

# RECLAMATION

*Managing Water in the West*

## **Draft Environmental Assessment**

### **Construction of a Third Hydroelectric Generating Unit**

### **Black Canyon Diversion Dam**

### **Gem County, Idaho**



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

**February 2016**

## U.S. DEPARTMENT OF THE INTERIOR

The mission of the Department of the Interior is to protect and provide access to our Nation's natural and cultural heritage and honor our trust responsibilities to Indian tribes and our commitments to island communities.

## MISSION OF THE BUREAU OF RECLAMATION

The mission of the Bureau of Reclamation is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public.

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Boise, Idaho

**February 2016**

DRAFT

# Acronyms and Abbreviations

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ACHP	Advisory Council on Historic Preservation
Administrator	BPA Administrator
AUM	animal unit months
BiOp	Biological Opinion
BLM	Bureau of Land Management
BMP	Best Management Practice
BPA	Bonneville Power Administration
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
cfs	cubic feet per second
CMU	Concrete Masonry Unit
CNEL	Community Noise Equivalent Level
CWA	Clean Water Act
dB	decibel
DEQ	Department of Environmental Quality
DOE	Department of Energy
DPS	distinct population segment
EA	Environmental Assessment
EID	Emmett Irrigation District
EO	Executive Order
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FCRPS	Federal Columbia River Power System

FONSI	Finding of No Significant Impact
HAER	Historic American Engineering Record
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
IDL	Idaho Department of Labor
ITAs	Indian Trust Assets
MBT	Migratory Bird Treaties
MOA	Memorandum of Agreement
MW	megawatt
MWH	Montgomery Watson and Harza
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NOAA Fisheries	National Oceanic and Atmospheric Administration National Marine Fisheries Service
NPDES	National Pollutant Discharge Elimination System
NPPCA	Northwest Power Planning and Conservation Act
NRHP	National Register of Historic Places
NTUs	Nephelometric Turbidity Units
O&M	operation and maintenance
OATT	Open Access Transmission Tariff
OSHA	Occupational Safety and Health Administration
ppv	peak particle velocity
psi	pounds per square inch
Reclamation	U.S. Bureau of Reclamation
RM	river mile
RMJOC	River Management Joint Operating Committee

SHPO	State Historic Preservation Office
TCP	traditional cultural properties
TES	threatened and endangered species
TMDL	total maximum daily load
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WMA	Wildlife Management Area

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# CONTENTS

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## Acronyms and Abbreviations

<b>Chapter 1</b>	<b>Purpose and Need.....</b>	<b>1</b>
1.1	Introduction.....	1
1.2	Proposed Action.....	2
1.3	Purpose and Need for Action.....	2
1.4	Location and Background.....	3
1.5	Scoping of Issues and Concerns .....	6
1.6	Legal Authorities .....	7
1.7	Regulatory Compliance .....	8
1.7.1	National Environmental Policy Act.....	9
1.7.2	Endangered Species Act (1973) .....	9
1.7.3	Clean Water Act (33 U.S.C. 1251 et seq.).....	9
1.7.4	National Historic Preservation Act of 1966 .....	10
1.7.5	Executive Order 13007: Indian Sacred Sites.....	10
1.7.6	Secretarial Order 3175: Department Responsibilities for Indian Trust Assets.....	10
1.7.7	Executive Order 12898: Environmental Justice .....	11
1.7.8	Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performances.....	11
<b>Chapter 2</b>	<b>Alternatives .....</b>	<b>13</b>
2.1	Introduction.....	13
2.2	Alternative Development .....	13
2.3	Description of Alternatives .....	13
2.3.1	Alternative A – No Action .....	13
2.3.2	Alternative B – Proposed Action.....	14
	Proposed Construction.....	14
2.4	Alternatives Eliminated from Consideration .....	22
2.5	Actions Considered for Cumulative Impacts .....	23
2.6	Summary Comparison of the Environmental Impacts of the Alternatives .....	24
<b>Chapter 3</b>	<b>Affected Environment and Environmental Consequences .....</b>	<b>29</b>
3.1	Introduction.....	29
3.2	Land Use, Recreation, and Power Generation .....	29

## CONTENTS (CONTINUED)

---

3.2.1	Affected Environment .....	29
	Agriculture/Irrigation .....	30
	Recreation.....	32
	Power Generation .....	32
3.2.2	Environmental Consequences .....	33
	Alternative A – No Action .....	33
	Alternative B – Proposed Action.....	33
	Mitigation .....	34
	Cumulative Effects .....	34
3.3	Reservoir Operation and Hydrology.....	34
3.3.1	Affected Environment .....	34
	Pumping Plants.....	35
	Payette Division Canal System .....	35
	Flow .....	36
3.3.2	Environmental Consequences .....	36
	Alternative A – No Action .....	36
	Alternative B – Proposed Action.....	37
	Cumulative Effects .....	37
3.4	Water Quality.....	37
3.4.1	Affected Environment .....	37
3.4.2	Environmental Consequences .....	39
	Alternative A – No Action .....	39
	Alternative B – Proposed Action.....	39
	Mitigation .....	40
	Cumulative Effects .....	41
3.5	Noise.....	41
3.5.1	Affected Environment .....	41
	Airblast .....	44
	Ground Vibration.....	44
	Existing Noise Levels.....	45
3.5.2	Environmental Consequences .....	45
	Alternative A – No Action .....	45
	Alternative B – Proposed Action.....	45
	Mitigation .....	46

## CONTENTS (CONTINUED)

---

	Cumulative Effects .....	46
3.6	Air Quality .....	46
3.6.1	Affected Environment .....	46
3.6.2	Environmental Consequences .....	49
	Alternative A – No Action .....	49
	Alternative B – Proposed Action.....	49
	Cumulative Effects .....	50
3.7	Vegetation .....	50
3.7.1	Affected Environment .....	50
3.7.2	Environmental Consequences .....	51
	Alternative A – No Action .....	51
	Alternative B – Proposed Action.....	51
	Mitigation .....	52
	Cumulative Effects .....	52
3.8	Fish and Wildlife.....	52
3.8.1	Affected Environment .....	52
	Fish .....	52
	Wildlife.....	53
3.8.2	Environmental Consequences .....	54
	Alternative A – No Action .....	54
	Alternative B – Proposed Action.....	55
	Mitigation .....	59
	Cumulative Effects .....	59
3.9	Threatened and Endangered Species .....	60
3.9.1	Affected Environment .....	60
	Bull Trout ( <i>Salvelinus confluentus</i> ) – Threatened and Designated Critical Habitat .....	61
	Yellow-billed Cuckoo ( <i>Coccyzus americanus</i> ) – Threatened .....	62
	Slickspot peppergrass ( <i>Lepidium papilliferum</i> ) – Proposed and Proposed Critical Habitat .....	64
	Canada Lynx ( <i>Lynx canadensis</i> ) – Threatened .....	65
	Northern Idaho Ground Squirrel ( <i>Urocitellus brunneus</i> ) – Threatened .....	65
	Whitebark Pine ( <i>Pinus albicaulis</i> ) – Candidate .....	65

## CONTENTS (CONTINUED)

---

	Anadromous Fish.....	66
3.9.2	Environmental Consequences .....	67
	Alternative A – No Action .....	67
	Alternative B – Proposed Action.....	68
	Cumulative Effects .....	68
3.10	Cultural Resources .....	68
3.10.1	Affected Environment .....	68
3.10.2	Environmental Consequences .....	69
	Alternative A – No Action .....	69
	Alternative B – Proposed Action.....	69
	Mitigation .....	70
	Cumulative Effects .....	71
3.11	Sacred Sites and Traditional Cultural Properties .....	71
3.11.1	Affected Environment .....	71
3.11.2	Environmental Consequences .....	72
	Alternative A – No Action .....	72
	Alternative B – Proposed Action.....	72
	Cumulative Effects .....	72
3.12	Indian Trust Assets .....	73
3.12.1	Affected Environment .....	73
3.12.2	Environmental Consequences .....	74
	Alternative A – No Action .....	74
	Alternative B – Proposed Action.....	74
	Cumulative Effects .....	74
3.13	Environmental Justice.....	74
3.13.1	Affected Environment .....	75
3.13.2	Environmental Consequences .....	76
	Alternative A – No Action .....	76
	Alternative B – Proposed Action.....	76
	Cumulative Effects .....	77
3.14	Socioeconomics .....	77
3.14.1	Affected Environment .....	77
	Population.....	77
	Demographics.....	78

## CONTENTS (CONTINUED)

---

3.14.2	Environmental Consequences .....	79
	Alternative A – No Action .....	79
	Alternative B – Proposed Action.....	79
	Cumulative Effects .....	80
3.15	Climate Change.....	80
3.15.1	Affected Environment .....	80
3.15.2	Environmental Consequences .....	81
	Alternative A – No Action .....	81
	Alternative B – Proposed Action.....	82
	Cumulative Effects .....	83
<b>Chapter 4</b>	<b>Consultation and Coordination.....</b>	<b>85</b>
4.1	Public Involvement .....	85
4.2	Scoping .....	85
4.3	Agency Consultation and Coordination.....	86
4.4	Tribal Consultation and Coordination .....	87
<b>Chapter 5</b>	<b>References .....</b>	<b>89</b>
<b>Appendices</b>		
Appendix A	Scoping, Comments, and Reclamation’s Responses on 2011 Draft EA	
Appendix B	IDFG Draft Mitigation Plan IDEQ Water Quality Action Plan SHPO Memorandum of Agreement	
Appendix C	Agency Consultation and Coordination	
Appendix D	Cultural and Tribal Correspondence	
Appendix E	EA Distribution List	
Appendix F	Comment Letters and Reclamation’s Responses (to be included in the FONSI/Final EA)	
<b>List of Figures</b>		
Figure 1-1.	Location of Black Canyon Diversion Dam.....	4
Figure 2-1.	Black Canyon powerplant third hydroelectric generating unit – location plan.....	15
Figure 2-2.	Black Canyon powerplant third hydroelectric generating unit – general arrangement, transverse section through unit and draft tube. ....	17

## CONTENTS (CONTINUED)

---

Figure 2-3.	Black Canyon powerplant third hydroelectric generating unit – longitudinal section through new penstock.....	18
Figure 2-4.	Black Canyon powerplant temporary office trailers and construction staging area.....	19
Figure 2-5.	Conceptual cofferdam structures constructed with (a) steel, (b) wood, or (c) sandbags. (Note – (c) shows a sandbag cofferdam which may be used downstream).....	21
Figure 3-1.	Project area or area of potential environmental impact for construction of a third hydroelectric generating unit at Black Canyon Diversion Dam.....	31

### List of Tables

Table 2-1.	Summary of environmental effects of actions.....	25
Table 3-1.	Representative outdoor and indoor noise levels (in units of dBA) (Illingworth and Rodkin 2006; USDOT FHA 2006). ....	43
Table 3-2.	National Ambient Air Quality Standards (EPA 2009). ....	47
Table 3-3.	Yellow-billed Cuckoo data summary for the 2014 field season.....	64
Table 3-4.	Racial population summary of the City of Emmett, Gem County, and the State of Idaho. ....	75
Table 3-5.	Income and poverty – State of Idaho, Gem County, and City of Emmett.....	76

# Chapter 1 PURPOSE AND NEED

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## 1.1 Introduction

The U.S. Department of the Interior, Bureau of Reclamation (Reclamation) prepared this revised Environmental Assessment (EA) in compliance with the National Environmental Policy Act (NEPA) and other relevant federal and state laws and regulations. This revised EA evaluates the construction of a third hydroelectric generating unit at the Black Canyon Diversion Dam, proposed by Reclamation. This activity would be in concert with, and include financial support from, the Bonneville Power Administration (BPA) to provide an additional source of renewable hydroelectric power at this facility located near the town of Emmett, Idaho.

Reclamation first announced its proposal for construction of the third hydroelectric generating unit at Black Canyon Diversion Dam through a news release on July 26, 2010. In August of 2010, Reclamation mailed a scoping document to agencies, Indian tribes, organizations, and individuals requesting their input on concerns over the proposed powerplant installation. A Draft EA was distributed for a 30-day comment period on June 26, 2011.

