spills and the impact if they did occur would likely be **low**.

The Tribal Hatchery relies on water withdrawals from the Kootenai River. Upgrades at the hatchery would not increase the amount of water withdrawn and the facility would continue to be compliant with its existing water permit. For the proposed Twin Rivers Hatchery, water withdrawals from the Moyie and Kootenai rivers would be new, with a total rate not to exceed 4 cubic feet per second (cfs) from both rivers and on-site wells. Tables 3-2 and 3-3 show the average monthly discharges for the Kootenai and Moyie Rivers. Because the maximum amount of water that can withdrawn by the Tribe under the conditions of their water permit is a small fraction of the average monthly water flowing in the Kootenai River (13,824 cfs average monthly flow, ranging between 6,810 and 32,600 cfs) and Moyie River (680 cfs average annual flow, ranging from 96 to

3,050 cfs), impacts on water quantity in the Moyie and Kootenai Rivers due to withdrawals for hatchery operations would be **low**.

Table 3-2: Kootenai River, Average monthly discharge (01/01/1930 to 09/30/2011)

Jan	Feb	Mar	Apr	May	Jun
8,760	7,930	6,810	12,900	28,000	32,600

Jul	Aug	Sep	Oct	Nov	Dec	Average
18,400	10,900	8,800	9,590	10,500	10,700	13,824

Source: USGS Gage 12305000 (Leonia, ID)

Table 3-3: Moyie River, Average monthly discharge (01/01/1930 to 12/31/2011)

Jan	Feb	Mar	Apr	May	Jun
167	178	301	1,270	3,050	1,940

Jul	Aug	Sep	Oct	Nov	Dec	Average
466	134	96	138	218	207	680

Source: USGS Gage No. 12306500 (Eastport, ID)

Effluent released from the Twin Rivers Hatchery would be generated by cleaning waste and backwash from rearing tanks and water filtration equipment. This water would enter a settling pond to allow solids to settle out before effluent is discharged to the Moyie River. Hatchery effluent could contain some contaminants that have the potential to impact receiving waters if the concentrations exceed ambient water quality standards or otherwise adversely affect aquatic biota or recreational opportunities. EPA established effluent limitation guidelines and standards for aquaculture facilities in June, 2004 (40 CFR 451). EPA's regulation applies to the discharge of pollutants from a concentrated aquatic animal production facility that produces 20,000 pounds or more per year of aquatic animals in a flow-through or recirculating system. The planned total releases at the Twin Rivers Hatchery are shown in Table 3-4. Because the hatchery would produce less than 20,000 pounds of fish per year a NPDES permit is not required.

To minimize the potential for high concentrations of contaminants entering the Moyie River, the Tribe would follow standard hatchery equipment and facility sanitation and fish health maintenance guidelines. Therefore, the potential for water quality impacts would be **low**.

Table 3-4: Annual Fish Production Biomass at Twin Rivers Hatchery

	Number of Juveniles	Age	Weight (g)	Total Release Weight (kg)	Total Release Weight (lbs.)
Burbot-Minimum Production Levels by weight	125,000	6 months	10	1,250	2,750
Burbot-Maximum Production Levels by weight	62,500 48,000	6 months 1 year	10 100	625 4,800	1,375 10,560
Burbot Totals				1,250-5,425	2,750-11,935
Sturgeon-Minimum Production Levels	18,000[1] 36,000	1-year+ <1-year	45[2] 4	828 144	1,821 317
Sturgeon-Maximum Production Levels	18,000 36,000	1-year+ <1 year	100[3] 4	1,800 144	3,960 317
Sturgeon Totals				972-1,656	2,138-4,277
Rainbow Trout[4]	1,100			500	1,100
Total Production				2,722-7,581	5,988-17,312

[1] Annual release expected to be 15,000-20,000. 18,000 used as an average annual release
[2] 2010 average fish weight
[3] Weights of 1-year old fish if an accelerated growth rearing strategy is used
[4] Rainbow trout used as food for burbot and white sturgeon. No rainbow trout would be released from the hatchery.

3.6.3 Mitigation—Proposed Action

The Tribe will implement the following measures to avoid or minimize impacts on water quantity and water quality before and during construction:

Before work commences, the following actions will be completed where applicable.

- Prepare and implement a Stormwater Pollution Prevention Plan for construction activities to minimize erosion and soil loss (e.g., use silt fences, straw bales, interceptor trenches or other perimeter sediment management devices; maintain as necessary throughout construction).
- Implement measures to prevent stockpile erosion during rain events (e.g., surround piles with compost berms, cover piles with impervious materials or other equally effective methods).

- Implement any mitigation measures specified in the Clean Water Act Section 404 permit(s) issued by the U.S. Army Corps of Engineers and the Section 401 water quality certification issued by Idaho Department of Environmental Quality.
- Follow the Idaho Department of Environmental Quality's Catalog of Stormwater Best Management Practices for Idaho Cities and Counties (IDEQ, 2005).
- Prevent construction vehicles from tracking sediment offsite or onto roadways.
- Install removable pads or mats to prevent soil compaction in all temporary construction access points and staging areas in riparian or wetland areas.
- Identify construction and staging areas with orange plastic fencing or similar methods to delinate disturbance areas
- Minimize staging areas to the size necessary to practically conduct the work and locate in previously disturbed areas at least 150 feet from any stream or wetland.
- Develop and implement a Spill Prevention, Control and Countermeasure Plan to minimize the potential for spills of hazardous material and protect public safey, which includes provisions for storage of hazardous materials and refueling of construction equipment outside of riparian zones, a spill containment and recovery plan, and notification and activation protocols.
- Inspect all equipment to ensure it is free of oil, hydraulic fluid, and diesel fuel leaks.
- Locate vehicle staging, cleaning, maintenance, refueling, fuel storage areas, and sanitary facilities, such as chemical toilets, at least 150 feet from streams or wetlands.
- Clean all equipment operated instream before beginning operations below the bankfull elevation to remove all external oil, grease and dirt.
- Diaper any stationary power equipment (e.g., generators) operated within 150 feet of any stream, water body or wetland to prevent leaks.
- Store all fuel and lubricants, as well potentially hazardous materials necessary for hatchery operations, in containers and areas that conform to applicable Tribal, federal, state and local regulations.
- Isolate in-water work areas (Kootenai and Moyie intake sites, and pipelines) using bulk bags, floating silt curtains, and sheet pile cofferdams around the work areas.
- Fill bulk bags with river sand and gravels from an adjacent upland source.
- Ensure that the silt curtains, bulk bags, and sheet pile cofferdams remain in place for the duration of work. Remove to introduce free flowing water in a controlled manner and at low velocities (approximately 3 feet/second) to minimize turbidity.

3.6.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Groundwater pumping at the Twin Rivers Hatchery during peak demand could result in some low, temporary impacts on groundwater supply. Construction activities could result in temporary and

localized impacts on surface water quality. Some low level increases of contaminants would enter the Moyie River through treated effluent.

3.6.5 Cumulative Effects—Proposed Action

Several actions occurring along Kootenai River have had and will continue to have an effect on water quality and quantity for both surface and groundwater including the Tribe's ongoing Kootenai River Habitat Restoration Program.

As discussed above, the Proposed Action would result in impacts on groundwater supply and water quality and would have a **low** cumulative impact on water quality and quantity impacts within the Kootenai basin.

3.6.6 Environmental Effects—No Action

Under the No Action Alternative, the Tribal Hatchery would continue to withdraw surface water from the Kootenai River. The Tribal Hatchery would also continue discharging effluent to the Kootenai River. While the surface water withdrawal and effluent discharge has a small effect on water quantity and quality in the Kootenai River, the amount of water withdrawn and discharged under the No Action Alternative would remain unchanged and the impacts to surface waters would remain **low.**

3.7 Visual Resources

3.7.1 Affected Environment

Visual Setting

The existing Tribal Hatchery covers approximately 1.5 acres and includes offices; crew quarters, storage sheds, and a low single story building housing spawning facilities and rearing tanks (see Figure 2-2). The Tribal Hatchery is bordered by agricultural fields to the west, tribal residences and the Tribe's administrative building to the north, tribal residences to the east, and the Kootenai River to the south.

The Twin Rivers Canyon Resort site is located at the lower end of the Kootenai River Canyon and has views of the Kootenai and Moyie Rivers and of the Cabinet Mountains to the south. The campground has 66 campsites and operates from April 1st - October 31st. The campground setting includes areas of maintained grass, open fields, groves of trees with managed understory vegetation, two small buildings, and one home. The Moyie River shoreline is diked along the entire site with large river cobble and little vegetation. A manmade swimming hole has been excavated between the campground and the Moyie River. (Figure 3-9).

There are no scenic byways or designated vistas in the vicinity of either the Tribal Hatchery or the Twin Rivers Hatchery.

Figure 3-9: Twin Rivers Canyon Resort Swimming Hole

Sensitive Viewers

Several residences are in close proximity to the existing Tribal Hatchery. Trees and other vegetation obscure the hatchery structures from view. A 30-foot flood control levee exists between the Kootenai River and the Tribal Hatchery. The levee obscures views of the hatchery from recreationalists on the river.

The proposed Twin Rivers Hatchery is located at the bottom of a canyon and can be seen by several homes located on the rim of the canyon directly west of the Twin Rivers Canyon Resort. The viewers in these residences and the recreational users that visit the Twin Rivers Canyon Resort are the only sensitive viewers in the area. Some resort visitors would be passing through the project area on their way to the Kootenai River boat launch, some would be day users of the swimming hole and open grassy area, and the remainder would be those staying at the resort. Of these sensitive viewers, the users staying at the resort for long period of time would be the most sensitive to any changes to the landscape.

3.7.2 Environmental Effects—Proposed Action

At the existing Tribal Hatchery, the proposed upgrades would be similar to the structures currently in place. Some temporary visual changes would result from the presence of equipment and activities during construction but once completed, the proposed modifications would result in

minor changes in how the facility looks. For this reason, visual resource impacts associated with the proposed upgrades at the existing Tribal Hatchery would be **low**.

The construction of the Twin Rivers Hatchery would result in temporary and permanent visual changes at the Twin Rivers Canyon Resort. Temporary visual changes would result from the presence of construction equipment and construction activities. Permanent visual changes would occur where new facilities would be constructed in locations where none previously existed.

During construction, visual changes associated with construction equipment and activity would be visible temporarily, but because the Tribe plans to close the Twin Rivers Canyon Resort for one season (Summer 2013), only construction activities occurring in the subsequent summer, such as the installation of fencing, landscaping and road paving, would be visible to recreational users. A portion of the construction activities at the Twin Rivers Canyon Resort would be visible to the residences on the canyon rim but permanent impacts would be **low** following construction because the hatchery structures would not be visible from these residences.

Permanent visual changes associated with the new hatchery facilities include a large hatchery building, two new pump stations along the Moyie and Kootenai Rivers, and three new residences. These changes would impact recreational users because the hatchery buildings and structures would not be consistent with the current park-like setting of the Twin Rivers Canyon Resort. As part of the Proposed Action, the Tribe would install trees and shrubbery to screen much of the hatchery facility from the recreational users. In addition, the hatchery facility would be located at the north end of the resort and so would not interfere with any views from the Twin Rivers Canyon Resort toward the Kootenai River and Cabinet Mountains to the south or the Moyie River to the east. The new Kootenai River intake would largely be below the water surface; however, protective pilings, a small service platform, and permanent crane would be visible by recreationalists. The Moyie intake would be visible, but its isolated location at the north end of the site with limited accessibility would limit its visibility to recreational users. Views from residences on the canyon rim would be altered largely by the addition of the Kootenai intake; other hatchery components would not be visible from those residences. For these reasons, visual resource impacts associated with the construction and operation of the Proposed Action would be **low-to-moderate**.