In October of 2011, the EA was completed and a Finding of No Significant Impact (FONSI) was approved and signed; however, in late 2012 and early 2013, as part of data collection needs for design, Reclamation drew down Black Canyon Reservoir to perform subsurface geotechnical analysis. These drawdowns, coupled with an ice jam, remobilized large amounts of sediment, which were subsequently transported downstream. This unexpected event resulted in new concerns regarding the reservoir and river fish population, water quality, and some new safety issues to the recreation area at Wild Rose Park. These concerns prompted Reclamation to develop a revised EA that supersedes the 2011 EA and FONSI.

This revised EA is being prepared to assist Reclamation in finalizing a decision on the recommended action alternative and to determine whether to issue a new FONSI or a notice of intent to prepare an environmental impact statement. This revised EA replaces the October 2011 EA as it addresses additional resources and changes that have occurred since October 2011. NEPA requires an environmental analysis on any federal action that may have a significant impact on the human environment.

## 1.2 Proposed Action

The Proposed Action is to construct a 12.5 megawatt (MW) hydroelectric generating unit at the Black Canyon Diversion Dam and includes:

- Constructing a new powerplant to house the unit;
- Placing a new penstock through the dam;
- Removing and replacing an existing administration building;
- Installing a new trash rake removal system;
- Installing new trashracks;
- Completing miscellaneous modifications to the existing powerplant;
- Removal of the current 69 kV switchyard and constructing a new 69 kV switchyard; and
- Realigning transmission lines currently on Reclamation property.

The third hydroelectric generating unit would use excess flows that currently pass over the top of the dam and redirect this water through the unit to create clean, renewable energy. As this is a run-of-the river powerplant, there will not be any change in facility operations or salmon augmentation flows provided from the Payette Division of the Boise Project due to the implementation of the Proposed Action. In addition, the project would preserve historic attributes of the existing facility and would construct the new facilities with similar historic appearance (see Appendix B – SHPO Memorandum of Agreement).

## 1.3 Purpose and Need for Action

The purpose of the Proposed Action is to provide an additional way of generating efficient and economical renewable hydroelectric power in accordance with Executive Order (EO) 13514, including:

- Helping BPA and Reclamation ensure an adequate, economical, efficient, and reliable power supply;
- Ensuring additional safety benefits for the switchyard;
- Optimizing use of the water resource of the Payette River;
- Maintaining cost-effectiveness; and
- Minimizing engineering and construction uncertainties.

The need for the action is to ensure agency compliance with executive branch direction to develop renewable energy resources (EO 13514). Additionally, Idaho is a net importer of power meaning that not enough power is generated within Idaho to meet the State's demands.

Likewise, BPA also transmits power from Washington State and the rest of the region to meet existing power demands in Idaho. Presently, there are transmission constraints limiting the amount of power that can be imported into Idaho. The proposed additional hydroelectric generating unit and associated facilities at Black Canyon Diversion Dam would satisfy part of this need. Also, safety issues concerning the switchyard will also be addressed by this action. Reclamation's objectives of enhancing safety at the site and increasing power production are consistent with the purposes of the Boise Project, which provide for safe operation of the facility as well as power production.

## **1.4 Location and Background**

The Black Canyon Diversion Dam and Reservoir are located in Gem County, Idaho, approximately 6 miles from the town of Emmett and about 30 miles northwest of the city of Boise, Idaho (see Figure 1-1). Black Canyon Diversion Dam is a feature of the Boise Project and impounds the Payette River. The reservoir is an important recreation resource in the region, for both local residents as well as those from the Boise metropolitan area. The Montour Wildlife Management Area (WMA) located at the upper east-end of the reservoir is managed cooperatively with Idaho Department of Fish and Game (IDFG) primarily for wildlife habitat and recreation use. Reclamation's jurisdiction includes the reservoir (1,100 surface acres) and adjacent lands (1,700 acres), as well as the Montour WMA (1,350 acres). Reclamation lands generally consist of a strip of land around the reservoir with about 12 miles of shoreline. Lands in the vicinity are predominantly for agricultural use and surrounding land ownership includes both federally managed land [Reclamation and the Bureau of Land Management (BLM)], as well as private lands, primarily rangeland and rural residences. The project area is further described in Chapter 3.



The current powerplant encloses two hydroelectric generators with a maximum generating capacity of 10.2 MW, and two hydraulically (water) driven pumps that deliver water to serve the EID Canal. Each of the existing unit's electrical components was upgraded from 4 MW to 5.1 MW in 1995 to provide the capability of generating 10.2 MW. The powerplant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes. Surplus power is delivered to BPA for marketing and distribution to regional industries and municipalities.

Since the 1990s, salmon flow augmentation guidelines have dictated facility operations as they direct the release policies that are different from past downstream discharges (NOAA Fisheries 2008a). Under the current salmon flow augmentation guidelines, up to 165,000 acre-feet of additional stored water is released during the June through August timeframe, resulting in additional flows of between 920 and 1,340 cubic feet per second (cfs) over the flow augmentation period.

In the 1980s, a *Planning Report and Draft Environmental Statement for the Boise Project Power and Modification Study within the Payette River Basin* was authorized to analyze the potential for developing hydropower plants at Cascade and Deadwood dams and for increasing power generation at Black Canyon Diversion Dam (Reclamation 1986). The basis of the planning report was to emphasize national economic development consistent with environmental statutes and state and local concerns. In 1985, the *Black Canyon Diversion Dam Hydroelectric Upgrade Feasibility Study* was completed by Reclamation (Reclamation 1985). An update of that document was completed in 2003 by Montgomery, Watson, and Harza (MWH) Global, Inc., and again in 2008 by HDR Engineering, Inc. The evaluation of 5 MW, 10 MW, and 15 MW conceptual designs, turbine analysis, and cost estimates were developed. Based on this information, BPA estimated the value of the generation determined from power rate information and provided this to Reclamation. Therefore, an additional 12.5 MW hydroelectric generating unit and associated equipment has been recommended.

BPA prepared a *Resource Contingency Programs Environmental Impact Statement (EIS)* in November 1995 (RCP EIS, Department of Energy (DOE/EIS-0230) and Amended Analysis (SA, DOE/EIS-0230/SA-02, May 9, 2001) to evaluate the trade-offs among resources to meet the load. BPA chose to implement the "Emphasize Conservation Alternative" which supported the development of new renewable resources, as well as conservation and efficiency improvements. In addition, BPA has chosen to implement the market driven alternative from BPA's Amended Analysis for the Business Plan EIS (BP EIS, DOE/EIS-0183, April 2007). The Proposed Action supports using renewable resources to meet BPA's long-term load obligations.

To meet increasing energy requirements and to comply with executive branch direction to develop renewable energy resources (EO 13514), Reclamation and BPA also sought to

develop additional new power generating projects with renewable resources to meet the load requirements of customers in the Southern Idaho area.

## 1.5 Scoping of Issues and Concerns

Scoping is an early and open process used to obtain information that helps identify issues and concerns related to a proposed action, the affected public and geographical area, alternatives, and constraints in the NEPA process.

In August of 2010, Reclamation mailed a scoping document to over 62 agencies, Indian Tribes, members of Congress, organizations, and individuals soliciting their help in identifying any issues and concerns related to the Proposed Action. Reclamation received 10 responses to the public scoping effort. The issues identified in the responses are summarized below:

### Issues/Comments from August 2010 EA Scoping

- In favor at this time. Will there be any changes to irrigation and recreation flows?
- Installation of draft tubes would require a Section 404 permit; however, the penstock and downstream information is insufficient to determine if permit required.
- Good idea to maximize power, but concerned if raise spillway-flood Montour.
- Go for it; cost effective and environmentally makes sense.
- Strongly support. Maximize renewable energy production.
- Concerned about building a new dam.
- Concerned about freestanding buildings over 120 square feet in size and if structures will be placed west of the dam.
- Indirect and direct effects on fisheries, including entrainment and mortality, water quality, including temperature, suspended solids, dissolved oxygen, water levels, and flows upstream and downstream of dam, changes in river morphology? Mitigation measures?
- Request for no load following at peak demand and enhance winter flows rather than restrict.
- Fully supports construction.

The Final FONSI/EA was finalized in October 2011 and following its completion, design plans and preparation for the construction project continued. On November 9, 2012, a news release was issued to inform the public of a single drawdown expected to occur in late-November to perform subsurface geotechnical analysis as part of design needs. Field work was put on hold in December due to heavy rainfall and a second drawdown was necessary to

resume the data collection. A news release informing the public of the resumed data collection was issued in January 29, 2013, with the expected drawdown to occur in mid-February. These drawdowns, coupled with an ice jam, remobilized large amounts of sediment that were subsequently carried downstream. This unexpected event and the subsequent concerns regarding the reservoir and downstream river fish population, water quality, and some new developments to the recreation area at Wild Rose Park prompted Reclamation to hold a public meeting.

Reclamation issued a News Release on June 13, 2013, and held a public meeting on June 25, 2013, in the city of Emmett to discuss the 2012/2013 drawdowns, future drawdowns, and the 2013 proposed EA to address public concerns. A public comment form with a 30-day response period was provided for further input.

A total of seven comments were received following the open house. The sources of the comments included: Emmett Mayor's Office, Gem County Commission, two irrigation districts, Payette River Recovery Commission, Idaho Conservation League, and a private citizen. The majority of comments supported the project; however, there were concerns regarding water quality and cumulative fish impacts. Based on these concerns and design changes, it was determined that the original 2011 EA should be superseded and replaced with this revised EA. Reclamation incorporated editorial revisions to clarify aspects of the document and to ensure accuracy. A summary of the 2011 scoping, comments, and Reclamation's responses are contained in Appendix A.

This 2016 EA includes additional information and evaluation of the relocation of power lines and changes to recreation (closure of Wild Rose Park); provides monitoring and mitigation plans for fish, wildlife, and water quality; and discusses potential impacts from climate change.

## 1.6 Legal Authorities

The Boise Project was authorized under the Reclamation Act of 1902, (as amended and supplemented).

The Northwest Power Planning and Conservation Act (NPPCA) (Northwest Power Act, 16 U.S.C. 839) authorizes Reclamation and BPA to undertake additions, replacements, and improvements at federal projects in the region; and directs the BPA Administrator (Administrator) to acquire renewable resources to the maximum extent practicable. Additionally, the Energy Policy Act of 1992 (42 U.S.C. § 13201, Section 2406) provides in part, and authorizes BPA without further appropriation and without fiscal year limitation, to expend funds that the Administrator determines necessary for the respective project.

The Snake River Water Rights Act of 2004 (H.R. 4981) directed the Secretary of the Interior, acting through Reclamation and other Department agencies, to carry out an agreement resolving major issues relating to the adjudication of water rights in the Snake River Basin. One of the purposes of this Act is to carry out the “Mediator’s Term Sheet” (also defined as the Agreement)” dated April 20, 2004 which includes a Snake River Flow Component and provides for continued delivery of salmon flow augmentation water for a 30-year period (through 2034). The provisions of this act improve Reclamation’s ability to provide water for salmon flow augmentation by increasing the long-term probability of obtaining 427,000 acre-feet and in some years providing as much as 487,000 acre-feet, and by minimizing the uncertainties related to the ability to protect the water in accordance with State law.

Reclamation has been delegated authority pursuant to the Fish and Wildlife Coordination Act (16 USC 661-666c); Section 5 of the Endangered Species Act of 1973 (16 USC 1534); and Section 7(a) of the Fish and Wildlife Act of 1956 (16 USC 742f(a)) to take the following actions, either directly or by providing financial assistance to non-Federal parties (255 DM 1.1.B.). Authority to award financial assistance agreements for projects associated with off-site locations (Paragraph 6.F.(2)(b)) is limited to the regional directors and Director, Management Services Office. The authority of the regional directors and Director, Management Services Office to award financial assistance agreements for all other projects authorized by this delegation can only be redelegated to designated grants officers.

- (a) Conduct activities for the improvement of fish and wildlife habitat associated with water systems or water supplies affected by Reclamation projects, including but not limited to fish passage and screening facilities at any non-Federal water diversion or storage project within the region;
- (b) Plan, design, construct, and monitor, including acquire lands or interest therein as needed, instream habitat improvements, including but not limited to fish passage screening facilities at off-site locations (as negotiated on privately owned lands and facilities not associated with a Reclamation project);
- (c) Acquire or lease water or water rights from willing sellers or lessors; and
- (d) Monitor and evaluate the effect of Reclamation actions on fish and wildlife resources including Endangered Species Act (ESA) listed species.

## 1.7 Regulatory Compliance

Various laws, executive orders, and secretarial orders apply to the Proposed Action and are summarized below. The legal and regulatory environment within which the federal activity would be conducted depends on which alternative is implemented.

### **1.7.1 National Environmental Policy Act**

The National Environmental Policy Act of 1969 (NEPA) requires that the action agency determine whether or not there are any environmental impacts associated with proposed federal actions. If there are no significant environmental impacts, a FONSI can be signed to complete the NEPA compliance.

### **1.7.2 Endangered Species Act (1973)**

Section 7 of the ESA requires federal agencies to use their legal authorities to promote the conservation purposes of the ESA and to consult with the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NOAA Fisheries), as appropriate, to ensure that effects of actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of listed species, or destroy, or adversely modify their critical habitat. As part of the ESA's Section 7, an agency must request information from the USFWS and the NOAA Fisheries on whether any threatened and endangered species (TES) occur within or near the action area. The agency then must evaluate impacts to those species.

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

Section 404 of the Clean Water Act (CWA) regulates the discharge of dredge and fills material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) and the Environmental Protection Agency (EPA) work with the Department of Environmental Quality (DEQ) to obtain certification for National Pollutant Discharge Elimination System (NPDES) permits and Section 404 dredge and fill permits. Permit review and issuance follows a sequence process that encourages avoidance of impacts, followed by minimizing impacts and, finally, requiring mitigation for unavoidable impacts to the aquatic environment. This sequence is described in the guidelines at Section 404(b)(1) of the CWA. Details on potential impacts to water quality are described in Chapter 3, Section 3.4.

The Idaho DEQ (IDEQ) administers Section 401 of the CWA in Idaho. IDEQ determines if a proposed project will meet water quality standards for any activities requiring certain federal permits including Section 404 permits. If the project will not create unacceptable water quality problems, IDEQ issues its 401 certification.

Reclamation will obtain appropriate permits (401 and 404) prior to construction activities.

#### **1.7.4 National Historic Preservation Act of 1966**

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires that federal agencies consider the effects that their projects have on properties eligible for or listed on the National Register of Historic Places (NRHP). The 36 Code of Federal Regulations (CFR) 800 regulations provide procedures that federal agencies must follow to comply with the NHPA. For any undertaking, federal agencies must determine if there are properties of National Register quality in the project area, the effects of the project on those properties, and the appropriate mitigation for adverse effects. In making these determinations, federal agencies are required to consult with the State Historic Preservation Office (SHPO), Native American tribes with a traditional or culturally-significant religious interest in the study area, the interested public, and in certain cases, the Advisory Council on Historic Preservation (ACHP). Details on potential impacts to cultural resources are described in Chapter 3, Section 3.10.

#### **1.7.5 Executive Order 13007: Indian Sacred Sites**

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

#### **1.7.6 Secretarial Order 3175: Department Responsibilities for Indian Trust Assets**

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

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

### **1.7.7 Executive Order 12898: Environmental Justice**

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

### **1.7.8 Executive Order 13514: Federal Leadership in Environmental, Energy, and Economic Performances**

EO 13514, *Federal Leadership in Environmental, Energy, and Economic Performance*, seeks to establish an integrated strategy towards sustainability in the Federal Government. Section 8(i) of the EO requires that as part of the formal Strategic Sustainability Performance Planning process, each federal agency evaluate agency climate change risks and vulnerabilities to manage both the short- and long-term effects of climate change on the agency's mission and operations. Section 5(b) of the EO specifies that the Chair of the Council on Environmental Quality (CEQ) shall issue instructions to implement the order (CEQ's *Federal Agency Climate Change Adaptation Planning: Implementing Instructions*, issued March 4, 2011) and provide implementing instructions to be used by federal agencies in climate change adaptation planning.

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## Chapter 2 ALTERNATIVES

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### 2.1 Introduction

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

### 2.2 Alternative Development

The alternatives and project design features presented in this chapter were determined by analyzing the purpose and need of the project and the results of several feasibility studies with criteria such as cost effectiveness, repayment ability, efficient use of the water resource, including salmon flow augmentation, and preservation of the historical attributes of the current facility. The scope of the project was defined by the purpose and need for the project, as defined in Chapter 1, and the issues developed during scoping. Using this guidance, the range of alternatives developed includes a proposed installation of a new hydroelectric generating unit and associated facilities adjacent to the existing powerplant, and a No Action alternative. No new alternatives were identified during the scoping process.

### 2.3 Description of Alternatives

#### 2.3.1 Alternative A – No Action

Under the No Action alternative, a new third hydroelectric generating unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to the Occupational Safety and Health Administration (OSHA) and Reclamation Health and Safety Standards.

### 2.3.2 Alternative B – Proposed Action

Under Alternative B, Reclamation would construct a 12.5 MW third hydroelectric generating unit at the Black Canyon Diversion Dam. The Proposed Action would include the following actions described below:

- Construction of a new powerplant.
- Removal and replacement of an existing switchyard.
- Removal and replacement of an existing administration building.
- Modernization of the electrical features for the existing two hydroelectric units.
- Construction of a new 12.5-foot-diameter penstock.
- Installation of a new trash rake removal system.
- Installation of new trashracks (Figure 2-1).
- Realignment of transmission lines currently on Reclamation property.

Reclamation completed planning and studies to ensure the economic benefit of constructing the project outweighed the cost. Historically, and dependent on weather and irrigation demands, water flows over the drum gates and proceeds downstream. Under Alternative B, this water would be diverted from flowing over the drum gates and into a unit used for power generation in the third unit.

The third unit would produce 12.5 MW, while the other two existing units would each continue to produce 5.1 MW. The new hydroelectric generating unit would be substantially more efficient than the existing two units; therefore, the existing two units would only be used when more than 12.5 MW can be generated by the available flows. During high flows, all three units would be running, generating a maximum output of 22.7 MW. During low flows, the third unit would be utilized down to approximately 5 MW, with the other two units offline.

#### Proposed Construction

##### *Powerplant*

The new powerplant would be located northwest of the existing powerplant (Figure 2-1). The overall footprint of the new powerplant consists of the following exterior features:

- A 53-foot by 100-foot by 46-foot superstructure;
- Cast-in-place concrete and precast concrete wall panels or Concrete Masonry Unit (CMU) infill with cement-base coating;
- An 18-foot by 20-foot main service entrance door; and
- A 10-foot by 14-foot service entrance adjacent to the existing powerplant.



The new powerplant would contain numerous interior features for proper operation and maintenance (O&M) and safety requirements including:

- A new 12.5 MW hydroelectric generating unit;
- New unit controls and pertinent electrical systems;
- A restroom with an emergency shower; and
- An overhead bridge crane.

All design features currently satisfy industry safety standards, American Disability Act Accessibility Guidelines, and Idaho SHPO recommendations (Figure 2-1, Figure 2-2, Figure 2-3).

The contractor will require a staging area for equipment, materials, office space, organization, and planning. For staging purposes, the contractor will be allowed to use the area designated on Figure 2-4, as well as areas within Wild Rose Park. Any areas damaged from staging will be restored to pre-construction conditions.

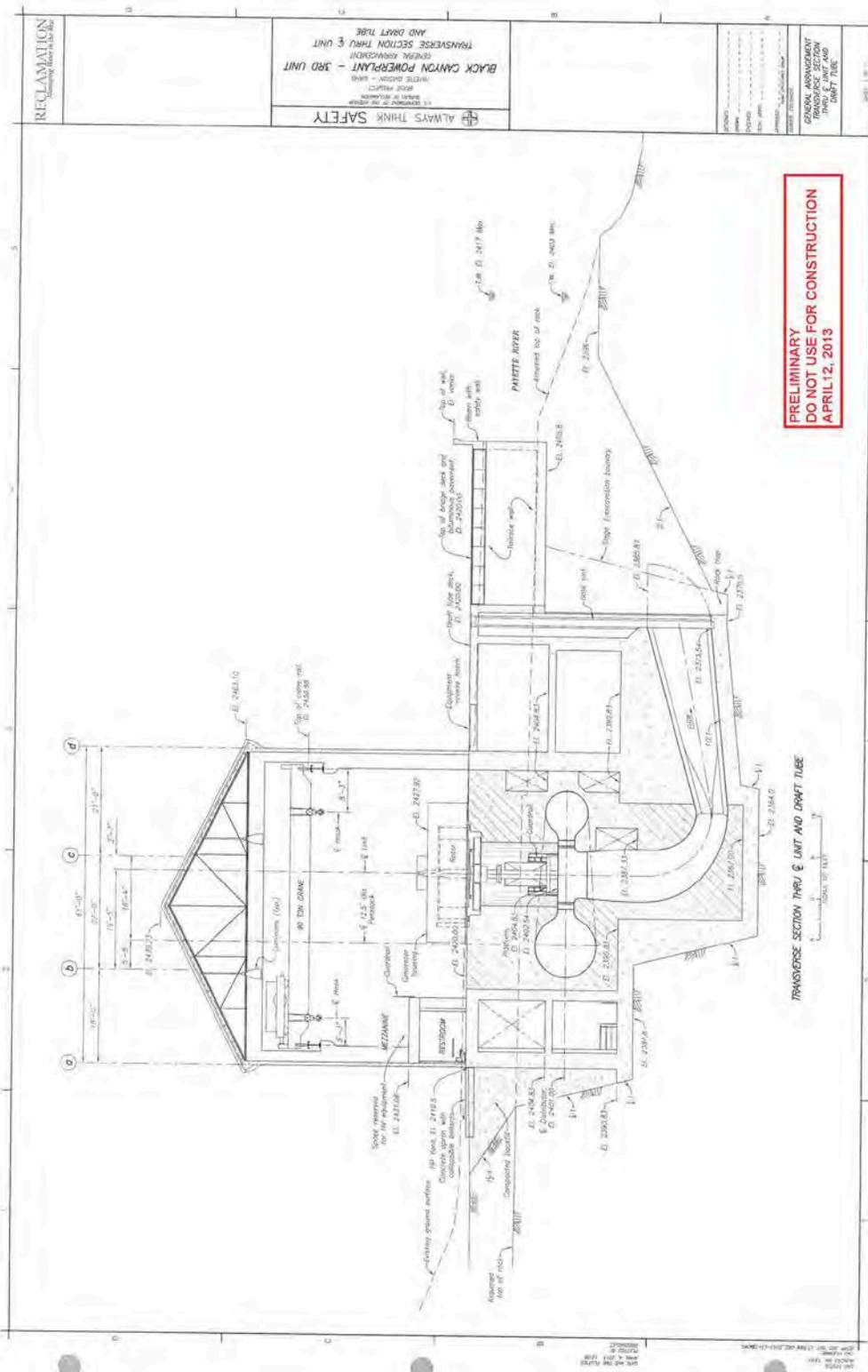


Figure 2-2. Black Canyon powerplant third hydroelectric generating unit – general arrangement, transverse section through unit and draft tube.





### ***Switchyard***

The existing switchyard would be moved to a location northeast of the existing powerplant. Upon relocating the switchyard, two transmission lines on Reclamation property would be moved to accommodate the location of the new switchyard.

To continue generation of power during the construction period, Reclamation may institute a phased-approach whereby a new switchyard would be constructed while the current switchyard is being utilized. Once the new switchyard is complete, power would be transferred to the new switchyard and the old switchyard would be decommissioned.

Rerouting of power lines, cables, relocation of distribution panels, and equipment rearrangement would be required to maintain station service power and transmission line service during construction.

### ***Administration Building***

The current administration building would be demolished during construction of the new hydroelectric generating unit. Temporary trailers located in Wild Rose Park would be used for temporary administration office space. Once construction of the new powerplant is complete, a new administration building would be erected. The new structure would continue to provide space for multi-purpose uses and administrative staff. The two temporary trailers would be removed when the new administration building is complete.

The construction of a second building may be determined necessary to provide office space for displaced staff during the construction of the third generating unit. If constructed, the second building would be located northwest of the new powerplant along the west perimeter of the current facility grounds and would be completed after the proposed third unit project is finished.