3.7.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe would implement the following mitigation measures to avoid or minimize impacts on visual resources.

- Close the Twin Rivers Canyon Resort for one season during the summer of 2013.
- Restore disturbed vegetation as soon as possible after construction is completed.
- Retain as many trees as possible to limit changes in the observable character of the landscape.
- Paint all new structures a non-reflective color that blends with the natural environment.
- Replant 100 trees around the Twin Rivers Canyon Resort to replace the trees that will be removed.

3.7.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Once completed, recreational users would see structures and hatchery facilities in areas that were previously undeveloped. As the landscaping matures, views of these changes would be intermittent or largely screened.

3.7.5 Cumulative Effects—Proposed Action

There are no major construction projects or other development planned in the immediate vicinity of the project area that would be visible to the same sensitive viewer groups. Therefore, the contribution of the Proposed Action to cumulative visual resource impacts would be **low**.

3.7.6 Environmental Effects—No Action

Under the No Action Alternative, operations at both the existing Tribal Hatchery and the Twin Rivers Canyon Resort would continue unchanged so **no** impacts to visual resources would occur.

3.8 Fish and Wildlife

3.8.1 Affected Environment

Fish

A wide variety of fish species inhabit the Lower Kootenai River and the Moyie River. Bull trout, westslope cutthroat trout, Columbia River redband trout, kokanee, burbot, and white sturgeon are all known to exist in the waters adjacent to the project area. No ***anadromous*** fish populations occupy the Kootenai subbasin.

The section of the Kootenai River adjacent to the Twin Rivers site is a broad riffle/run with an intact riparian area. The width and size of the river make it unlikely that the riparian vegetation provides substantial cooling effect to the river, but the vegetation does provide bank stability, litter fall, habitat for invertebrates, and large woody material (U.S. EPA, 2004). Riparian vegetation at the Twin Rivers Canyon Resort is limited to allow for views of the river by the recreational users of the resort.

Significant losses in riparian and wetland areas along the lower Kootenai River have occurred since the early 1900s due to human activity (U.S. EPA, 2004). Some of the most serious impacts have come from: water impoundment and diversion; river diking, flood control and channelization; dam construction and operation; wetland draining and associated reduction of native species dependent on wetlands (including beavers); livestock grazing; urban and suburban development; land clearing for agriculture; road building; and recreation. This degradation impaired key riparian and floodplain wetland ecological functions, including sediment filtering, streambank building, water storage, aquifer recharge, dissipation of stream energy, nutrient retention, and fish and wildlife habitat (U.S. EPA, 2004).

The U.S. Fish and Wildlife Service identified two ESA-listed fish species that may occur in the project area, the Kootenai River white sturgeon Distinct Population Segment (DPS), which is

endangered and the Columbia River bull trout DPS, which is ***threatened*** (USFWS, 2011). (Table 3-5)

Kootenai River White Sturgeon

Juvenile and adult Kootenai white sturgeon may be found year round in the Kootenai River downstream of Bonners Ferry (USFWS, 2006). Adult sturgeon infrequently occur upstream of Bonners Ferry but juvenile sturgeon may occur year-round. Although about a third of Kootenai sturgeon in spawning condition migrate upstream to the Bonners Ferry area annually (May through July), few remain there to spawn (USFWS, 2011).

Bull Trout

Bull trout use Kootenai River habitat for foraging, migration and over-wintering. Spawning is not known or suspected to occur, primarily due to higher water temperatures. Bull trout are most likely present in the mainstem Kootenai River in Idaho during the winter, spring, early- to mid-summer and late fall at relatively low abundance (USFWS, 2011).

Bull trout have been documented in the Moyie River. From 2001 to 2006 four radio-tagged bull trout were documented using the lower Moyie River (Paragamian, et al., 2010); however, spawning likely does not occur in the lower Moyie River downstream of the Moyie River dam. Bull trout in the lower Moyie River were documented in May, June, July, September and November. The longest occupancy event occurred for 29 days in November 1999.

Table 3-5: ESA-Listed Species in Project Area

Name	Status
Fish Species	
Bull Trout (*Salvelinus confluentus*)	Threatened
White sturgeon (*Acipenser transmontanus*)	Endangered
Wildlife Species	
Grizzly bear (*Ursus arctos horribilis*)	Threatened
Canada Lynx (*Lynx canadensis*)	Threatened
Woodland caribou (*Rangifer tarandus caribou*)	Endangered
North American wolverine (*Gulo gulo luscus*)	Candidate

Wildlife

Within the lower Kootenai River basin, many species of birds and mammals can be found, including large mammals such as elk, moose, mountain goats, whitetail and mule deer, black bear, and mountain lion. Many nongame species are also in the area and include a variety of songbirds, weasel, mink, beaver, otter, flying squirrel and porcupines (USFWS, 2011).

The Twin Rivers site includes a variety of vegetation types but is predominantly turf grasses and weedy forbs. Several patches of trees and shrubs remain on the site but offer little habitat values for wildlife because they are scattered across the site. The most common trees are Douglas fir,

ponderosa pine, western red cedar, and black cottonwood. Common shrubs include oceanspray, mock orange, and rose. The site is relatively developed and the habitat has lower wildlife value due to the use of the land as a seasonal resort.

The USFWS has identified three ESA listed species (woodland caribou, grizzly bear, Canada lynx) and one candidate species (North American wolverine) that could occur in Boundary County. These species are unlikely to occur in the project vicinity because the grizzly bear and woodland caribou are known to occur in remote areas of Boundary County, none of these species are river dependent, and none are typically found in developed areas with moderate to high levels of human activity. Therefore these species were not considered in this analysis.

3.8.2 Environmental Effects—Proposed Action

Fish

The Proposed Action could affect fish through changes in water quality and water quantity (including temporary turbidity or accidental spills; discussed in Section 3.6), construction noise, catching and releasing fish (both during isolation of work areas and for egg and sperm collection), loss of habitat, and increasing hatchery fish within the ecosystem.

Upgrades at the Tribal Hatchery would not change the number of fish caught or released, so potential impacts would be due to construction activities and dock expansion. Installation of a new crane and rail fish transport mechanism would be expected to benefit adult sturgeon through less stressful handling.

Construction activities could result in noise impacts to aquatic habitats during the placement of a 300-square-foot extension to the existing floating dock. To anchor the extension, one new piling would be installed to stabilize the combined docks. The new piling would be installed using a barge-mounted pile driver and would require 60 to 80 strikes. Once the piling is installed, the dock extension would be floated into place, attached to the existing dock and then attached to the new piling. Because of the short duration of the pile driving and conducting the installation during the in-water work window identified by IDFG and USFWS that extends from August through November, any fish that would be in the area would be expected to temporarily leave, but not be permanently affected. Therefore the impacts would be a **low**.

Fish impacts could occur at the Tribal Hatchery due to construction related turbidity increases, in water work, or potential contaminates from accidental spills. Turbidity can cause confusion to fish, clogged gills, and fill-in spawning habitat. However, with mitigation measures to control erosion and sedimentation, turbidity levels are expected to be low and minimally affect fish and the risk and potential impacts of accidental spills of toxic substances would be low with a spill prevention plan (Section 3.6). In addition, in-water work would occur during the IDFG and USFWS identified work window that extends from August through November when fewer fish are in the area Because turbidity levels would be low, disturbances would be short-term, and in-water work would be during appropriate fish work windows, impacts to fish due to the upgrades at the Tribal Hatchery would be **low**.

Construction activities at the Twin Rivers Hatchery would have the same potential impacts to fish due to turbidity and accidental spills as described for the Tribal Hatchery above. Effluent released

from the Twin Rivers Hatchery would have low impacts on water quality (Section 3.5, Water Quality and Water Quantity) and therefore, would have **low** impacts on fish.

The potential to temporarily disturb aquatic habitat would occur in the areas around the two water intake structures and buried pipelines that extend into the Moyie and Kootenai River (Figure 2-1). Underwater noise would be minimal because the extent of the construction would be limited and temporary. Although there would be modifications to habitat during construction, these changes would be minimal and would not substantially reduce the area of available aquatic habitat. BPA expects most fish to vacate the area once construction activities begin. If juvenile fish remain in the area and become trapped and require handling, these activities could result in impacts from stress and injury. High levels of injury or mortality are not expected to occur because handling would comply with any permit requirements. While mortality of captured and relocated fish would be minimized, some mortality can be expected (up to about one percent). Therefore, there would be a **low** impact to fish and aquatic species from construction.

The USFWS expressed concerns during scoping regarding the Tribe's plan to increase the number of hatchery-origin Kootenai sturgeon into the Kootenai River ecosystem without fully understanding the carrying capacity of the system. The USFWS stated that without understanding the carrying capacity of the Kootenai River, the increase in the number of juvenile white sturgeon as well as the new release of juvenile burbot have the potential to cause detrimental effects to the existing ESA-listed Kootenai white sturgeon population and the ESA-listed bull trout population (see Section 1.5).

Carrying capacity is defined as the threshold of stress below which populations and ecosystem functions can be sustained (CEQ, 1997b). Carrying capacity is difficult to measure because of the constantly changing variables within a complex ecosystem. If the carrying capacity of a system is exceeded, competition within the system can result in the scarcity of food, loss of suitable habitat, and increased prevalence of disease. If such conditions persist, populations can begin to decline until a new equilibrium is established. By monitoring parameters such as the survival rate and growth of juvenile white sturgeon, as well as the availability of food and suitable habitat can indicate whether a system like the Kootenai River can support the current level of hatchery production and any increase in hatchery releases.

The results of a study completed in 2009 suggested that density-dependent factors may be limiting survival of hatchery-reared juvenile white sturgeon in the Kootenai River. The study evaluated the survival of hatchery-reared juvenile white sturgeon and saw a decline in survival in response to the cumulative effects of the size and number of fish released (Justice, 2009). The study recommended that future management actions prioritize the release of fewer, larger-sized white sturgeon in order to improve first year survival rates and subsequently, the survival of hatchery reared fish to spawning-age population. Survival of 1-year+ juvenile fish has shown to increase survival and impacts on survival caused by the cumulative effects of the size and number of fish released.

In response to USFWS' comments regarding the numbers of sturgeon to be released annually, the Tribe revised their production targets (Table 3-6). The revised production targets reflect an effort to balance the need for increased broodstock numbers to ensure adequate genetic diversity in future generations with managing the number of juveniles released, which might result in negative impacts on ESA-listed white sturgeon and bull trout if carrying capacity is exceeded. The low end of the Tribe's Kootenai white sturgeon production target is reduced to 15,000 juvenile white

sturgeon (Kootenai Tribe of Idaho, 2012). This level would be the same as the existing Tribal Hatchery production. The upper range of their production target is 30,000 Kootenai white sturgeon. This would be twice the current level of juvenile production.

Because the Twin Rivers Canyon Resort boat launch is often inundated by high water in the months when adult fish would be spawned, adult Kootenai white sturgeon would be transported from the existing Tribal Hatchery to the Twin Rivers Hatchery by truck. The fish would be placed in a covered water-filled fiberglass tank mounted on the truck and then transported the 14 miles east to the Twin Rivers Hatchery. The fish would be given oxygen by a bottled oxygen system and water obtained from the Tribal Hatchery water system prior to transport. At an average speed of 30-40-mph, the travel time from Tribal Hatchery to Twin Rivers Hatchery is approximately 20 -30 minutes. Any negative effects to ESA-listed Kootenai white sturgeon resulting from them being transported via truck would be minimized and mitigated through the terms and conditions for this action agreed to in the Tribe's Section 10 permit. Therefore, impacts on Kootenai white sturgeon from transportation would be **low**.

Table 3-6: Current and expected future Kootenai sturgeon production values[1] with and without the Twin Rivers Hatchery

	Current Facilities[2]	Program Objective	Current Facilities with Upgrades[3]	Twin Rivers Hatchery
Broodstock number	24	Up to 45	Up to 18	Up to 27
Families produced	12-18	Up to 30	Up to 12	Up to 18
Fish/family	1,000-1,500	500-1,000	500-1,000	500-1,000
Size at release	30 grams	30 grams	30 grams	30 grams
Total releases per year	15,000-20,000	15,000-30,000	6,000-12,000	9,000-18,000

1: Estimates are based upon Age-1 juvenile releases and no contribution from natural recruitment.
2: Males and females (Tribal Hatchery and Kootenay Trout Hatchery)
3. Tribal Hatchery and Kootenay Trout Hatchery

To release any hatchery reared sturgeon, the Tribe must implement all terms and conditions included in the ESA Section 10 Permit issued by the USFWS (Permit No. TE-798744-7). Specifically, the Tribe's existing Section 10 permit requires the Tribe to submit a proposal to the USFWS prior to releasing any hatchery-reared sturgeon. The Tribe has proposed conducting an Annual Program Review (APR) that would inform decision making on broodstock management, egg collection, production goals, and monitoring and evaluation (M&E) activities for a coming year. The APR would develop a proposal prior to the capture of adult broodstock in coordination with the USFWS and the Recovery Team. The proposal reflects the number and size of families that will be produced in a given year, which sets targets for the number of adults that will be captured and the number of eggs that will be taken from each female. Monitoring activities implemented by the Tribe, IDFG, BC MFNLRO, and Montana Department of Fish, Wildlife and Parks (MFWP) include adult stock assessment, juvenile stock assessment, and tracking movements of adults. Hatchery-reared sturgeon may be released only after the USFWS provides written authorization.

The Tribe's burbot production program is regulated through the issuance of a Live Fish Import/Transport /Release Permit. IDFG has issued permits to the Tribe since 2009 for the release of up to 50,000 juvenile burbot (IDFG Permit Number: HQ-11-115). To date, the Tribe has released between 5,000 and 20,000 juvenile burbot annually. Targets for burbot production have been determined through the agreement of the cooperating entities working to reestablish burbot in the Kootenai River (B.C. MFLNRO, Tribe, and IDFG) (Table 3-7). IDFG is currently reviewing the Tribe's proposal to increase production of burbot at the Twin Rivers Hatchery to 125,000 juvenile fish and expects to issue it approval prior to the Tribe's release of additional burbot (Hardy, Personal Communication, 2012).

Table 3-7: Burbot Production to Date and Proposed

	Current Experimental Production	Proposed Expanded Production
Families Produced	Up to 36	Up to 60
Larvae Released	0 – 350,000	Up to 1,000,000[3]
Age-0+ 6 mo.-old Juveniles Released	5,000 - 20,000[2]	62,500-125,000
Age-1 Released	100 – 500	0-48,000

1 Twin Rivers Hatchery is expected to start production in Phase 3 (shaded column).
[2] IDFG permit allows for up to 50,000 juvenile burbot to be released annually.
[3] Maximum allowed under Tribes IDFG permit

Juvenile burbot feed on ***invertebrates*** and aquatic insects, based on size. As adults, burbot primarily eat other fish such as lamprey, whitefish, grayling, northern pike, suckers, stickleback, trout, and perch. At times, burbot will also eat insects and other macro invertebrates and have been known to eat frogs, snakes, and birds. While burbot historically existed in the system, the introduction of hatchery produced burbot into the Kootenai has the potential to trigger behavior such as competing with or preying on bull trout fry and juvenile white sturgeon. Conversely, with reintroduction, burbot would be a prey base for white sturgeon and bull trout.

The Tribe's M&E actions for burbot include collecting data on fish survival across all life stages, growth, and density. If M&E data collected indicates high predation rates on ESA-listed populations, the Tribe and its co-managers would reduce future burbot releases or open a fishery to manage population abundance and distribution. Each January, during the APR review M&E data will be used to establish production and release levels for the coming year. This APR would evaluate the effects of burbot releases on the system that would inform release targets for the following year(s) and could minimize the effects of burbot releases on bull trout and white sturgeon spawning and rearing.

Overall, impacts associated with the Tribe's planned hatchery releases of Kootenai white sturgeon and burbot would be minimized by the M&E actions outlined in Appendices B &C), the Annual Program Review, and the USFWS' ESA consultation process and impacts would be **low-to-moderate**. However, the improvements at the Tribal Hatchery would also provide positive benefits for fish in the Kootenai basin by reducing the risk of extinction for Kootenai white sturgeon and by

reintroducing burbot. If successful, the proposed project would provide sustainable populations of Kootenai white sturgeon and burbot that would be able to provide for future Tribal Treaty subsistence and cultural harvest, as well for the sport harvest of burbot.

Furthermore, as discussed in Section 3.5, Water Quality and Water Quantity, the potential impacts of the proposed hatchery effluent in the receiving water quality would be **low**.

Wildlife

Because the site of the existing Tribal Hatchery does not include any wildlife habitat, the proposed upgrades would not result in a loss of habitat.

The Twin Rivers Hatchery would impact wildlife habitat through loss, modification, and degradation. The removal of 10 acres of grass and wooded area, including 66 trees, and presence of construction activities may displace wildlife into adjacent habitats.

The habitat removal would mostly affect bird species using the habitat for nesting, as a winter refuge, or as a stopover site during annual migrations. Birds would be expected to flee land-clearing activities and thus, avoid direct mortality. Moreover, clearing activities would either take place outside of breeding season (March through July), and if breeding season could not be avoided, surveys would be conducted for active nests. If active nests were to be detected, a plan would be developed to avoid impacts until young have fledged. Habitat removal would also affect common wildlife species potentially present in the area; they would likely leave and find similar habitat in surrounding areas.

Construction of the water intake on the Kootenai River and the improvements to the boat launch parking lot would impact an existing palustrine emergent marsh and a palustrine scrub-shrub wetland. These areas are dominated by invasive reed canarygrass and offer limited biological function. Any loss of function caused by habitat disturbance during construction would be mitigated by replanting those areas using native species. Therefore, there would be a **low** impact to wildlife and wildlife habitat from construction and operation of the Twin Rivers Hatchery.

3.8.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe would carry out the following mitigation measures to avoid or minimize impacts on fish and wildlife. Additional measures are discussed in Sections 3.3 Vegetation, 3.6 Water Quality and Quantity, and 3.11 Noise.

- Implement all terms and conditions included in the existing ESA Section 10 Permit issued by the USFWS. Implement required BMPs associated with the Section 404 Clean Water Act permit.
- Implement the proposed Monitoring and Evaluation Plan which includes the Annual Program Review process.
- Use settling ponds to remove organic waste (i.e., uneaten food and feces) from the proposed hatchery water to minimize discharge of these substances to the receiving waters.
- Ensure that the existing and proposed hatchery facilities are operating in compliance with all applicable fish health guidelines and facility operation standards and protocols, by

conducting annual audits and producing reports that indicate the level of compliance with applicable standards and criteria.

- Plant 100 new trees to replace those that would be removed to accommodate the new hatchery facility.
- Avoid clearing native habitats during the avian breeding season (March through July). If clearing cannot be avoided during these times, survey the clearing zone prior to ground-disturbing activity to determine whether any active nests of migratory birds are present. If active nests are detected, develop a plan to avoid impacts until young have fledged.

3.8.4 Unavoidable Impacts Remaining After Mitigation — Proposed Action

Fish

Although mitigation would minimize the disturbance of fish and other aquatic species during construction, some low level of disruption would remain. Temporary effects that may result from construction such as increased turbidity are expected to be short term and minimized through appropriate application of BMPs. Operation of the proposed hatchery is not expected to adversely impact fish or aquatic species.

Wildlife

A small amount of permanent habitat loss, primarily of low value wildlife habitats, would result with project construction. Noise, activity and vegetation removal during construction would cause a temporary loss of wildlife habitat in and near the construction zone. These minimal losses to wildlife and wildlife habitat are not expected to adversely affect the viability or survival of local wildlife populations. Therefore, unavoidable impacts on wildlife resources, after mitigation, would be **low**.

3.8.5 Cumulative Effects—Proposed Action

Fish

The Tribe currently has multiple programs focused on the restoration of various components of the Kootenai River ecosystem but two of their projects are focused specifically on restoring the physical habitat of the lower Kootenai River.

Kootenai River Habitat Restoration Program—The Tribe is implementing restoration projects in phases starting upstream in the Kootenai River Braided Reach and working generally downstream through the Meander Reaches. Phase I was completed in summer 2011, Phase 2 in the summer 2012. A third phase is scheduled to commence in summer 2013. These habitat restoration projects are intended to address some of the many human impacts that have occurred in the Kootenai watershed. The projects include measures to improve instream habitat (e.g., depth, velocity and habitat complexity), address bank erosion and land loss, sediment loading, and to reconnect and reestablish floodplain habitats.

Floodplain Reconnection—The Floodplain Reconnection project focuses specifically on restoring targeted tributaries by returning them to their original channel and reconnecting them with the Kootenai River, thus restoring critical floodplain habitat.

The Kootenai River Ecosystem Project—The Kootenai River Ecosystem Project adds controlled amounts of nitrogen and phosphorus to the Kootenai River in order to stimulate primary production and reverse downward population trends in fish populations such as trout, kokanee, mountain whitefish, burbot, and white sturgeon.

IDFG's Kootenai River Resident Fish Mitigation Project—The Kootenai River Resident Fish Mitigation project is comprised of several studies specifically focused on the recovery of white sturgeon (ESA-listed), burbot, and salmon fish populations in the Kootenai River with the overall goal to restore native fish populations in the Kootenai River. The research is designed to identify strategies that will aid in reaching recovery goals of focal species such as spawning location, timing, and population size, which allows mitigation strategies to be developed and provides biological information to improve operations at Libby Dam.

With the expected benefits from these large scale projects, the cumulative impact of the Proposed Action on fish and aquatic species, in conjunction with the aquaculture program, would be beneficial.

Wildlife

Wildlife resources in the Kootenai basin have been extensively altered as large areas of natural landscape were converted to intensively farmed and irrigated cropland. The cumulative loss, degradation, and fragmentation of wildlife habitat from these actions have contributed to declines in wildlife populations and biodiversity in the project vicinity. Farming and ranching activities would continue to represent the land use activities affecting wildlife resources the most. No new major construction projects are planned for areas near the Tribal Hatchery and the proposed Twin Rivers Hatchery. The Twin Rivers Hatchery would contribute to cumulative wildlife impacts in the project vicinity through the permanent removal of small areas of wildlife habitat, temporary disturbance to and displacement of wildlife and from wildlife potentially killed incidentally during construction and from associated traffic. The cumulative impacts on wildlife resources from the Proposed Action are considered **low**.