### ***Temporary Station Service***

During construction of the new powerplant, the current station service power provided to the powerplant/facility) would be interrupted, thereby, precipitating the need to provide temporary station service. Idaho Power would provide temporary station service with a transformer and voltage regulator connected to its existing power grid. The transformer would be located near the north end of the abutment of Black Canyon Diversion Dam.

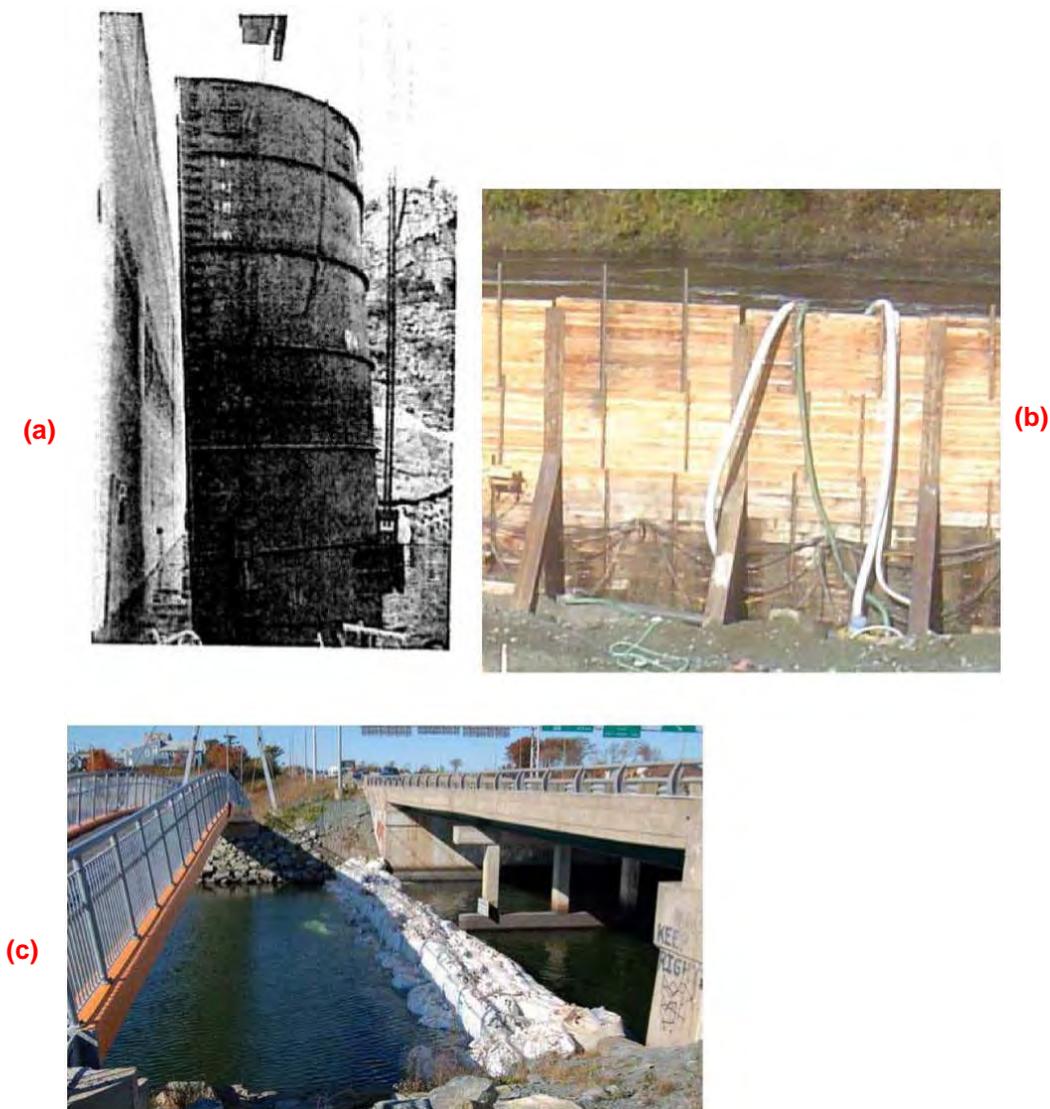
### ***Penstock and Slide Gate***

The penstock would be installed on the front face of the dam. Although partially buried in the ground near the generating unit, its alignment would be parallel to the existing penstocks. Removal of existing rock would be required near the base of the dam in the area where the

penstock is buried near the generating unit. Following dam penetration, a 9-foot by 11-foot slide gate for the new penstock would be installed on the upstream side of the dam.

### *Cofferdam*

Under normal reservoir operations, Black Canyon Reservoir would be drawn down for the penetration of the penstock and installation of the slide gate on the upstream face to minimize the extent of drawdowns during construction. A cofferdam would likely be necessary and may be installed on the upstream dam face (see Figure 2-5). An additional cofferdam may be necessary to accommodate downstream excavation.



**Figure 2-5. Conceptual cofferdam structures constructed with (a) steel, (b) wood, or (c) sandbags. (Note – (c) shows a sandbag cofferdam which may be used downstream).**

During construction of the third hydroelectric generating unit, it is anticipated that some blasting approximately 40 to 100 feet away from the tailrace would be required for installation of the cofferdam (see Sections 3.2 and 3.5). Blasting would take place during the non-irrigation season when downstream flows are at its lowest elevation. Reclamation would require the contractor to utilize best management practices (BMPs) such as the use of silt curtains to control any potential sediment releases in order to protect water quality. The timing of such operations during such low water elevation periods should result in a minimal impact to water quality. Since new material may be placed in the reservoir and tailrace area, a Section 404 permit from the USACE would be required for the Proposed Action alternative. In addition, IDEQ would then provide a CWA Section 401 water quality certification for the construction activities. These permits and certifications would outline requirements to minimize the impacts to water quality associated with the construction activities.

### *Trash Rake*

A trash rake is a screen that blocks debris from entering the hydro-intakes and causing damage. Debris accumulates throughout the year and must be physically removed annually to avoid a blockage. A new trash rake system would be installed to remove debris from the trashracks. Currently, the Black Canyon Reservoir needs to be lowered 10 to 20 feet on an annual basis to remove trash and debris from the trashracks. With the new trash rake, the need for lowering the reservoir on an annual basis for trash rake cleaning would be eliminated.

### *Trashrack*

A new trashrack would be provided to replace the current trashrack that is shared by the existing hydro-pumps and hydroelectric generating units. The new trashrack is needed to accommodate the new trash rake system. In addition, a new separate trashrack would be installed for the new third hydroelectric generating unit.

## **2.4 Alternatives Eliminated from Consideration**

Reclamation evaluated several alternatives for increasing power production at Black Canyon Diversion Dam since the initial 1985 feasibility study. Various physical arrangements (depending on the generation capacity chosen) are theoretically possible, but the existing configuration limits the viable options. The following alternatives were analyzed and subsequently eliminated:

- Building a new powerplant either downstream of Cobblestone Park or to the west of the existing facility; rejected due to high costs and inconvenient location to other facilities.

- Using the existing open intake area and installing a new penstock along the face of the dam and to the south of the existing penstocks; rejected due to logistical issues.
- Constructing an outdoor powerplant; rejected due to more complex increases in maintenance issues.
- Replacing turbine runners and upgrading generators of the existing hydro-generating units; both rejected due to limited room for expansion and limited size of existing facility based on average flow conditions.
- Considering several hydroelectric generation capacities – 5 MW (worse economic benefit) and 15 MW (best economic benefit but rejected due to size given restricted site conditions).

## 2.5 Actions Considered for Cumulative Impacts

"Cumulative Effect of Impact" is defined as the "impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7). The CEQ interprets this regulation as referring only to the cumulative impact of the direct and indirect effects of the proposed action and its alternatives when added to the aggregate effects of past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Past, present, and reasonably foreseeable actions identified in the area (public or private) that would adversely impact the same resource area evaluated in this EA, would be additive effects to the proposed project. Actions considered for cumulative impacts are identified by location below.

Agriculture (farming and grazing) and timber resource products are the two basic local industries in the area. Agricultural activity in the Boise and Payette Valleys started in the early 1880s when settlers began filing on arid lands under private irrigation enterprises. By 1900, about 148,000 acres in the area had been placed under irrigation. By the 1920s, the valley was producing an abundance of orchard fruit, specifically cherries and apples. Under provision of the Reclamation Act of June 17, 1902, the U.S. Secretary of the Interior authorized construction of the original Boise Project on March 27, 1905, and the construction of Black Canyon Dam on June 26, 1922. Black Canyon Dam was constructed for 2 years and became operational in 1924. The Boise Project currently furnishes irrigation water in southwestern Idaho and eastern Oregon to 225,000 acres of project lands and 165,000 acres of land under special and Warren Act contracts. There are 114,000 acres of irrigated land in the Payette Division that receive water from the Payette River and Black Canyon Reservoir, as well as surplus drainage from the Arrowrock Division. Storage reservoirs in the Payette

Division include Deadwood Reservoir on Deadwood River and Cascade Reservoir on the North Fork of the Payette (Reclamation 2004a).

Livestock grazing occurs on the surrounding areas of Black Canyon Reservoir. Reclamation leases more than 600 acres of federal land at Black Canyon Reservoir for grazing purposes. Grazing leases specify the cow-calf pairs of animal unit months (AUMs) allowed on each parcel leased (ranging from 10 AUM to 42 AUM) and the dates that grazing is permitted (typically April 1 through June 15 and September 1 through October 30). Cattle and sheep have historically been trailed through the Montour WMA and Black Canyon Project lands (Reclamation 2004a).

The timber industry in Gem County began in the late 1800s. The Boise Payette Lumber Company bought the site in 1917. The company later became the Boise Cascade Company and finally the Boise Corporation (Idaho Counties 2006). During the mid-1900s, the mill was the fifth largest in the world. However, the timber industry has declined because of a lack of a steady supply of logs. As a result, Boise Cascade closed its Emmett mill in the 1980s. The mill later burned in an accidental fire.

## **2.6 Summary Comparison of the Environmental Impacts of the Alternatives**

The environmental impacts, including proposed mitigation, of the Proposed Action alternative are compared in Table 2-1 against the environmental impacts that would result under Alternative A – No Action. The environmental consequences of the alternatives arranged by resource are described in detail in Chapter 3. The terms “environmental consequences” and “environmental impacts” are synonymous in this document.

**Table 2-1. Summary of environmental effects of actions.**

Resource	Alternative A – No Action	Alternative B – Proposed Action
Land Use, Recreation, and Power Generation	No construction of a new separate third hydroelectric unit, switchyard will remain in place, no trash rake installation, and administration/shop building will remain in present location. Power generation will continue at current operational levels.	<p>During an approximate yet-to-be determined 3-year construction period, Wild Rose Park would be closed. Two or more short-term drawdowns (anticipated November through March) may affect recreation. During construction, there would be an increase in dust, traffic, and blasting along the north bank of the river.</p> <p>Basic land use and power generation would not be adversely affected following construction.</p> <p>No adverse effects to camping and recreation. Impacts would be minimal and temporary during the construction period. Other equivalent options are available.</p>
Reservoir Operation and Hydrology	No construction of a new third hydroelectric unit, switchyard will remain in place, no trash rake installation, and administration/shop building will remain in present location and reservoir operations will continue as usual.	Following construction, reservoir operations are likely to be affected during drawdowns.
Water Quality	Since no action will occur, current water quality conditions will remain.	Temporary reservoir drawdowns during construction may have adverse effects on water quality within the riverine system below the dam. A water quality action plan has been developed in concert with IDEQ.
Noise	Existing powerplant and O&M noise will remain at current levels.	Potential short-term noise impacts. Noise from blasting may have a short-term adverse impact to resident fish in the immediate reservoir area.