3.8.6 Environmental Effects—No Action

Fish

Under the No Action Alternative, there would be no changes to the existing Tribal Hatchery and the Twin Rivers Hatchery would not be built. Local aquatic habitats in the Kootenai River and Moyie River would not be affected. Kootenai River white sturgeon recovery could be slower under the No Action Alternative because of the capacity limitations at the existing Tribal Hatchery. Burbot reintroduction could also be slower in the Kootenai River under the No Action alternative because the initiation of the large-scale burbot production at the Twin Rivers Hatchery would not occur.

Wildlife

Under the No Action Alternative, there would be no changes to the existing Tribal Hatchery and the Twin Rivers Hatchery would not be built. Maintenance of existing hatchery facilities would continue in a manner similar to existing conditions, as would recreational use of Twin Rivers Canyon Resort. Potential impacts would be limited to minor disturbance from recreational use and periodic maintenance activities. Because on-going wildlife impacts associated with the No Action Alternative are temporary and localized, these impacts would be **low**.

3.9 Cultural Resources

Cultural resources include things and places that demonstrate evidence of human occupation or activity related to history, architecture, archaeology, engineering, and culture. Historic properties, as defined by 36 CFR 800, the implementing regulations of the National Historic Preservation Act (NHPA; 16 USC 470 *et seq.*), are a subset of cultural resources that consists of any district, site, building, structure, artifact, ruin, object, work of art, or natural feature important in human history that meets defined eligibility criteria for the National Register of Historic Places (NRHP).

The NHPA requires that cultural resources be inventoried and evaluated for eligibility for listing in the NRHP and that federal agencies evaluate and consider effects of their actions on these resources. Cultural resources are evaluated for eligibility in the NRHP using four criteria commonly known as Criterion A, B, C, or D, as identified in 36 CFR Part 60.4 (a–d). These criteria include an examination of the cultural resource's age, integrity (of location, design, setting, materials, workmanship, feeling and association), and significance in American culture, among other things. A cultural resource must meet at least one criterion to be eligible for listing in the NRHP.

Historic properties include prehistoric resources that predate European contact and settlement. The area of potential effects (APE; defined in 36 CFR 800.16(d)), for cultural resources includes the site of the existing Tribal Hatchery and the Twin Rivers Canyon Resort.

3.9.1 Affected Environment

Ethnographic Overview

Both the existing Tribal Hatchery and the Twin Rivers Canyon Resort are within the traditional territory of the Ktunaxa (Kootenai) Nation and specifically the Lower Kootenai people, of which the Kootenai Tribe of Idaho belongs. The Lower Kootenai people traditionally occupied the Kootenai River and adjacent valleys and its environs, from approximately the location of the present Montana communities of Libby and Jennings to Kootenay Lake in B.C.

A few Lower Kootenai would accompany the Upper Kootenai on snowshoes to areas east of the Rocky Mountains on their yearly bison-hunting expeditions during the pre-horse period (Brunton 1998:225). The Twin Rivers Project area was one of many stops along the river used by resource gathering groups. Some of the Kootenai, especially the Lower Kootenai, would join large tribal gatherings at Kettle Falls for the July and August runs of Chinook, coho, and sockeye salmon (Kennedy and Bouchard, 1998). Additional summer and fall activities emphasized collecting berries, fall roots, seeds, and various plants; hunting deer, elk, caribou, and moose for meat; hunting or trapping beaver, muskrat, mountain goats, bear, lynx, wolf, and other furbearers for

their hides and, occasionally, for food; and preparing the village for winter. Bird hunting was essential to the Lower Kootenai and included cranes, ducks, sea gulls, fool hens, and geese.

Historic Overview

The first non-Indian exploration into northern Idaho was by David Thompson of the North West Company. In 1807, Thompson travelled up the Kootenai River from Kootenay Lake in southeastern B.C.; Thompson stored canoes in the vicinity of Bonners Ferry and proceeded on horseback up the Moyie River valley to the present area of Cranbrook and Ft. Steele, B.C. (Tyrell J. B., 1916).

Following the early exploration of the region by fur traders, the first sustained rush of Euroamerican settlers to northern Idaho was due to the discovery of gold, which inspired the construction of a transportation system sufficient to carry men and goods. Following the initial rush of prospectors, the development of more stable communities led to the development of hard rock mines. The success of the hard rock mines was dependent upon a regional transportation system sufficient for the conveyance of the massive equipment required of mills and smelters (Ostrogorsky et al, 1991).

In 1882, the transcontinental Northern Pacific Railroad was completed across northern Idaho north of the Clark Fork River, around the north side of Lake Pend Oreille, along the north side of the Pend Oreille River until crossing just above Albeni Falls, and then southwest from Newport to Spokane, Washington.

In 1893, James J. Hill completed construction of his Great Northern Railroad, running from Duluth, Minnesota, to Seattle, Washington, by way of the Kootenai River and Bonners Ferry. The railway route in north Idaho crossed the Kootenai River at Bonners Ferry, ran south to cross Lake Pend Oreille at Sandpoint, and continued across the Rathdrum Prairie to Spokane. The Spokane International line followed in 1905, crossing the Kootenai River at Bonners Ferry and connecting Spokane with the Canadian Pacific Railway (Bonner County History Book Committee, 1991).

Railroads opened the area to large-scale logging, mining, and agricultural development, giving rise to small communities and lumber mills along their routes. Small towns including Addie, Meadow Creek, Snyder, and Moyie Springs in Idaho depended on the railroad for supplies and communication. The Twin Rivers Canyon Resort property was an undeveloped wilderness area until it was purchased for use as a private hunting area in 1978. The site remained undeveloped, but was thinned of logs until the late 1980s, when development of the current recreational vehicle and camping resort was constructed (Grant Associates, Inc., 2008).

3.9.2 Environmental Effects—Proposed Action

On the behalf of BPA, Historical Research Associates (HRA) searched archaeological site records and cultural resource survey reports on file at the Idaho State Historic Preservation Office (SHPO), and nineteenth-century maps created by the General Land Office (GLO) were reviewed to locate nearby historical features (Dampf, 2009). This background research revealed that there are no previously recorded archaeological sites or historic structures within the Twin Rivers Canyon Resort and there have been no previous cultural resources studies conducted within the APE.

At the existing Tribal Hatchery, four previous cultural resources studies and three prehistoric and historic archaeological studies have been completed within a 1.0-mi radius of the Tribal Hatchery

complex. The only previous study in close proximity to the Tribal Hatchery complex was a pedestrian survey conducted for the Bureau of Indian Affairs and the Kootenai Tribe of Idaho as part of a tree planting project less than a quarter mile to the north (Sims, 1985). The survey resulted in the identification of a prehistoric artifact scatter, consisting of lithic debris, fire-cracked rock, and possible stone tools.

HRA archaeologists Steven Dampf, M.S., and Gregg Wilson, M.S., conducted a pedestrian and subsurface survey on June 21 and 22, 2012 at both project locations. At the existing Tribal Hatchery, Ron Abraham, Tribal Council Vice Chairman for the Kootenai Tribe of Idaho observed the fieldwork and no historic standing structures were observed in the APE. HRA archaeologists inspected the ground surface but did not excavate shovel probes due to the amount of previous disturbances observed on the property.

HRA conducted two field surveys at the Twin Rivers Canyon Resort. The first was conducted in 2009 and was based on a preliminary design of the Twin Rivers Hatchery. HRA conducted a second survey in 2012 once the Twin Rivers Hatchery design was finalized and additional areas of ground disturbance were identified. HRA's initial background research showed the closest cultural resources identified in the vicinity of the Twin Rivers Canyon Resort were historic archaeological sites, mostly associated with transportation: two railroad grades, one highway, and one historic wagon road.

The majority of the Twin Rivers Hatchery APE has been highly disturbed by the development of the Twin Rivers Canyon Resort. Some shovel probes exhibited evidence of previous disturbance in the top 20 cm (8 in) (e.g., compaction and mixed soils and/or fill materials). No potentially significant cultural materials older than 50 years were observed on the ground surface or within shovel probes. Based on their findings, HRA recommended that no further cultural resources work was necessary and BPA concurred with that recommendation.

Following the completion of the Twin Rivers Hatchery 30% designs, BPA requested additional investigations be conducted to include additional areas of ground disturbance at the Twin Rivers Canyon Resort. HRA conducted a records search at SHPO that revealed no archaeological sites have been recorded and no cultural resources studies have been conducted within a 1.0-mi radius of the Twin Rivers site since the 2009 survey. A total of 11 shovel and auger probes were excavated at the Twin Rivers site and no potentially significant cultural materials older than 50 years were observed on the ground surface or within shovel probes. Thus, the potential for the Proposed Action to impact cultural resources is **low.**

3.9.3 Mitigation—Proposed Action

Because a low potential remains to disturb unknown cultural resources accidentally, the Tribe would implement the following mitigation measure to avoid or minimize impacts of the Proposed Action on cultural resources:

- Use appropriate BMPs including the preparation and use of an Inadvertent Discovery Plan, which would establish procedures to deal with unanticipated discovery of cultural resources before and during construction to minimize impacts. The plan, among other provisions, would require immediate work stoppage and appropriate notification in the event of the discovery of previously unknown cultural or historic materials.

3.9.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

There is the low potential to uncover or impact cultural resource during construction of the Proposed Action.

3.9.5 Cumulative Effects—Proposed Action

Because the Proposed Action is unlikely to affect cultural resources, it would not contribute to a cumulative impact on cultural resources.

3.9.6 Environmental Effects—No Action

Under the No Action Alternative, no modifications would be made at the existing hatchery or at the Twin Rivers Canyon Resort. Therefore, there would be **no** impact on cultural resources.

3.10 Socioeconomics and Environmental Justice

3.10.1 Affected Environment

The study area for socioeconomics is Boundary County, Idaho. Data for the analysis came from the Bureau of Economic Analysis which organizes data according to markets for labor, products, and other economic information.

Population and Housing

In 2011, Boundary County, Idaho had an estimated population of 10,804 (U.S. Census, 2012a). The largest city in the county is Bonners Ferry. It had a population of 2,543 in 2010 (U.S. Census, 2010).

Employment and Income

About 5,146 people age 16 and over were employed in some capacity in Boundary County in 2011 (Bureau of Labor Statistics 2011). The unemployment rate in the study area in 2011 was 12.4%. In 2010, per-capita personal income in the study area was $18,011 (U.S. Census, 2010).

Environmental Justice

The study area for environmental justice is Boundary County, Idaho.

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, issued by President Clinton in 1994, requires that each federal agency develop an environmental justice strategy that identifies and addresses "disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations" (59 Federal Register 7629 [February 11, 1994]). The president specifically directed agencies to analyze the effects of potential actions on minority and low-income communities through the NEPA review process (Council on Environmental Quality (CEQ), 1997a).

The Council on Environmental Quality directs environmental justice analyses to consider concentrations of ethnic and racial minority populations and low-income populations that the

Proposed Action could affect (CEQ 1997a). Geographic areas where ethnic and racial minorities exceed 50% of the population must be identified. Geographic areas where the percentage of the ethnic and racial minority population is “meaningfully greater” than the percentage in the surrounding area should also be identified. Low-income populations are identified using the U.S. Census Bureau’s definition of a poverty area, where 20% of the population is below the federal poverty level, based on their income in 1999 (U.S. Census Bureau 2012b).

Minority populations consisting of Latino/Hispanic origin, American Indian, and two or more races were determined in the environmental justice study area. In Boundary County, Idaho 4.9% of the population is considered a minority population. In the state of Idaho, 6.1% of the population is considered a minority population (U.S. Census, 2012a).

The U.S. Census Bureau uses a set of dollar value thresholds that vary by family size and composition to determine the poverty level. Between 2000 and 2009 in Boundary County, Idaho, 18.8% of people had income below the poverty level, as compared to 13.6% of the statewide population (U.S. Census, 2012a).

3.10.2 Environmental Effects—Proposed Action

Population and Housing

Because construction activities associated with the Proposed Action would occur over approximately 16 months (Ireland; Personal Comm. 2012), the duration of construction work would likely not be long enough to induce any permanent changes to population in the study area. Construction would require approximately 20 workers, with the workforce coming from both inside and outside Boundary County. Workers from outside Boundary County would likely reside temporarily within the project vicinity and have an indiscernible effect on the overall population of the study area. The workers from out of the area would require temporary lodging in the local area during the 16-month construction period. Construction workers likely would occupy RV parks and hotel/motels of which there is expected to be sufficient temporary lodging to accommodate this small increase in demand over the construction period. Therefore, the potential for impacts on population and housing from construction would be **low**.

The Tribe’s aquaculture program currently employees the equivalent of approximately 7 people full-time per year. Under the Proposed Action the Tribe’s aquaculture program would require the equivalent of 4 additional people full-time per year. These employees would likely be Tribal members so the Proposed Action would likely not result in an increase in the study area’s population. Several permanent employees would live in on-site housing to be constructed as part of the Proposed Action. The increase in demand for permanent housing from any workers not housed on site would not have a discernible effect on the supply of housing in the study area because they would likely come from the existing population. Therefore, the potential for impacts on population and housing from operation would be **low**.

Employment and Income

As discussed above, the temporary increase in jobs during construction would represent a very small proportion of the current workforce in the study area. Therefore, the temporary impact on the labor market in the study area would be virtually indiscernible and would be **low**. For those people

who obtain construction jobs, especially if they are currently unemployed, the individual impact would be positive.

Construction of the Proposed Action is expected to cost approximately $16 million. This cost would include expenditures on materials and equipment and expenditures on labor, some of which would be spent locally in the study area. These local expenditures would have ripple effects on the economy, as workers and businesses receiving income would respend some of the money locally, the workers and businesses that receive that money would also respend some locally, and so on. These direct and indirect expenditures would represent a small proportion of the total annual income in the study area so the impact would be temporary and **low**.

During operation, the Proposed Action would employ the equivalent of 11 people full-time per year. This increase in employment would not have a discernible long-term effect on the labor market in the study area, but would represent a positive impact for those people who receive jobs, especially if they would otherwise be unemployed. The potential for this impact, while positive, would be **low**.

Environmental Justice

The potential impacts associated with construction of the Proposed Action would primarily affect the immediate area surrounding the proposed hatchery site. There may be some disruptions to traffic that could occur during construction, but impacts would be borne equally by all and would not disproportionately affect environmental justice populations. Operation of the Proposed Action would have some impacts associated with recreation and water quality, and low beneficial effects associated with fishing opportunities; however, similar to construction impacts, operational impacts would not disproportionately affect environmental justice populations. Therefore, the potential for impacts disproportionately affecting environmental justice populations would be **low**.

3.10.3 Mitigation—Proposed Action

As discussed above, most socioeconomic impacts would be indiscernible and potentially positive and **no** impacts on environmental justice populations are expected. Therefore, no mitigation for socioeconomics or environmental justice populations is anticipated.

3.10.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Minor socioeconomic impacts could occur as a result of the Proposed Action associated with small temporary increases in the demand for housing.

3.10.5 Cumulative Effects—Proposed Action

Other construction projects in the study area have resulted in minor contributions to the local economy. In addition, these projects have resulted in some construction-related impacts that could temporarily affect population and housing, employment and income, and environmental justice populations. Because the impacts of the Proposed Action would largely be temporary and **low**, the Proposed Action would not noticeably contribute to a cumulative impact on population and housing, employment and income, and environmental justice populations.

3.10.6 Environmental Effects—No Action

Under the No Action Alternative, the Twin Rivers Canyon Resort and the existing Tribal Hatchery would be unchanged; therefore, the impacts related to construction would not occur. Operation and maintenance activities would continue and would be similar to existing conditions. Some operation and maintenance activities could result in **low** impacts on socioeconomics, similar to the potential impacts described above and environmental justice populations would not be impacted.

3.11 Noise

3.11.1 Affected Environment

The study area for noise includes adjoining land within 1,000 feet of the existing Tribal Hatchery and the proposed Twin Rivers Hatchery.

Noise is generally considered as sound that is loud, disruptive, unexpected, or otherwise undesirable. Environmental noise is commonly quantified in terms of ***A-weighted decibels*** (dBA), an overall frequency-weighted sound level that approximates the frequency response of the human ear. Table 3-8 contains examples of common activities and their associated noise levels in dBA.

Table 3-8: Common Activities and Associated Noise Levels

Activity	Noise Level (dBA)
Bedroom at night	25
Refrigerator	40
Moderate rainfall on vegetation	50
Normal conversation indoors	60
Gas lawnmower 100 feet away	70
Truck 10 feet away	80
Loud live band music	110

The ability to perceive a new noise source intruding into background conditions depends on the nature of the intruding sound and the background sound. For situations where the nature of the new sound is similar to the background sound (e.g., new traffic noise added to background traffic noise), a noise of 3 dBA is just noticeable, a change of 5 dBA is clearly noticeable, and a change of 10 dBA is perceived as doubling or halving sound level. For situations where the nature of the new intruding sound is different from background sound (e.g., construction noise in an otherwise quiet setting), the new sound (including sporadic “clanks” from construction equipment) can be perceived even if it only raises the overall noise level by less than 1 dBA.

Sensitive noise receptors at the existing Tribal Hatchery include the closest off-site residences, which are approximately 150-200 feet to the east. At the Twin Rivers Canyon Resort the sensitive noise receptors consist of the closest off-site residences (the closest of which is roughly 3,000 feet away from the study area) and recreational users of the Twin Rivers Canyon Resort. The existing and proposed dwellings in the proposed hatchery site would be occupied by paid Tribal staff

members, who are not considered to be noise-sensitive receptors. Because of its isolated location there are no existing noise sources. Background noise levels in rural and agriculture areas are roughly 45 dBA during the day and 35 dBA at night (U.S. Environmental Protection Agency 1971).

There are no federal regulations applicable to noise generated by the Proposed Action. Idaho has not established state-wide regulations limiting noise emissions from commercial facilities. Similarly, Boundary County has not established a noise control ordinance that limits noise emissions.

3.11.2 Environmental Effects—Proposed Action

During construction, sound emissions produced by conventional construction equipment (expressed as dBA at a 50-foot distance) would range from about 75 to 90 dBA, 78 dBA for a dump truck, 80 dBA for an excavator, 85 dBA for a backhoe, and 87 dBA for a bulldozer (Federal Transit Administration 2006). The intensity of sound attenuates, or diminishes, by about 7.5 dBA as distance doubles, where vegetation is present to absorb noise (Federal Transit Administration 2006). The zone of effect is considered to extend from the source of the noise to the point at which the noise is reduced to that of existing background levels.

At the existing Tribal Hatchery heavy equipment would not be needed to make the required upgrades. As a result, noise generated during construction would likely be only slightly higher than existing background levels. Because of the low noise levels and the short duration of the construction period, noise impacts at the existing Tribal Hatchery during construction would be **low**. Because no new sources of noise are included in the planned upgrades at the existing Tribal Hatchery there would not be any change in noise levels during operation. Therefore, noise impacts resulting from the proposed upgrades at the existing Tribal Hatchery would be **low**.

Based on the Federal Transit Administration spreading noise model for attenuation over distance, assuming an ambient noise level of 45 dBA, a bulldozer (87 dBA at 50 feet) could be discernible above ambient noise from about 1,000 to 2,000 feet away from the construction zone. At the Twin Rivers Canyon Resort the closest residences are more than 3,000 feet from the proposed construction zone. Therefore, it is unlikely the temporary construction noise would be discernible at the closest off-site residences and noise impacts on residents would be **low**. The Tribe would close the Twin Rivers Canyon Resort to recreational users during construction of the new hatchery facilities so no recreational users would be present during construction. Therefore, the temporary noise impacts on recreationists during construction would be **low**.

During operation of the Twin Rivers Hatchery, the permanent noise sources would include small wellhead pumps; large recirculation pumps; mechanical water-chilling equipment and a diesel-powered backup generator (that would be tested occasionally during normal business hours). The wellhead water supply pumps would be submersible pumps and have no discernible noise. The large recirculation pumps, backup generator, and the mechanical water chillers at the hatchery would likely be inside the building or in dedicated weather/acoustical enclosures. These acoustical enclosures would reduce ambient noise levels at sensitive noise-receptors to near-background levels, so their noise impact would be **low**. Therefore, the permanent noise impacts during operation would be **low**.

The pumps to be used for water drawn from the Kootenai and Moyie Rivers would either be submersible pumps or vertical turbine centrifugal pumps at the intake locations. The submersible pumps would have no discernible noise. If vertical turbine centrifugal pumps are used they would be enclosed in a small building to attenuate noise.

Two emergency generators would be installed at the hatchery, one at the main hatchery building and one at the Kootenai River intake. Each generator would reside in a sound proof enclosure to attenuate noise.

3.11.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe will implement the following mitigation measures to avoid or minimize noise impacts.

- Employ a liaison, who would be available to provide information, answer questions, and address concerns during project construction.
- Schedule all construction work during daylight hours.
- Require sound-control devices on all construction equipment powered by gasoline or diesel engines that are at least as effective as those originally provided by the manufacturer.
- Operate and maintain all construction equipment to minimize noise generation.

3.11.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Improvements at the Tribal Hatchery and construction of the Twin Rivers Hatchery will create temporary construction noise and minimal operational noise. .

3.11.5 Cumulative Effects—Proposed Action

There are no other projects planned in immediate vicinity of either the upgrades to the existing Tribal Hatchery or the proposed Twin Rivers Hatchery so there is **no** potential for cumulative noise impacts as a result of the Proposed Action.

3.11.6 Environmental Effects—No Action

Under the No Action Alternative, the existing Tribal Hatchery would not be modified and the Twin Rivers Hatchery would not be built. Recreational use of the Twin Rivers Canyon Resort would continue similar to existing conditions. Therefore, there would be **no** noise impacts under the No Action Alternative.

3.12 Transportation

3.12.1 Affected Environment

The study area for transportation and rights-of-way includes area roadways used to access the existing Tribal Hatchery and the proposed hatchery site at the Twin Rivers Canyon Resort. The proposed hatchery site is accessed by a two-mile gravel access road from State Highway 2.