2.6 Summary Comparison of the Environmental Impacts of the Alternatives

Resource	Alternative A – No Action	Alternative B – Proposed Action
Air Quality	Since no action will occur, current air quality conditions will remain.	Air impacts are not likely to exceed statutory requirements, and BMP's such as water sprays to control dust emissions from the construction site, buffer distances between construction activities and air sensitive receptors, avoidance of simultaneous dust emission activities, reduction in the numbers of equipment operating in critical areas can be applied to reduce poor air quality conditions.
Vegetation	No impacts to existing vegetation; surrounding area will be undisturbed.	Some manicured areas would be disturbed; BMPs would be employed for weed control. Any areas damaged from staging would be restored to pre-construction conditions. No adverse effects anticipated.
Fish and Wildlife	Due to no construction activities, there will be no effects to fish or wildlife.	<p>Increased fish entrainment may occur from the reservoir during the short-term construction-related drawdowns. Temporary impacts to the fish community may have adverse effects as a result of increased sediment deposition resulting from the transport of suspended sediments from Black Canyon Reservoir into the downstream river. A mitigation plan has been developed in concert with IDFG.</p> <p>Potential for temporary impacts to wildlife may occur due to construction noise and activity. Some wildlife could adapt to the disturbance or relocate. No adverse effects anticipated.</p>
Threatened and Endangered Species (TES)	Due to no construction activities, there will be no effects to listed species.	There would be no adverse effects as there are no known populations of TES within the project area.
Cultural Resources	There will be no construction activities. All existing structures will remain in their current condition.	Potential for adverse effects to the historic integrity of the dam and existing powerplant.

2.6 Summary Comparison of the Environmental Impacts of the Alternatives

Resource	Alternative A – No Action	Alternative B – Proposed Action
Sacred Sites and Traditional Cultural Properties (TCPs)	No construction of a new separate third hydroelectric unit, switchyard will remain in place, no trash rake installation, and administration/shop building will remain in present location.	No Sacred Sites or TCPs have been identified; therefore, no adverse effects.
Indian Trust Assets (ITAs)	Due to no construction activities, there will be no effects to ITAs.	No adverse effect.
Environmental Justice	Currently, there are few, if any, minority populations in or near the project area. No Action will not result in disproportionately high and adverse human health or environmental effects.	No adverse effect.
Socioeconomics	No anticipated changes to the economy or demographics as a result of continued power production within the capacity of the existing units.	Potential for beneficial effects as construction activities would bring a temporary economic boost to the local economy.
Climate Change	Potential for adverse effects with the changing climate (i.e., drought, erratic weather events, or shifting high flows).	Potential for adverse effects with the changing climate (i.e., drought, erratic weather events, or shifting high flows).

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# **Chapter 3 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

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## **3.1 Introduction**

This chapter describes existing conditions, environmental consequences, and proposed mitigation for affected resources in the project area. This is not a comprehensive discussion of every resource rather this chapter focuses on aspects of the environment that may be affected by the recommended federal action being considered. This chapter compares the effects of the Proposed Action (Alternative B) and the No Action alternative on the resources that were identified through scoping as key components of the affected environment, or those that must be analyzed due to laws, regulations, or policies.

Impacts caused by the Proposed Action are limited to those events described in this chapter. The influence of past actions are not specified in this document but may be reflected in the current conditions that are part of the No Action alternative. Although other actions are considered in the referenced mitigation plan, we recognize that the scope of this document is limited to the Proposed Action being considered. Additionally, the Proposed Action or referenced mitigation plan does not cover routine maintenance associated with the operation of Black Canyon Diversion Dam and Reservoir.

## **3.2 Land Use, Recreation, and Power Generation**

### **3.2.1 Affected Environment**

Reclamation owns Black Canyon Diversion Dam and Reservoir and a significant portion of the land immediately adjacent to the reservoir (approximately 3,900 acres). Approximately 2,800 acres of Reclamation land is terrestrial while the reservoir is roughly 1,100 surface acres. Using 1993 LANDSAT (satellite imagery) data for land cover, most of the land north and south of Black Canyon Reservoir has been classified as “rangeland.” Lands surrounding Emmett Valley to the west, Montour Valley to the east, and Sweet Valley to the northeast of the project area (Figure 3-1) are classified as “irrigated agriculture.” For the purpose of this EA, the project area upstream would include the full pool elevation of the reservoir from the upstream end of the Montour WMA to the dam and Reclamation lands to the north and south of the reservoir to the dam. Downstream of the dam would include all Reclamation lands to the north and south of

Payette River immediately below the dam including Wild Rose Park and Cobblestone Park. In addition, it would include the Payette River to the confluence with the Snake River to the east of the City of Emmett. There are small portions of lands adjacent to rivers and other water bodies, such as the reservoir, that have been classified as “forested” or “non-forested wetlands” (Reclamation 2004a). The town of Emmett is the only area near the project area classified as “dense urban” (Reclamation 2004a). Primary land uses surrounding the Reservoir and project area include agriculture/irrigation, recreation, and power generation.

### **Agriculture/Irrigation**

Land use within the project area is primarily agricultural with dry land and irrigated croplands, along with upland grazing. Agricultural activity in the Boise and Payette valleys started in the early 1880s when settlers began filing on arid lands under private irrigation enterprises. By 1900, about 148,000 acres in the area had been placed under irrigation. Water within the project area is managed by the Payette Division within the Boise Project. The Boise Project currently provides irrigation water in southwestern Idaho and eastern Oregon to 225,000 acres of project lands and 165,000 acres of land under special and Warren Act contracts, for a total of 390,000 acres. Of the 390,000 acres, the Payette Division accounts for approximately 114,000 acres of irrigated land. The Payette Division delivers irrigation water through diversions, pumps, and withdrawals from Black Canyon Canal, including surplus drainage from Arrowrock Reservoir. Storage reservoirs in the Payette Division include Deadwood Reservoir on Deadwood River and Cascade Reservoir on the North Fork of the Payette. The Boise Project grows sweet corn seed, which provides a major portion of the nation’s requirements. Boise Project also produces large quantities of grain, onions, sugar beets, corn, potatoes, apples, pasture, and alfalfa hay and seed. The hay and forage crops support a large number of local dairy and beef cattle. Uplands are used for open grazing of cattle and sheep. Landownership is mostly private, with some public lands found in the uplands and river bottom.

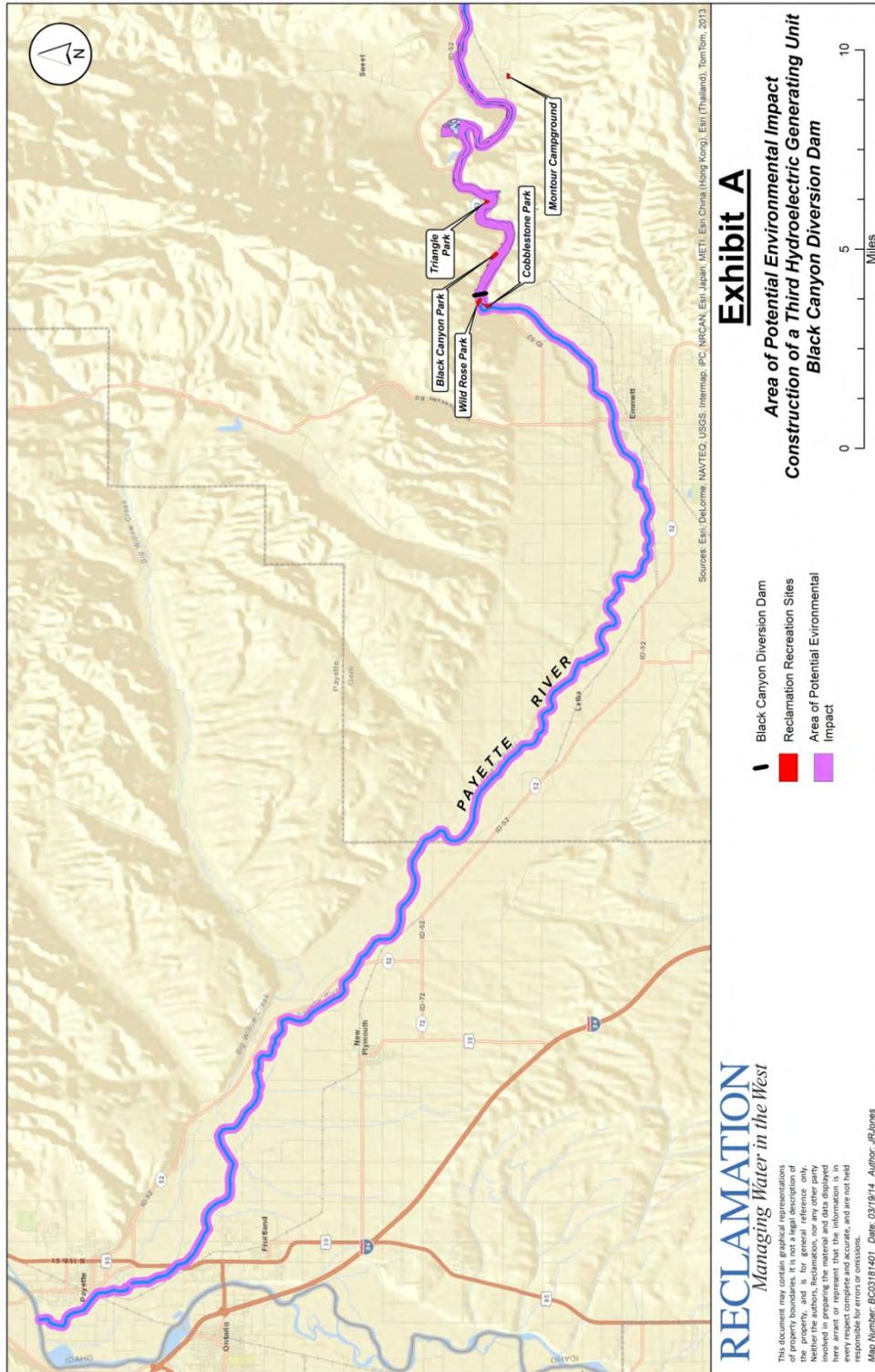


Figure 3-1. Project area or area of potential environmental impact for construction of a third hydroelectric generating unit at Black Canyon Diversion Dam.

## Recreation

Developed recreation facilities are provided by Reclamation in five locations around Black Canyon Reservoir: Wild Rose Park, Cobblestone Park, Black Canyon Park, Triangle Park, and Montour Campground.

Wild Rose Park is located below the dam adjacent to the Black Canyon powerplant and the proposed project area. Wild Rose Park is 11.3-acres located on the site of the original construction camp used when Black Canyon Diversion Dam was being built. Wild Rose Park currently provides manicured lawns, dispersed individual picnic tables, restrooms, potable water, a group picnic shelter, beach sand volleyball courts, and a small gazebo. The shelter and gazebo can be reserved for a fee.

Cobblestone Park is also below the dam, just downriver and across the river from Wild Rose Park. It offers manicured lawns, individual picnic tables, restrooms, potable water, beach sand volleyball courts, and a group shelter.

Black Canyon Park, the most intensely used park, is located on the reservoir approximately one mile east of the dam. Its amenities include manicured lawns, individual picnic tables, restrooms, potable water, a two-lane boat ramp, a beach area (including volleyball courts), several piers, and two picnic shelters that may be reserved for a fee.

Triangle Park is located on the reservoir approximately 3.2 miles east of the dam. The entire site may be reserved for a fee for group events. It has manicured lawns, dispersed individual picnic tables, restrooms, a small, shallow boat ramp, a group fire ring, beach sand volleyball courts, a medium-size gazebo, and a small gazebo that sits on top of a hill at the entrance.

Montour Campground is located approximately 10 miles from the reservoir within the Montour WMA and offers manicured lawns, dispersed individual picnic tables, restrooms, beach sand volleyball courts, and potable water.

## Power Generation

In addition to providing water diversion for irrigation, the dam has a hydroelectric powerplant with two generators, each with an initial generating capacity of 4 MW. Each generator was upgraded in 1995 to 5.1 MW; however, maximum operations are limited to 5.0 MW. The plant supplies power to the Southern Idaho Federal Power System. The powerplant is operated as “run-of-the-river” meaning little or no storage water is provided. The transmission of power is handled between Idaho Power and BPA through the Open Access Transmission Tariff (OATT). BPA manages the power and any shortages are absorbed by BPA through their interconnections with Idaho Power. In 1997, the southern Idaho automation program was implemented that allows remote control of the southern Idaho

powerplants. This implementation has resulted in decreased operational expenses and increased operational efficiency for all powerplants (see Section 3.3 – Reservoir Operations and Hydrology).

### **3.2.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. The land use activities surrounding Black Canyon Diversion Dam powerplant would continue to be managed as it currently is. Power generation and routine maintenance would continue at its current operating status.