The existing Tribal Hatchery is located on Hatchery Road on the Kootenai Tribe of Idaho's Reservation, 4 miles west of Bonners Ferry, ID. Roadways leading to the Tribal Hatchery are rural and experience light traffic. Because there are no state highways in the vicinity of the Tribal Hatchery, there are no average daily trip (ADT) data for the roads. Much of the traffic in the area consists of agricultural equipment and travel associated with the scattered rural residences

On State Highway 2, 2010 average daily traffic (ADT) ranged from 775 vehicles (January) to 1,757 vehicles (July) at Moyie Springs (Idaho Department of Transportation, 2012). The only traffic traveling on the access road is traffic going to and from the Twin Rivers Canyon Resort. There are no estimates of the number of vehicles the Twin Rivers Canyon Resort access road.

3.12.2 Environmental Consequences—Proposed Action

At both locations, the Proposed Action has the potential to result in direct short-term impacts on transportation from increased traffic generated by construction vehicles carrying construction materials to and from the Tribal Hatchery and the proposed Twin Rivers Hatchery. Large construction equipment traveling to the proposed Twin Rivers Hatchery site may also periodically block traffic on Highway 2 causing very short-term delays for other vehicles. While the construction activities at both locations would temporarily increase traffic, the increase would represent a minor increase in daily traffic volume compared with existing roadway use is not expected to substantially impact traffic operations on the local roads. Although the presence of large construction vehicles or trucks containing materials could result in periodic traffic delays, potential delays would be brief and infrequent. Therefore, transportation impacts during construction at both locations would be **low**.

The proposed upgrades at the existing Tribal Hatchery would not result in any additional trips by hatchery staff so traffic impacts during operation would be **low**.

The proposed Twin Rivers Hatchery would result in additional daily trips along Highway 2 as staff travel to and from work each day. In the spring, trucks carrying adult broodstock would be travelling between the Tribal Hatchery and the Twin Rivers Hatchery. Trucks carrying juvenile white sturgeon and burbot would travel to and from the site several times a year to various releases points along the Kootenai River. Trucks carrying adult sturgeon from the Tribal Hatchery to the Twin Rivers Hatchery would travel approximately 28 miles round trip. This would result in 20-30 trips during the months of May and June when spawning occurs. Because of the infrequent nature of these trips and the relatively higher volume of traffic on area highways, operational traffic impacts would be **low**.

3.12.3 Mitigation—Proposed Action

The Tribe will implement the following mitigation measures to avoid or minimize transportation impacts:

- Keep construction activities and equipment clear of residential driveways, to the greatest extent possible.
- Employ traffic control flaggers and post signs along roads warning of construction activity and merging traffic for temporary interruptions of traffic, where needed.

3.12.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

During construction, potential unavoidable impacts would consist of minor delays and interruptions of local traffic along the roads leading to each of the facilities. These short-term impacts would cease once construction is completed. Some additional traffic would be generated during operation of the proposed hatchery; however, the additional traffic would be very minimal.

3.12.5 Cumulative Effects—Proposed Action

The Proposed Action would result in minimal increases in traffic during construction and operation. No known development or additional construction projects are known at this time that would increase traffic delays. Therefore, the Proposed Action would not result in cumulative impacts on transportation.

3.12.6 Environmental Effects—No Action

Under the No Action Alternative, the Twin Rivers Hatchery would not be constructed and upgrades at the Tribal Hatchery would not occur; therefore, there would be no impact on transportation.

3.13 Air Quality

3.13.1 Affected Environment

The study area for air quality includes parcels adjacent to Twin Rivers Canyon Resort, which could be affected by fugitive dust during construction, and areas adjacent to public roads that would be used by project-related delivery trucks. Boundary County is also included in the air quality study area because regional air quality could be affected by emissions from all sources within the county.

EPA and IDEQ both have responsibility for air quality in the state of Idaho. Under the Clean Air Act (42 U.S.C. 4701 *et seq.*), EPA has established National Ambient Air Quality Standards (NAAQS) to protect the public from air pollution (U.S. EPA, 2012). These standards focus on pollutants of particular concern for human health and the environment.

The key air pollutants of concern for the study area are listed below.

- **Particulate matter**. Particulate matter is generated by industrial emissions, residential wood combustion, motor vehicle tailpipes, and fugitive dust from roadways and unpaved surfaces. Two forms of particulate matter are regulated by EPA: particulate matter less than 10 micrometers in size (PM10) and particulate matter less than 2.5 micrometers in size (PM2.5). PM2.5 has a greater health effect than PM10 at locations far from the emitting source because it remains suspended in the atmosphere longer and travels farther. IDEQ does not monitor particulate matter in the study area. PM 10 and PM2.5 concentrations in the study area are likely to be less than the NAAQS, because the area is sparsely developed and traffic levels are relatively low.

- **Ozone.** Ozone is a regional pollutant caused by an atmospheric photochemical reaction of cumulative emissions. Ozone is primarily a product of more concentrated motor vehicle traffic during warm, sunny weather. Ozone would not be emitted by the existing or proposed hatchery, but it would form in the atmosphere via a reaction of substances emitted by the facilities (nitrogen oxides and volatile organic compounds from equipment such as backup generators, oil-fired space heating, gas stoves in the residences, lawnmowers, and tailpipes from commuter vehicles and haul trucks). IDEQ does not monitor ozone in the study area. Ozone concentrations in the study area are likely to be less than the NAAQS limits, because the area is sparsely developed and traffic levels are relatively low.

Existing localized sources of air pollutants in the study area include vehicles on state and local highways, residential home heating (particularly wood burning), agricultural practices (particularly tilling, outdoor burning and resuspension of dust and fine particles), and resuspension of road dust from traffic on unmaintained roadways.

Boundary County is in attainment with the NAAQS (Idaho Department of Environmental Quality, 2012). This means that the concentrations of air pollutants in the area are historically below (i.e., in attainment with) the limits described in the NAAQS.

3.13.2 Environmental Consequences—Proposed Action

Air pollutant emissions would be generated during the temporary construction phase and long-term operational phase of the existing and proposed hatcheries. In significant amounts, these pollutants could be a public health hazard, especially for people with respiratory ailments; and could reduce visibility on roads, highways, and in scenic areas, to the detriment of public safety or enjoyment. In addition, vehicle emissions and combustion of fossil fuels during project operations as well as during construction could emit greenhouse gases. Potential climate change impacts caused by greenhouse gas emissions are discussed separately in Section 3.14, Climate Change.

Typical air pollutants from construction sites include fugitive dust and vehicle emissions. Given the rural setting of the study area, the pollutants that could increase as a result of project construction activities are carbon monoxide, ozone, and particulate matter. An increase in fugitive dust particulate matter would be the main air quality concern. Fugitive dust could be created during construction, travel on unpaved surfaces, and other ground-disturbing activities. Although construction activities could increase dust and particulate levels, impacts would be **low** because they would be temporary and would occur in localized areas. The closest neighboring buildings are roughly 3,000 feet from the proposed hatchery on the ridge above the Moyie River, so the small amounts of fugitive dust generated during the construction process would disperse to levels lower than the NAAQS. For these reasons, the temporary fugitive dust impacts during construction would be **low**.

The operation of heavy equipment during construction could result in temporary increases in carbon monoxide, carbon dioxide, sulfur oxides, oxides of nitrogen, and volatile organic hydrocarbons. The increase in vehicle emissions from construction equipment would be temporary and localized to specific work areas, and would change on a daily or weekly basis. The increase in vehicle and equipment emissions likely would be relatively small comparable to current emission

levels found in agricultural and rural areas. For these reasons, impacts on air quality from tailpipe emissions during construction activities would be **low**.

Air quality could be slightly affected during operation and maintenance of the existing and proposed hatcheries. Vehicle emissions resulting from periodic deliveries to the existing and proposed hatcheries and commute trips by employees would be temporary and localized. For these reasons, impacts on air quality from operation and maintenance activities would be **low**.

In addition to the above key air pollutants, the Proposed Action would also emit pollutants such as carbon monoxide and sulfur dioxide. These pollutants would be emitted at low rates that have little potential to cause ambient concentration issues at the existing and proposed hatcheries.

The Proposed Action would also emit greenhouse gases, which are discussed in Section 3.14, Climate Change.

3.13.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the following mitigation measures to minimize impacts on air quality. See Section 3.14, Climate Change, for additional mitigation measures that relate to air quality.

- Transport all vegetation or other debris associated with construction clearing to an approved landfill.
- Use water trucks to control dust during construction, as needed.
- Ensure that all vehicle engines are maintained in good operating condition to minimize exhaust emissions.

3.13.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

There could be temporary increases in air pollutants during construction, and project-related trucks traveling on public roads would slightly increase regional emissions during operation of the existing and proposed hatcheries. Although these impacts could not be totally mitigated or avoided, they would not violate current air quality standards.

3.13.5 Cumulative Impacts—Proposed Action

No new facilities are proposed near the existing or proposed hatchery site. Traffic volumes along existing regional highways might increase as a result of regional population growth, but considering the low population densities in the region these increases would be unlikely to have an effect on air quality. Therefore, air quality in Boundary County is expected to remain in attainment, and cumulative air quality impacts from the Proposed Action would be **low**.

3.13.6 Environmental Consequences—No Action Alternative

Under the No Action Alternative, no new facilities would be constructed, so no construction-related emissions would occur. Maintenance of the recreational facilities at the Twin Rivers Canyon Resort

and the existing Tribal Hatchery facility would continue similar to existing conditions and would result in **low** air quality impacts similar to those described for the Proposed Action.

3.14 Climate Change

3.14.1 Affected Environment

Background

Greenhouse gases (GHGs) are chemical compounds in the atmosphere that absorb and trap infrared radiation as heat, which causes warming of the planet through a greenhouse-like effect. Human activities are causing an increase in atmospheric concentrations of GHGs. Increasing concentrations of GHGs could increase the earth's temperature up to 7.2 degrees Fahrenheit (°F) by the end of the twenty-first century (U.S. Environmental Protection Agency 2010).

The principal GHGs emitted through human activities are carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), and fluorinated gases (U.S. Environmental Protection Agency 2010). Each of those GHG constituents exhibits its own "global warming potential". CO2 is the most prevalent GHG emitted, so the emission rates for a mixture of GHG constituents is commonly combined into the equivalent amount of CO2 or CO2 equivalents (CO2e[5]) The burning of fossil fuels accounts for 81% of all GHG emissions in the United States. CO2 enters the atmosphere as a result of land use changes; burning of fossil fuels, including coal, natural gas, oil, and wood products; and manufacturing of cement. By 2005, CO2 levels had increased to 379 parts per million, a 36% increase compared to pre-industrial levels as a result of human activities (Intergovernmental Panel on Climate Change, 2007).

Federal Guidance

EPA's mandatory reporting threshold for annual CO2 emissions from stationary industrial sources is 25,000 metric tons of CO2e. This threshold is roughly the amount of CO2 generated annually by 4,400 passenger vehicles. If the industrial facility's emissions exceed this threshold, then the facility is required to report its GHG emissions to EPA, but the facility is not required to take any other action at this time (40 CFR 98).