#### **Alternative B – Proposed Action**

The overall addition of a third unit is an expansion within an existing powerplant facility which has undergone extensive upgrades in the past; therefore, any impact to land resources would be an extension of the existing conditions. A new road would be constructed to provide access for the new switchyard. Additionally, the main entrance road may be repaved if impacted by construction activities. All other activities would be done within the existing facility grounds and the Proposed Action would not adversely affect basic land use including agricultural practices. Therefore, no mitigation measures are proposed.

During an approximate yet-to-be determined 3-year construction period, Wild Rose Park would be closed for safety issues as well as to use as a staging area for the contractor during construction (Figure 2-4). Safety issues may include but are not limited to increased dust, traffic, and blasting noise along the north bank of the river. Dust and noise may affect visitors to Cobblestone Park during construction, due to their proximity to the dam. Impacts from dust and noise at Triangle Park and Black Canyon Park would be significantly less than at Cobblestone Park due to the separation from construction; however, IDEQ requires the use of specific BMPs to control fugitive dust at all construction sites (IDAPA 58.01.650-651) (IDEQ 2008). Recreation would not be adversely effected, as other camping and recreation opportunities exist within the surrounding area. Any areas damaged from staging would be restored to preconstruction conditions.

Total generation from the Southern Idaho Generation sources should not be significantly impacted by this project due to the minimal amount of power generated at the facility. Although the power lines would be rerouted, they would all be on Reclamation property that has previously been disturbed. Total power generation would not be adversely affected, although, the two existing units would be offline for the majority of construction. The Proposed Action has the potential for beneficial effects to future power generation; therefore, no mitigation measures are proposed.

#### **Mitigation**

Impacts to camping and recreation would be short term; however, under the Proposed Action, Wild Rose Park closure would be mitigated by operating Cobblestone Park with as many equivalent activities as possible to Wild Rose. A few of the additional amenities include allowing it to be reserved for a fee for group events. In addition, all of the other parks would remain open and operable for seasonal use under their existing terms and conditions. The water level in the reservoir is anticipated to be at normal level when the parks are open.

The contractor would be required to use specific BMPs to control fugitive dust at all construction sites. Fugitive dust would be suppressed by spreading water over disturbed areas where heavy equipment is working during dry conditions.

Signs would also be posted throughout the construction period to reduce and/or warn traffic of the proposed project (see Section 3.5 – Noise).

#### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.3 Reservoir Operation and Hydrology**

### **3.3.1 Affected Environment**

Black Canyon Diversion Dam is a concrete gravity dam with an ogee overflow spillway. The dam has a structural height of 183 feet and serves to divert water to the Payette Division through Black Canyon Canal. The original reservoir capacity was 44,700 acre-feet but heavy siltation over time has reduced the capacity. The volume at full pool is 29,822 acre-feet at elevation 2997.5. Water is diverted at Black Canyon Diversion Dam by gravity into the Black Canyon Main Canal on the south side of the Payette River. Water supply to the Black Canyon Main Canal is also provided by an electrical pump. Water is also supplied to the EID Canal on the north side of the river by two hydro-pumps, located in the existing powerplant. The powerplant's electrical components were each upgraded from 4 MW to 5.1 MW in 1995

to provide the capability of generating 10.2 MW; however, present generating capacity is limited to about 10 MW without turbine upgrades. The powerplant supplies power to the Southern Idaho Federal Power System.

In 1988, a 6-inch raise in Black Canyon Reservoir water surface was implemented by modifying the spillway drumgate and the radial gate at the Black Canyon Main Canal headworks. This was done to improve regulation of irrigation diversions from Black Canyon Reservoir to the Black Canyon Main Canal and to conserve the amount of stored water released from upstream reservoirs to meet fluctuating irrigation demands.

### **Pumping Plants**

There are three pumping plants associated with Black Canyon Diversion Dam: (1) Black Canyon at the Black Canyon Diversion Dam, (2) `C` Line Canal on the Black Canyon Main Canal, and (3) Willow Creek on `C` Line Canal East, about 4 miles northeast of Middleton, Idaho. There are also four small relift pumping plants.

The Black Canyon Pumping Plant contains two pumps directly connected to turbines; the `C` Line Canal plant has five pumps; and Willow Creek has two motor-driven pumps lifting water from the `C` Line Canal East.

There are also two direct connected turbine-driven pumps located in the powerplant to serve the EID Canal on the north side of the river.

### **Payette Division Canal System**

The Black Canyon Main Canal is 29 miles long and extends from the Black Canyon Diversion Dam south and west along the Payette River. The canal has a diversion capacity of 1,300 cfs.

The `C` Line Canal East, with diversion capacity of 469 cfs, begins at `C` Line Canal Pumping Plant on the Black Canyon Main Canal and is 21 miles long. The `C` Line Canal West branches from the `C` Line Canal East, extends 24 miles, and has a diversion capacity of 60 cfs.

The `A` Line and `D` Line Canals begin at the terminus of the Black Canyon Main Canal. The `A` Line Canal is 33 miles long and has a diversion capacity of 226 cfs; the `D` Line Canal, 39 miles long, has a diversion capacity of 254 cfs.

The EID receives most of its water supply from the North Side Black Canyon Canal, but EID lands south of the Payette River are supplied by the Black Canyon main canal. Both canals divert water from the Payette River at Black Canyon Diversion Dam. This supplemental water is supplied by two hydro-pumps located in the existing powerplant.

## Flow

Water from the Payette River basin below the dam is used for irrigation, power, salmon flow augmentation, recreation, as well as water quality and other fish and wildlife purposes (NOAA Fisheries 2008b). From Black Canyon Diversion Dam, the average monthly discharge (in cfs) in dry and wet years ranges from 700 cfs to 7,000 cfs respectively, with the average ranging around 2,825 cfs. Since 1993, in response to the terms and conditions cited in associated Biological Opinions (BiOps) for listed anadromous fish, Reclamation has provided salmon flow augmentation water for the lower Snake and Columbia Rivers. Water has been provided from Reclamation uncontracted reservoir space, reservoir space and natural flow rights Reclamation has acquired from sellers, and rental of water from Idaho rental pools (District 1 - Upper Snake River, District 63 - Boise River, and District 65 - Payette River).

Flow releases to two hydroelectric generation units from Black Canyon Diversion Dam occur through individual intakes and penstocks. The intakes are located on the upstream face of the dam and the individual unit penstocks penetrate the dam horizontally at the intake level. The penstocks are built on the face of the dam with the invert of the upper end of the penstock elevation at approximately 2468 feet, and the lower end at the invert elevation of approximately 2410 feet. The existing penstocks are 8 feet in diameter. The two 5 MW generating units consist of vertical Francis-type turbines with a spiral cases. The spillway consist of three bays, each with float controlled, 16-foot-high drum gates. The maximum spillway design discharge capacity is 40,000 cfs, but probable maximum spillway discharge is significantly higher than the spillway design discharge. The tailwater levels vary with total release from the spillway, release through low-level outlets, and discharges through the hydro-pumps and hydroelectric generating units. The spillway crest elevation is 2482.5 feet. The reservoir level would be lowered below 2,430 feet to enable the construction of the penstock penetration, intake installation, trashrack replacement, and other activities.

### 3.3.2 Environmental Consequences

#### Alternative A – No Action

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. The land use activities surrounding Black Canyon Diversion Dam powerplant would continue to be managed as it is currently.

River flows and reservoir levels above and below the Diversion Dam would remain similar to operations over the past several years, depending on runoff in the basin, and would continue to serve the purpose of irrigation, recreation, power, salmon flow augmentation, as well as water quality and other fish and wildlife purposes.

### **Alternative B – Proposed Action**

Under the Proposed Action, construction of a third powerplant and its operations, should not affect water flows since the facility is operated as “run-of-the-river.” Water would run through the new hydroelectric generating unit instead of spilling over the drum gates. This action would not affect any associated existing water rights, salmon flow augmentation, or standard operations of irrigation districts and water users. Storage levels of the upstream reservoirs would remain as they are depending on natural conditions. The operation would be the same as under the No Action alternative, whereas, Reclamation would continue to honor its historic contracts and operational responsibilities of managing water and providing this resource to water users. Replacement of the trashrack would occur during the winter low flow period, and these flows would continue to be passed through the sluice gates located below the trashracks. Since much of the watershed upstream of Black Canyon Dam is unregulated, inflows into the reservoir can fluctuate substantially. When reservoir water levels are below the spillway elevation, inflows greater than the capacity of the sluice gates would cause reservoir water levels to increase.

### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.4 Water Quality**

### **3.4.1 Affected Environment**

The lower Payette River downstream of Black Canyon Dam (river mile [RM] 38.5 to RM 0.0) encompasses approximately 2,000,000 acres. Approximately 380,000 acres of irrigated and non-irrigated lands from this area have been recorded in the *Lower Payette River Subbasin Assessment and Total Maximum Daily Load* (TMDL) report for the lower Payette River area (Ingham 1999).

Section 303(d) of the CWA requires states to develop TMDLs for those water bodies determined not in full support of the designated beneficial uses and those water bodies are considered to be water quality limited. A TMDL documents the amount of pollutant(s) a water body can assimilate without violating state water quality standards. As defined in 40 CFR Part 131, these plans are designed to provide load allocations to both point sources

(waste-load allocations), non-point sources (load allocation), and provide for a margin of safety.

Temperature, nutrients, and bacteria are listed as pollutants of concern in the lower Payette River and are at levels that are impairing or could impair beneficial uses. Beneficial uses impacted or impaired included cold water biota, salmonid spawning, and primary contact and secondary contact recreation uses (Ingham 1999).

Sources of pollutants include both point sources and non-point sources. Point sources are limited mainly to municipal treatment plants and confined animal feeding operations. Non-point sources are associated with agricultural, urban, suburban, and rural areas.

Total phosphorus and nitrogen are at concentrations that may cause nuisance aquatic vegetation growth. However, it was concluded that nutrients are not currently impairing beneficial uses under current flow conditions. While dissolved oxygen concentrations do not drop below water quality standards, monitoring indicated that aquatic growth is causing fluctuation in dissolved oxygen levels.

Summer water temperatures in the lower Payette River are warm and exceed water quality standards for both cold water biota and salmonid spawning. However, other factors including habitat modification and flow alteration may contribute to impairment of beneficial uses. Blockage and diversion structures are interfering with migration patterns of trout species to historic spawning areas. Although it is demonstrated that water temperatures exceed current water quality standards for cold water biota and salmonid spawning, it is believed that warm water temperature is not the only pollutant impairing beneficial uses. Other conditions that preclude the development of a TMDL for temperature include warm water temperatures that exceed water quality standards originating from Black Canyon Reservoir (40 CFR 131.10(g)(3)(4)(5)). The *Lower Payette River 5-year Subbasin Assessment and Review* report (2010) by IDEQ identified that there is no continuous water temperature data available for most of the control monitoring locations in the river, data from 2008 was evaluated using the maximum weekly maximum air temperatures 90th percentile method. Air temperature as recorded at Payette, Idaho is 10 and 25°F below the standard for all but one week from May through June, and 2 to 15°F below the standard from mid-August through September. Based on that analysis, there is enough data to confirm that this section of the lower Payette River is impaired for temperature and that the water delivered to the subbasin by Black Canyon Dam is the most prominent source of thermally altered water (IDEQ 2010). The mainstem river water temperature exceeds salmonid spawning and cold-water aquatic life criteria May through October and water temperature of the river usually gains 5°C, or 20 percent, between the outfall of the dam and the confluence with the Snake River.

Fecal coliform (fecal coli) bacteria levels exceed the water quality standards for both primary and secondary contact recreation. These levels are noted from below Black Canyon

Diversion Dam to the Snake River (RM 25 to the confluence). Overall fecal coli reduction of 84 percent would be required to achieve water quality standards. Load allocation would focus on non-point sources only (load allocation).

Past Reclamation water quality monitoring efforts during reservoir drawdown periods have indicated that sediment and turbidity can become elevated at very low reservoir elevations. These past drawdowns have included sluice gate and dam O&M, as well as drawdowns in preparation for the construction of the third hydroelectric generating unit.

### **3.4.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, the third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. Water quality and the various TMDL components would remain at their current levels.

#### **Alternative B – Proposed Action**

Under the Proposed Action, the construction of a third hydroelectric generating unit and its associated facilities would proceed. Water temperatures currently exceed State of Idaho criteria for cold water biota and salmonid spawning, the Proposed Action should not change the conditions from those described in the No Action alternative.

Actual construction would not adversely affect water quality; however, drawdowns may increase turbidity and suspended sediment in the downstream river. Based on previous drawdowns conducted for sluice gate and dam O&M, as well as geophysical surveys in 2012/2013, increased turbidity has been documented in the riverine system. As a result of at least two more proposed drawdowns, the Proposed Action would have short-term, temporary adverse effects to water quality within the riverine system below the dam, but would not likely affect the water quality in the reservoir system above the dam.

The period in which sediment remobilized from the reservoir during drawdowns would be short term in duration, but of likely high concentrations. Based upon previous reservoir drawdowns, it is expected that turbidity would range from 50 to 1,000+ Nephelometric Turbidity Units (NTUs) over background conditions during the descending phase of the

drawdowns, but should improve to near ambient conditions once the reservoir begins to refill. The effects of sediment remobilization would dissipate downstream as the released sediment is relocated to point bars and along the river banks. In addition, the effects would be further minimized following the spring freshet, which would rework any point bars or bank storage, cleaning gravels and refreshing mud flats along the length of the Payette River. While posing a short-term increase in turbidity, the temporary nature of the sediment releases would be addressed through the water quality action plan. This plan would address BMPs for sediment concentration reduction, monitoring, and a short-term activity exemptions from water quality standards during the drawdown periods associated with the installation and construction of the third hydroelectric unit at Black Canyon Diversion Dam.

Any point discharges from the switchyard would be contained in an approved system; as well as for the new powerplant and administration building. These systems would be incorporated into the designs of the facilities. Under the Proposed Action, a general stormwater permit would be acquired to address any run-off from construction activities.

During construction of the third hydroelectric generating unit, standard construction BMPs would be implemented to control potential short-term impacts to water quality as a result of the possible installation of a cofferdam and potential blasting operations approximately 40 to 100 feet away from the tailrace. Both installation of any cofferdam or blasting would likely take place during the non-irrigation season when downstream flows are at the winter minimum. If water quality impacts were to occur, they would be short term and associated with minor sedimentation or turbidity issues. However, these issues are typically controlled through stormwater permits and construction BMPs.

#### **Mitigation**

Prior to blasting and material removal, the contractor would be responsible for providing a Stormwater Pollution Prevention Plan to control any potential sediment releases in order to protect water quality. The contractor would be required to comply with any Section 401 or 404 permit conditions. In regards to water temperature, nutrients and bacteria, total phosphorus, nitrogen, or fecal coliform bacteria, no mitigation measures are proposed because neither alternative is anticipated to greatly change or alter levels of these water quality parameters due to construction of the third hydroelectric generating unit.

Based on the previous drawdown conducted for the sluice gate and dam O&M, geophysical surveys in 2012/2013, and on at least two more proposed drawdowns, the Proposed Action may have adverse effects to water quality within the riverine system below the dam. These water quality issues, including increased turbidity and mobilization of sediment from the reservoir into the riverine system, would be monitored prior to, during, and following any further construction activities and would be developed in a cooperative Black Canyon Diversion Dam Water Quality Action Plan with IDEQ (See Appendix B).

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## Cumulative Effects

Past, present, and reasonably foreseeable future agricultural water quality impacts, when added to the potential sediment releases from this project, would be minor. Sediment released from Black Canyon Reservoir into the lower Payette River may be deposited in the streambed as the river flows downstream to the Snake River. During past drawdowns, an increase in turbidity (an indicator of sediment) has been documented. The majority of past reservoir drawdowns have occurred to address O&M issues. Specifically for the proposed project, a reservoir drawdown occurred in late 2012 and early 2013 for a geophysical survey. This past event, in combination with the possibility of two or more drawdowns during the proposed project construction period, may be considered a cumulative impact. Additionally, this impact, when added to agricultural water quality impacts in the area, may be a cumulative impact of sediment deposition in the lower Payette River, which may have an impact to water quality.

To reduce the magnitude and duration of this cumulative impact, Reclamation is partnering with IDEQ on the development of a Water Quality Action Plan that mitigates for potential impacts to water quality (Appendix B). Additionally, production agriculture, through BMPs is continually improving water quality of agricultural runoff. This too would decrease the magnitude and duration of the sediment effects.

## 3.5 Noise

This section defines noise, describes the existing noise setting and the potential noise during the Proposed Action. Construction hours would likely range from 8 to 12 hours per day and may take place 7 days per week.

### 3.5.1 Affected Environment

Noise is defined as unwanted sound that is objectionable because it is disturbing or annoying due to its pitch or loudness. Pitch is the height or depth of a tone or sound. Higher pitched signals sound louder to humans than sounds with a lower pitch. Loudness is intensity of sound waves combined with the reception characteristics of the ear.

A decibel (dB) is a unit of measurement that is used to indicate the relative amplitude of a sound. Sound levels in dB are calculated on a logarithmic scale. Subjectively, each 10 dB increase in sound level is generally perceived as approximately a doubling of loudness.

There are several methods of characterizing sound. The most common is the A-weighted sound level or dBA. This scale gives greater weight to the frequencies of sound to which the human ear is most sensitive. Representative outdoor and indoor noise levels in units of dBA are shown in Table 3-1. Most commonly, environmental sounds are described in terms of an average level that has the same acoustical energy as the summation of all the time-varying events. This energy equivalent sound/noise descriptor is called Leq. The most common averaging period is hourly, but Leq can describe any series of noise events of arbitrary duration, since the sensitivity to noise increases during the evening and at night, largely because excessive noise interferes with the ability to sleep. Twenty-four hour descriptors have been developed that incorporate artificial noise penalties added to quiet-time noise events. The Community Noise Equivalent Level (CNEL) is a measure of the cumulative noise exposure in a community, with a 5 dB penalty added to evening (7:00 p.m. to 10:00 p.m.) and a 10 dB addition to nocturnal (10:00 p.m. to 7:00 a.m.) noise levels. The Day/Night Average Sound Level, Ldn, is essentially the same as CNEL, with the exception that the evening period is dropped and all occurrences during this 3-hour period are grouped into the daytime period. A brief discussion of each of these effects and standards commonly used to assess the impacts of blasting is shown in Table 3-1.

**Table 3-1. Representative outdoor and indoor noise levels (in units of dBA) (Illingworth and Rodkin 2006; USDOT FHA 2006).**

<i>At a Given Distance from Noise Source</i>	<i>A-Weighted Sound Level in Decibels</i>	<i>Noise Environments</i>	<i>Subjective Impression Effect</i>
	— 140 —		
Civil Defense Siren (100')	— 130 —		
Jet Takeoff (200')	— 120 —		Pain Threshold
	— 110 —	Rock Music Concert	
Diesel Pile Driver (100')	— 100 —		Very Loud Hearing Damage After 15 Minutes Exposure Repeated Exposure Risks Permanent Hearing Loss
	— 95 —		
Heavy truck (50')	— 90 —	Boiler Room	Very Annoying Hearing damage (8 hours)
Freight Cars (50')		Printing Press Plant	
Pneumatic Drill (50')	— 80 —		Annoying, Intrusive Interferes With Conversation
Freeway (100')		In Kitchen With Garbage Disposal Running	
Vacuum Cleaner (10')	— 70 —		Moderately Loud Intrusive, Interferes with Telephone Conversation Noise Begins To Harm Hearing
		Data Processing Center	
Air conditioning unit (20')	— 60 —		Intrusive
		Department Store	
Light Traffic (100')	— 50 —		
Large Transformer (200')		Private Business Office	
	— 40 —		Quiet
		Quiet Bedroom	
Soft Whisper (5')	— 30 —		Very Quiet
		Recording Studio	
	— 20 —		
	— 10 —		Threshold of Hearing
	— 0 —		

Blasting would be required to remove rock in the area of the new generating unit as part of the construction process. The blasting operation would be conducted mostly on the dry rock surface; however, the removal of the blasted material may occur in wet conditions depending on the geology of the exposed foundation. The blasting and material removal would be required to take place during the non-irrigation season when downstream flows are at its lowest elevation. The two primary environmental effects of blasting are airborne noise and ground-borne vibration.

### **Airblast**

Energy released in an explosion creates an air overpressure (commonly called an airblast) in the form of a propagating wave. If the receiver is close enough to the blast, the overpressure can be felt as the pressure front of the airblast passes. The accompanying booming sound lasts for only a few seconds.

Because an airblast lasts for only a few seconds, use of  $L_{eq}$  (a measure of sound level averaged over a specified period of time) to describe blast noise is inappropriate. Airblast is properly measured and described as a linear peak air overpressure (i.e., an increase above atmospheric pressure) in pounds per square inch (psi). Modern blast monitoring equipment is also capable of measuring peak overpressure data in terms of unweighted dB. Decibels, as used to describe airblast, should not be confused with or compared to dBA, which are commonly used to describe relatively steady-state noise levels. An airblast with a peak overpressure of 130 dB can be described as being mildly unpleasant, whereas exposure to jet aircraft noise at a level of 130 dBA would be painful and deafening.

### **Ground Vibration**

Blasting creates seismic waves that radiate along the surface of the earth and downward into the earth. These surface waves can be felt as ground vibration. Airblast and ground vibration can result in effects ranging from annoyance of people to damage of structures. Varying geology and distance would result in different vibration levels containing different frequencies and displacements. In all cases, vibration amplitudes and high frequency content would decrease with increasing distance from the blasting source.

As seismic waves travel outward from a blast, they excite the particles of rock and soil through which they pass and cause them to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The rate or velocity (in inches per second) at which these particles move is the commonly accepted descriptor of the vibration amplitude, referred to as the peak particle velocity (ppv).

## Existing Noise Levels

Sensitive receptors for noise can be defined as people at various locations who are participating in activities for which low noise levels are important (e.g., activities conducted at residences, hospitals, schools, libraries, recreational areas, and places of worship).

Sensitive noise receptors near the proposed new powerplant include Wild Rose Park. Noise sources in the area of potential affect are predominantly natural, including mainly the noise generated from the flow of water in the tailrace. Accordingly, existing ambient noise levels are low. Background noise levels in wilderness and rural areas typically range between 35 and 45 dBA. The park is located approximately 400 feet north and west of the construction zone. The closest private residence is downstream of the project area about 1,500 feet on the south side of the river.

### 3.5.2 Environmental Consequences

#### Alternative A – No Action

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. Existing powerplant and O&M noise with its various components would remain at their current levels.

#### Alternative B – Proposed Action

The excavation would require the contractor to drill and blast the hard basalt foundation at the location of the proposed new generating plant. The drilling would occur on a current asphalt parking area and be excavated to an elevation approximately 45 feet deep. The area to be blasted consists of an extremely hard basalt material and some depositional areas within the basalt in cracks and seams. This activity would occur below the annual tailrace drawdown elevation. Without knowing the frequencies which maybe imparted due to the type of blasting material and its placement configuration, monitoring equipment would be necessary to determine the appropriate load configuration. Noise impact from construction equipment at parks, campgrounds, and residences upstream and downstream of the work would be minimal and would sound like distant traffic (40 to 50 dBA). Noise from blasting would also be minimal.

Vibration from construction equipment and blasting at parks, campgrounds, and residences upstream and downstream of the work would likely be undetectable.

### **Mitigation**

Blasting would likely take place during daylight hours. Prior to blasting and material removal, monitoring equipment would be placed on the existing powerplant building to ensure the structure is not adversely affected by blasting vibrations.

### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.6 Air Quality**

### **3.6.1 Affected Environment**

The Clean Air Act (CAA) requires the EPA to identify and set standards for pollutants that have an adverse effect on human health and the environment. The CAA established two types of national air quality standards. Primary standards set limits to protect public health, including the health of "sensitive" populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings. Areas that exceed these standards are called non-attainment areas and are required by the EPA to implement special measures to bring them back into compliance.

To provide a quantifiable means to measure air quality, EPA's Office of Air Planning and Standards, has established standards for six criteria pollutants. These threshold concentrations are called National Ambient Air Quality Standards (NAAQS) and are listed below in Table 3-2. For each pollutant, the standard includes a maximum concentration above which adverse effects on human health may occur. Units of measure for the standards are parts per million (ppm) by volume, milligrams per cubic meter of air ( $\text{mg}/\text{m}^3$ ), and micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ).