In 2010, the Council for Environmental Quality (CEQ) issued draft guidance for how federal agencies should address GHG emissions and climate change impacts in EAs and EISs (Council for Environmental Quality 2010). The guidance recommends the following:

- Federal agencies should estimate direct GHG emissions. If the direct emissions exceed 25,000 tons per year, the agency should consider conducting a rigorous climate change evaluation for the project. CEQ emphasizes that 25,000 tons per year is not an impact threshold, but only an "evaluation threshold" that might warrant more rigorous evaluation.
- Federal agencies should consider the potential impacts of future climate change on the operation of a proposed action. For example, if the proposed action requires a reliable

[5] CO_2e is a unit of measure used by the Intergovernmental Panel on Climate Change that takes into account the global warming potential of each of the emitted GHGs using global warming potential factors. Global warming potential is a relative measure of how much heat a greenhouse gas traps in the atmosphere that compares the amount of heat trapped by a certain mass of the gas in question to the amount of heat trapped by a similar mass of carbon dioxide.

water supply source, the environmental document should consider whether future decreases in available water resources could affect the proposed action.

3.14.2 Environmental Effects—Proposed Action

GHG Emissions

Implementation of the Proposed Action would contribute to greenhouse gas concentrations in several different ways. Soil disturbance would occur during construction as foundations for structures and trenches for underground pipes are dug. Measurement of emissions from soil disturbance is difficult; however, research has shown that emissions as a result of soil disturbance are short-lived and return to background levels after several hours (Kessavalou, 1998). Based on the conservative methodology used to estimate vehicle emissions, the emissions related to soil disruption and vegetation decay are considered to be accounted for in the overall construction emission rates discussed below.

Emissions from construction, operations, and maintenance-related vehicles would impact atmospheric greenhouse gas concentrations incrementally because construction equipment and vehicles would be fueled by gasoline and diesel combustion motors.

The loss of carbon storage from the removal of vegetation at the site would be offset over time by the growth and accumulation of carbon in soils and new vegetation.

Greenhouse gas emissions were estimated based on the approximate number of vehicles to be used during project construction and the approximate distance those vehicles would travel during the construction period. For the proposed project, an estimated 60 vehicle round trips per day would occur between Bonners Ferry, ID and the two hatchery locations during the peak construction period. Construction would take about 2 years, with peak construction activity occurring during a 1-year period.

Greenhouse gas emissions were calculated for the 1-year peak construction period using the estimate of 60 vehicle round trips per day. A round trip was considered to be from Bonners Ferry, ID to each of the construction sites (approximately 20 miles). The greenhouse gas emission estimates are therefore artificially high in order to ensure that potential greenhouse gas emissions are fully described.

The estimated greenhouse gas emissions for the 1-year peak construction period would be 1,533 metric tons of CO_2e. While all emissions of greenhouse gases are significant in that they contribute to global greenhouse gas concentrations and climate change, the total CO_2e emissions from the proposed project would be low compared to emissions from other contributors. The emissions would also be lower than the U.S. Environmental Protection Agency's mandatory reporting threshold for annual CO_2 emissions, which is 25,000 metric tons of $C0_2$ equivalents.

Because the operation of each hatchery would not be a significant source of GHG emissions, and the vehicle trips per year associated with operation of the hatcheries would be less than the number of vehicle trips occurring during construction, the impact from GHG would be less than would occur during construction. Given this low contribution, the project's impact on greenhouse gas concentrations during operation and maintenance would be considered **low**.

Vulnerability and Adaptation: Potential Impacts of Future Climate Change on Future Operation of the Proposed Action

While research using various climate models clearly indicates that global climate change will result in increasing average annual temperatures over the coming decades in the Pacific Northwest, what effect that will have on river systems over the long term remains uncertain. The average of multiple climate model simulations projects that annual temperatures will increase 2.2° F by the 2020s and 3.5° F by the mid-21st century, compared to the average for 1970 to 1999 (United States Department of Agriculture, 2010). These models indicate that temperature increases would occur during all seasons, with the greatest increases projected in summer. The models show variability in estimating how much temperature will increase based on the assumptions used for the amount of emissions expected in the coming century. Estimates for temperature increases range from 5.9° F to 9.7° F in the Pacific Northwest by the end of the 21st century. The consensus among the scientific community is that future worldwide climate change could alter existing meteorological patterns of local precipitation, local snowpack and snowmelt, local hydrology, and local groundwater recharge (Intergovernmental Panel on Climate Change 2007). As a result, it is possible that worldwide climate change could affect the future seasonal patterns of water supplies that would be used by the Proposed Action.

3.14.3 Mitigation—Proposed Action

If the Proposed Action is implemented, the Tribe would implement the following mitigation measures to avoid or minimize impacts on GHG emissions:

- Implement vehicle idling restrictions.
- Encourage carpooling and the use of shuttle vans among construction workers to minimize construction-related traffic and associated emissions.
- Locate staging areas in previously disturbed or graveled areas, where practicable, to minimize soil and vegetation disturbance.
- Encourage the use of the proper size of equipment for each job.
- Use alternative fuels for stationary equipment at the construction sites, such as propane, or use electrical power, where practicable.
- Reduce electricity use in the construction office by using compact fluorescent bulbs and turning off computers and other electronic equipment every night.
- Recycle or salvage nonhazardous construction and demolition debris, where practicable.

3.14.4 Unavoidable Impacts Remaining After Mitigation—Proposed Action

Unavoidable impacts would include increases in GHG emissions. Increases in GHG emissions are expected to be well below EPA’s mandatory reporting threshold and much lower than CEQ’s evaluation threshold.

3.14.5 Cumulative Effects—Proposed Action

All levels of GHG emissions play a role in contributing cumulatively to global GHG concentrations and climate change. However, given the low emissions caused by the Proposed Action, its cumulative contribution to global GHG concentrations is considered **low**.

3.14.6 Environmental Effects—No Action

No new facilities would be constructed under the No Action Alternative so there would be no construction-related GHG emissions. Some minor GHG emissions would continue as a result of ongoing operation of the existing hatchery and maintenance activities at the existing hatchery and at the Twin Rivers Canyon Resort. Impacts from these emissions would be **low**.

Chapter 4
Environmental Consultation, Review, and Permit Requirements

This chapter addresses statutes, implementing regulations, and executive orders applicable to the Proposed Action. This EA is being sent to tribes, federal agencies, state agencies, and state and local governments as part of the consultation process for the Proposed Action. Tribes, and agencies consulted are included in the list in Chapter 5, Tribes and Agencies Consulted, of this EA.

4.1 National Environmental Policy Act

This EA was prepared pursuant to regulations implementing NEPA (42 U.S.C. 4321 *et seq*.), which requires federal agencies to assess the impacts that their actions may have on the environment. NEPA requires preparation of an EIS for major federal actions significantly affecting the quality of the human environment. BPA prepared this Preliminary EA to determine if the Proposed Action would create any significant environmental impacts that would warrant preparing an EIS, or if a FONSI is justified.

4.2 Fish and Wildlife

4.2.1 Endangered Species Act

The ESA (16 U.S.C. 1531 *et seq.*) establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants, and the preservation of the ecosystems on which they depend. The ESA is administered by USFWS for terrestrial species and some freshwater fish species and by NOAA Fisheries for anadromous fish and marine species.

Section 7(a) of the ESA requires federal agencies to ensure that the actions they authorize, fund, and carry out do not jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of critical habitat. Section 7(c) of the ESA and other federal regulations require that federal agencies prepare a biological assessment (BA) addressing the potential effects of their actions on listed or proposed endangered species and critical habitats.

BPA consulted the USFWS lists of fish, wildlife, and plant species in Boundary County that are protected under the ESA to determine which endangered or threatened species and critical habitat occur in the study area as defined in Sections 3.3, Vegetation, and 3.8, Fish and Wildlife, of this EA.

Based on the USFWS lists and reconnaissance-level surveys, BPA determined two species had the potential to occur and be affected by the Proposed Action: bull trout and bull trout critical habitat and Kootenai white sturgeon. BPA entered into pre-consultation with USFWS regarding potential effects on these species and critical habitat. Pursuant to the requirements of Section 7(c) of the ESA, BPA prepared a BA and submitted it to USFWS. The BA addresses effects of the Proposed Action on bull trout and Kootenai white sturgeon. BPA determined the Proposed Action would

likely adversely affect bull trout and bull trout habitat and not likely adversely affect Kootenai white sturgeon and Kootenai white sturgeon critical habitat. BPA submitted the final BA to USFWS in September 2012, with a request to enter into formal consultation. BPA has requested concurrence with the determination of no effect. The potential effects on the Proposed Action on bull trout and their critical habitat and Kootenai white sturgeon and their critical habitat are discussed in greater detail in Section 3.8, Fish and Wildlife. Upon completion of the ESA consultation process with the USFWS, the Proposed Action would comply with all terms and conditions suggested by USFWS for bull trout and its critical habitat and white sturgeon and its critical habitat.

4.2.2 Fish and Wildlife Conservation Act and Fish and Wildlife Coordination Act

The Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901 *et seq*.) encourages federal agencies to conserve and promote conservation of non-game fish and wildlife and their habitats. The Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq*.) requires federal agencies with projects affecting water resources to consult with USFWS and the state agency responsible for fish and wildlife resources. The USFWS and Idaho Department of Fish and Game will be sent copies of this Preliminary EA and mitigation measures designed to avoid and minimize impacts to fish and wildlife and their habitat is identified in Section 3.8, Fish and Wildlife, of this EA.

4.2.3 Migratory Bird Treaty Act and Federal Memorandum of Understanding

The Migratory Bird Treaty Act implements various treaties and conventions between the United States and other countries, including Canada, Japan, Mexico, and the former Soviet Union, for the protection of migratory birds (16 U.S.C. 703–712). Under the act, taking, killing, or possessing migratory birds, or their eggs or nests, is unlawful. The act classifies most species of birds as migratory, except for upland and nonnative birds such as pheasant, chukar, gray partridge, house sparrow, European starling, and rock dove.

BPA, through the U.S. Department of Energy, and USFWS have a memorandum of understanding (MOU) to address migratory bird conservation in accordance with Executive Order 13186, which directs each federal agency that is taking actions possibly negatively affecting migratory bird populations to work with the USFWS to develop an agreement to conserve those birds (U.S. Department of Energy and U.S. Fish and Wildlife Service 2006). The MOU addresses how both agencies can work cooperatively to address migratory bird conservation and includes specific measures to consider implementing during project planning and implementation.

Potential impacts on migratory birds and mitigation measures are discussed in Sections 3.3, Vegetation and 3.8, Fish and Wildlife. Construction, operation, and maintenance of the Proposed Action would result in low impacts on migratory birds, as a result of loss of habitat from tree and vegetation removal.

4.2.4 Bald Eagle and Golden Eagle Protection Act

The Bald Eagle and Golden Eagle Protection Act prohibits the taking or possessing of and commerce in bald and golden eagles, with limited exceptions (16 USC. 668–668d). Bald and

golden eagles do not occur in or around the existing or proposed hatchery sites. Mitigation measures to avoid and minimize impacts to wildlife, including birds are identified in Section 3.8.3.

4.3 Water Resources

4.3.1 Clean Water Act

The Clean Water Act (33 U.S.C. 1251 et seq.) regulates discharges into waters of the United States. The various sections that could potentially be applicable to the Proposed Action include Sections 401and 404.

Section 401: A federal permit to conduct an activity that causes discharges into navigable waters is issued only after the affected state certifies that existing water quality standards would not be violated if the permit were issued. IDEQ would review the Proposed Action's Section 404 permit application for compliance with Idaho water quality standards and grant certification if the permit complies with these standards.

Section 404: Authorization from the U.S. Army Corps of Engineers (Corps) is required in accordance with the provisions of Section 404 of the Clean Water Act when dredged or fill material is discharged into waters of the United States including wetlands. The Tribe will coordinate with the Corps to obtain a Section 404 permit for any fill placed in wetlands and work with IDEQ to obtain Section 401 water quality certification. Potential impacts on wetlands are described in Section 3.3, Vegetation and Wetlands, of this EA.

4.3.2 Floodplain and Wetland Regulations and Executive Orders

The U.S. Department of Energy mandates that impacts on floodplains and wetlands be assessed and alternatives for protection of these resources be evaluated in accordance with Compliance with Floodplain/Wetlands Environmental Review Requirements (10 C.F.R. 1022.12) and Executive Orders 11988 (Floodplain Management) and 11990 (Protection of Wetlands). Wetlands are also addressed in other laws, including the ESA and National Historic Preservation Act. Evaluation of impacts of the Proposed Action on floodplains and wetlands are discussed in Section 3.3, Vegetation and Wetlands, and Section 3.4, Floodplains, of this EA.

4.4 State, Area-wide, and Local Plan Consistency

As indicated in Section 3.2, Land Use and Recreation, the proposed upgrades to the Tribal Hatchery would not result in any change to the existing land uses or require any local land use approvals. While local land use regulations are inapplicable to tribal trust land, the Kootenai Tribe sought and obtained a Conditional Use Permit from Boundary County to ensure the proposed Twin Rivers Hatchery would be consistent with surrounding land uses, applicable land use plans, and zoning, and would not result in any substantial, long-term impacts on adjacent land uses. See Section 3.2, Land Use and Recreation, for further discussion.

4.5 Cultural and Historical Resources

Laws and regulations govern the management of cultural resources. A cultural resource is an object, structure, building, site, or district that provides irreplaceable evidence of natural or human history of national, state, or local significance, such as National Landmarks, archaeological sites, and properties listed (or eligible for listing) in the NRHP. Cultural resource-related laws and regulations include:

- Antiquities Act of 1906 (16 U.S.C. 431–433),
- Historic Sites Act of 1935 (16 U.S.C. 461–467),
- Section 106 of the National Historic Preservation Act (NHPA) (16 U.S.C. 470 *et seq*.), as amended,
- Archaeological Data Preservation Act of 1974 (16 U.S.C. 469 a–c),
- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470aa-mm), as amended,
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 *et seq*.),
- Executive Order 13007 Indian Sacred Sites, and
- American Indian Religious Freedom Act of 1978 (42 U.S.C. 1996, 1996a).

Section 106 of the NHPA requires federal agencies to consider the effects of their actions on historic properties. The NHPA provides a process, known as the Section 106 process that enables agencies to assess impacts on historic properties along with participation from interested and affected parties such as tribes, and then avoid, minimize, or mitigate for these impacts. Historic properties may be prehistoric or historic sites, including objects and structures that are included in or eligible for inclusion in the NRHP. Historic properties also include artifacts or remains within historic sites and properties of traditional and cultural importance to tribes.

To this end, BPA has provided information about the Proposed Action to and requested input on the level and type of proposed identification and evaluation efforts of the prehistoric resources from the Idaho SHPO, the Confederated Salish and Kootenai Tribes, Coeur d'Alene Tribe of Idaho, Kalispel Tribe of Indians, and The Kootenai Tribe of Idaho.

4.6 Executive Order on Environmental Justice

In February 1994, Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, was released to federal agencies. This order states that federal agencies must identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. Because the location of the Proposed Action is isolated from surrounding residents and would be owned and operated by the Tribe, it would have no impacts on nearby populations and so would not cause disproportionately high and adverse impacts on minority and low-income populations.

4.7 Air Quality

The federal Clean Air Act, as amended (42 U.S.C. 7401 *et seq.*), requires the EPA and individual states to carry out a wide range of regulatory programs intended to assure attainment of the NAAQS. In Idaho, both the EPA and IDEQ have responsibility for air quality. Because the Proposed Action would occur in an area that is currently in attainment for meeting the NAAQS and because no stationary sources of air emissions would occur, construction activities associated with the Proposed Action are exempted from state regulation. Air quality impacts from construction and operation are expected to be **low** and mitigation measures are discussed in Section 3.13, Air Quality.

4.8 Climate Change

Gases that absorb infrared radiation and prevent heat loss to space are called GHGs. Models predict that atmospheric concentrations of all GHGs will increase over the next century, but the extent and rate of change is difficult to predict, especially on a global scale. As a response to concerns over the predicted increase of global GHG levels, various federal and state mandates address the need to reduce GHG emissions, including the following.

- The Clean Air Act is a federal law that establishes regulations to control emissions from large generation sources such as power plants; limited regulation of GHG emissions occurs through the New Source Review permitting program.
- The EPA has issued the *Final Mandatory Reporting of Greenhouse Gases Rule* (40 C.F.R. 98) that requires reporting of GHG emissions from large sources. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs are required to submit annual reports to the EPA (U.S. Environmental Protection Agency 2010).
- Executive Orders 13423 and 13514 require federal agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates.

Because of the sources of GHG expected during construction and operation of the Proposed Action, GHG emissions are expected to be below EPA's mandatory reporting threshold. The impact of the Proposed Action on GHG concentrations would be low, as discussed in Section 3.14, Climate Change, of this EA.

4.9 Farmland Protection Policy Act

The Farmland Protection Policy Act (7 U.S.C. 4201 *et seq.*) directs federal agencies to identify and quantify adverse impacts of federal programs on farmlands. The purpose of this Act is to minimize the number of federal programs that contribute to the unnecessary and irreversible conversion of agricultural land to non-agricultural uses. As discussed in Section 3.2, Land Use and Recreation, of this EA, the Proposed Action would not convert any area of agricultural land to non-agricultural uses.

4.10 Hazardous Materials

The application of several regulations that pertain to the management and use of hazardous materials to the Proposed Action are summarized below.

4.10.1 The Spill Prevention, Control, and Countermeasures Rule

The Spill Prevention, Control, and Countermeasures Rule includes requirements to prevent discharges of oil and oil-related materials from reaching navigable waters and adjoining shorelines (40 CFR 112). It applies to facilities with total above-ground oil storage capacity (not actual gallons on site) of greater than 1,320 gallons and facilities with below-ground storage capacity of 42,000 gallons. No on-site storage of oil or oil-related materials is proposed as part of the Proposed Action.

4.10.2 Comprehensive Environmental Response, Compensation, and Liability Act

The Comprehensive Environmental Response, Compensation, and Liability Act, as amended, provides funding for hazardous materials training in emergency planning, preparedness, mitigation implementation, response, and recovery (42 USC 9601 *et seq.*). Eligible individuals include public officials, emergency service responders, medical personnel, and other tribal response and planning personnel. No hazardous materials sites are located within the existing Tribal Hatchery or the proposed Twin Rivers Hatchery site.

4.10.3 Uniform Fire Code

The local fire district may also require development of a Hazardous Materials Management Plan in accordance with the Uniform Fire Code. The Tribe would develop and implement such a plan, if required.

4.10.4 Resource Conservation and Recovery Act

The Resource Conservation and Recovery Act (RCRA), as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal facilities (42 USC 6901 *et seq.*). Each facility owner or operator is required to have a permit issued by EPA or the state. Typical construction and maintenance activities have generated small amounts of hazardous wastes, including solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated by the Proposed Action. These materials would be disposed of according to state law and the RCRA.

Chapter 5
Tribes, Agencies, and Persons Consulted

Those consulted or receiving notice of document availability include local, state, and federal agencies, public officials, and tribes in the project vicinity. Specific individuals were contacted to gather information and data about the project area and applicable requirements, as part of consultation, or for permit applications.

5.1 FEDERAL AGENCIES

U.S. Environmental Protection Agency

U.S. Army Corps of Engineers

U.S. Fish and Wildlife Service, Spokane Office

5.2 STATE AGENCIES

Idaho Department of Fish and Game, Boise, Idaho Office

Idaho Department of Environmental Quality

State of Idaho House and Senate members for Districts encompassing the project area

Idaho State Historic Preservation Office

5.3 TRIBES

Kootenai Tribe of Idaho

Confederated Salish and Kootenai Tribes

Kalispel Tribe of Indians

Coeur d' Alene Tribe of Idaho

5.4 LOCAL GOVERNMENTS

Boundary County

5.5 Land Owners

Peterson, D.

Moyie Springs Lumber Co LLC

Mortensen, V.

U.S. Bureau of Land Management

Brink, K.

Sweet, S.

Emerson Trust

Chapter 6
Glossary of Terms

100-year floodplain – areas with a 1% chance of being flooded during a given year.

A-weighted decibels – An expression of the relative loudness of sounds as perceived by the human ear.

Anadromous – Ascending rivers from the sea for breeding.

Bedrock – the native consolidated rock underlying the top soil.

Candidate species Plants and animals native to the United States for which the US Fish and Wildlife Service or the National Marine Fisheries Service has derived from sufficient information on biological vulnerability and threats to justify proposing to add them to the threatened and endangered species list, but cannot do so immediately because other species have a higher priority for listing.

Carrying capacity – Theoretical limit to the capacity of a natural ecosystem to support continued increase in consumption of its resources and in generation of pollution without being overwhelmed. It depends on factors such as population size and density, and rate of renewability of its resources.

Cumulative impacts – Impacts on the environment, which results from the incremental impact of an action when added to other past, present, and future actions.

Distinct Population Segment – The smallest division of a taxonomic species permitted to be protected under the Endangered Species Act.

Ecological niche – The ecological role and space that an organism fills in an ecosystem.

Endangered species – Plants or animals that are in danger of extinction through all or a significant portion of their ranges and that have been listed as endangered by the US Fish and Wildlife Service or the National Marine Fisheries Service.

Environmental justice populations – Minority and low-income populations as identified by Executive Order 12898, which requires federal agencies to analyze the effects of their actions on segments of the population that may disproportionately adversely affected.

Erratic boulders – Rocks or boulders that have been carried and deposited by glaciers.

Glacial till – unconsolidated material that has been moved and deposited by a glacier.

Greenhouse gas – A gas in an atmosphere that absorbs and emits radiation, e.g., carbon dioxide.

Invertebrate – animal species that do not have a spine.

Larvae – Newly hatched fish, typically with full fin complements and a fully developed digestive track

Mitigation – The act of making something less severe or harsh.

Moraine – glacially formed accumulation of unconsolidated glacial debris (soil and rock).

Ordinary high water mark – Refers to the highest level reached by a body of water that has been maintained for a sufficient period of time to leave evidence on the landscape, including vegetation and soils.

Outwash deposit – fluvial sediments laid down by glacial melt-water.

Palustrine wetlands – Non-tidal wetlands that are substantially covered with emergent vegetation. Palustrine emergent wetlands are wetlands dominated by non-woody, soft-stemmed plants while palustrine scrub-shrub wetlands are dominated by woody vegetation, such as young trees and shrubs.

Riverine wetlands – Freshwater, perennial streams comprised of the deepwater habitat contained within a channel.

Seismic fault – Fractures in the Earth's crust prone to earthquakes.

Sheet erosion – A very slow form of erosion where "sheet wash"—a thin film of water—— transports soil particles by rolling them along the ground.

Threatened species – Any plants or animals that are likely to become endangered species within the foreseeable future throughout all or a significant portion of their ranges and which have been listed as threatened by the US Fish and Wildlife Service or the National Marine Fisheries Service.

Chapter 7 References

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