**Table 3-2. National Ambient Air Quality Standards (EPA 2009).**

Pollutant	Primary Standards		Secondary Standards		
	Level	Averaging Time	Level	Averaging Time	
Carbon Monoxide (CO)	9 ppm (10 mg/m <sup>3</sup> )	8-hour <sup>(1)</sup>	None		
	35 ppm (40 mg/m <sup>3</sup> )	1-hour <sup>(1)</sup>			
	0.15 µg/m <sup>3</sup> <sup>(2)</sup>	Rolling 3-Month Average			Same as Primary
	1.5 µg/m <sup>3</sup>	Quarterly Average			Same as Primary
Nitrogen Dioxide (NO <sub>2</sub> )	0.053 ppm (100 µg/m <sup>3</sup> )	Annual (Arithmetic Mean)	Same as Primary		
	150 µg/m <sup>3</sup>		24-hour <sup>(3)</sup>	Same as Primary	
Particulate Matter (PM <sub>2.5</sub> )	15.0 µg/m <sup>3</sup>	Annual <sup>(4)</sup> (Arithmetic Mean)	Same as Primary		
	35 µg/m <sup>3</sup>	24-hour <sup>(5)</sup>	Same as Primary		
Ozone (O <sub>3</sub> )	0.075 ppm (2008 std)	8-hour <sup>(6)</sup>	Same as Primary		
	0.08 ppm (1997 std)	8-hour <sup>(7)</sup>	Same as Primary		
	0.12 ppm	1-hour <sup>(8)</sup>	Same as Primary		
		(Applies only in limited areas)			
Sulfur Dioxide (SO <sub>2</sub> )	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m <sup>3</sup> )	3-hour <sup>(1)</sup>	
	0.14 ppm	24-hour <sup>(1)</sup>			
(1) Not to be exceeded more than once per year.					
(2) Final rule signed October 15, 2008.					
(3) Not to be exceeded more than once per year on average over 3 years.					
(4) To attain this standard, the 3-year average of the weighted annual mean PM <sub>2.5</sub> concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m <sup>3</sup> .					
(5) To attain this standard, the 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m <sup>3</sup> (effective December 17, 2006).					
(6) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.075 ppm. (effective May 27, 2008)					
(7) (a) To attain this standard, the 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm. (b) The 1997 standard—and the implementation rules for that standard—will remain in place for implementation purposes as EPA undertakes rulemaking to address the transition from the 1997 ozone standard to the 2008 ozone standard.					
(8) (a) The standard is attained when the expected number of days per calendar year with maximum hourly average concentrations above 0.12 ppm is less than 1. (b) As of June 15, 2005 EPA revoked the 1-hour ozone standard in all areas except the 8-hour ozone nonattainment Early Action Compact (EAC) Areas.					

States strive to achieve attainment with state and federal air quality standards since remaining in compliance helps protect public health and contributes to economic growth. Non-attainment status can potentially limit production capabilities of existing industries and preclude siting of new industries that provide job opportunities. Attainment of air quality standards also helps avoid a potential loss of federal highway funding that can result from nonattainment status. Once an area is in non-attainment status, it is costly and time-consuming to develop and implement plans to reach attainment status.

In addition to areas classified as attainment and non-attainment, some areas are described as "maintenance areas." Maintenance areas are those geographic areas that were classified as non-attainment, but are now consistently meeting the NAAQS. Maintenance areas have been re-designated by the EPA from "non-attainment" to "attainment with a maintenance plan;" commonly called "maintenance areas." These areas have demonstrated through monitoring and modeling they have sufficient controls in place to meet and main the NAAQS. They also have contingency measures in place that would be implemented should the areas start showing exceedances.

Idaho has adopted the federal air quality standards and incorporates them in the Idaho Administrative Procedures Act (IDAPA) as part of IDAPA 58.01.01 Rules for the Control of Air Pollution in Idaho (IDEQ 2008). The IDEQ routinely monitors outdoor air quality to satisfy Federal regulatory requirements and scientifically determine the quality of Idaho's airsheds. IDEQ's monitoring network measures the levels of five of the six ambient air criteria pollutants identified by the CAA:

- Carbon Monoxide (CO)
- Nitrogen Dioxide (NO<sub>2</sub>)
- Particulate Matter (PM<sub>10</sub> and PM<sub>2.5</sub>)
- Ozone (O<sub>3</sub>)
- Sulfur Dioxide (SO<sub>2</sub>)

The sixth criteria pollutant, airborne lead, is no longer considered a major health threat in most of the United States. With the phase-out of leaded gasoline and closure of the Bunker Hill Mine, DEQ no longer monitors airborne lead levels.

IDEQ developed the Quality Assurance Project Plan for the State of Idaho Ambient Air Quality Monitoring Program, to assure ambient and meteorological data collected by Idaho's air monitoring network meets or exceeds required standards. The manual prescribes detailed operational procedures for sampling, analyzing, and reporting air pollution and meteorological conditions. The manual is reviewed annually and revised as needed, subject to approval by the EPA.

Four geographical areas in Idaho are classified as non-attainment or maintenance areas. Two areas are non-attainment areas for PM10: Sandpoint, located in Bonner County, on the northwest corner of Lake Pend Oreille within the Panhandle National Forest, and Pinehurst, located in Shoshone County, in the Silver Valley surrounded by the Coeur d'Alene and St. Joe National Forests. The Portneuf Valley, 96.6 square miles of Pocatello, Chubbuck, and surrounding areas is a Maintenance Area for PM10. Northern Ada County, located in southwestern Idaho, is a Limited Maintenance Area for CO. It is Idaho's only designated CO Maintenance Area. Northern Ada County is also a Maintenance Area for PM10.

### **3.6.2 Environmental Consequences**

Potential air quality impacts would be associated with construction of a third hydroelectric generating unit at Black Canyon Diversion Dam. The primary types of air pollution during construction would be combustible pollutants from equipment exhaust and fugitive dust particles from disturbed soils becoming airborne.

Air quality impacts would be considered significant if the construction or operation of Black Canyon Diversion Dam violated applicable air quality standards.

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. The land use activities surrounding Black Canyon Diversion Dam powerplant would continue to be managed as it currently is.

Potential adverse air quality impacts would likely be from combustible pollutants and fugitive dust (PM10) associated with construction activities. Compliance with all applicable IDEQ emission standards and BMPs would reduce potential impacts to less than significant levels.

#### **Alternative B – Proposed Action**

Construction of a third hydroelectric generating unit would require excavation in which the contractor would drill and blast the hard basalt foundation at the location of the proposed new generating plant.

Dust may affect visitors to Cobblestone Park during construction, due to their proximity to the dam. Impacts from dust at Triangle Park and Black Canyon Park would be significantly less than at Cobblestone Park due to the separation from construction; however, IDEQ requires the use of specific BMPs to control fugitive dust at all construction sites (IDAPA 58.01.650-651) (IDEQ 2008).

Air impacts are not likely to exceed statutory requirements, and BMP's such as water sprays to control dust emissions from the construction site, buffer distances between construction activities and air sensitive receptors, avoidance of simultaneous dust emission activities, reduction in the numbers of equipment operating in critical areas can be applied to reduce poor air quality conditions.

### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.7 Vegetation**

### **3.7.1 Affected Environment**

The proposed work area is primarily developed with manicured lawns, shrubs, and trees some of which may be removed during construction of the powerplant. The south side of the river consists of a willow and cottonwood community, which is typical of lowland riparian areas located within the southeast region of Idaho. Vegetation and plant communities along the Payette River above and below the dam have been modified from the original native composition by farming, construction of irrigation projects, recreation, livestock grazing, and other human uses, as well as the shallow groundwater resulting from the reservoir.

Some areas adjacent to Wild Rose Park have native species, such as elderberry, golden currant, black cottonwood, Douglas hawthorn, dogwood, and willows, but much of this area is dominated by non-native species. Some of the non-native species are apple trees, black locust, Russian olive, orchard grass, and smooth brome. Others, such as Canada thistle, spotted knapweed, hound's tongue, poison hemlock, rush skeletonweed, teasel, blue mustard, chicory, purple loosestrife, and sowthistle are invasive species that are able to spread rapidly. Other established invasive species are reed canarygrass, false indigo, bristly foxtail, downy brome, and dogfennel (Reclamation 2004a).

Several species of plants are found along the irrigation and drainage systems, including watercress, speedwell, and duck weed. Upland native vegetation is dominated by big sagebrush, bitterbrush, and rabbitbrush. Upland understory species include bluebunch

wheatgrass, squirreltail, and balsamroot. In many areas, especially along roadways, upland areas have been invaded by downy brome and rush skeletonweed (Reclamation 2004a).

Vegetation management issues along the Payette River include the spread of invasive and noxious weeds, the maintenance and enhancement of plant species diversity, quality wildlife habitats, and the protection of sensitive plant species of concern. The most crucial vegetation management issue is weed suppression. Noxious and other invasive weeds can reduce species diversity both in the plant communities where they invade and in the wildlife species using those communities. Weed treatment issues are particularly challenging around Montour because of the abundance of water in the area. Herbicide use near water or in areas where the water table is high and groundwater could be contaminated, is severely restricted, and prohibited for some herbicides. However, herbicides have been the primary method of weed control. Other options, such as mechanical or biological controls, must be used to enhance water-approved herbicides.

### **3.7.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. The No Action alternative should have no impacts to existing vegetation facility grounds and the surrounding area would be undisturbed.

#### **Alternative B – Proposed Action**

Under the Proposed Action, clearing and grubbing to remove all vegetation from the new switchyard area would occur prior to excavation. Little or no disturbance to sagebrush-grass ecosystem type vegetation is likely to occur. The area where the proposed relocated administration building is to be sited is a partly vegetated area and partly asphalted parking area. Given the low probability that the above listed vegetation occurs within the immediate project area, and the lack of impacts to natural vegetation types, Reclamation has determined that implementation of the Proposed Action would not significantly impact natural vegetation. The site location is already situated on disturbed ground and no other vegetation should be affected.

No designated critical habitats for rare and sensitive plant species occur within the project area. Although Slickspot peppergrass is noted to exist within Gem County, no recorded data on this species are known to occur within the area of potential impact (Figure 3-1), and none were noted within the specific project site during field visits.

### **Mitigation**

Although facility vegetation is already minimal and little disturbance should occur within the existing facilities, Reclamation may implement a program reintroducing appropriate native vegetation to those areas previously disturbed or disturbed during construction activities (where practical). After construction, the new switchyard area would receive an application of herbicide on a continuous basis to ensure no regrowth of vegetation.

The implementation and adherence to BMPs such as revegetation of native species matched for site drainage, climate, shading, and resistance to erosion, soil type, slope, aspect, and other similar practices make it possible to avoid formal mitigation measures.

### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.8 Fish and Wildlife**

### **3.8.1 Affected Environment**

#### **Fish**

Historically, the resident native fish community of the Payette River supported migratory and resident forms of Bull Trout, Redband Trout, and migratory salmon and steelhead, which were eliminated in the drainage by the construction of Black Canyon Diversion Dam. Mountain Whitefish (whitefish), Largescale Sucker and Bridgelip Sucker, Northern Pikeminnow, Chiselmouth, Redside Shiner, Longnose and Speckled Dace, Mottled Sculpin, Shorthead Sculpin, Peamouth, and White Sturgeon were also historically present (BPA 2003).

Due to the wide range in elevation and diversity of aquatic habitats, the Payette River supports a variety of fish and fish communities. Currently, Black Canyon Reservoir (between approximately RM 38.5 and RM 47) on the Payette River provides only marginal fish habitat, but does support a fishery for introduced sport fishes and whitefish. Sediment from upstream land disturbances has limited the diversity of available habitats in the reservoir in turn limiting the density and diversity of the fish community. The Payette River from the reservoir to the

confluence with the Snake River provides habitat that supports a mixed fishery of both cold water and warm water species.

Within the project area whitefish are found in both the reservoir and downstream river. Whitefish constitute the primary game fish in the downstream river, and at this time are the only native, self-sustaining, salmonid in the mainstem Payette River downstream of Black Canyon Diversion Dam. Whitefish select spawning areas in the fall (September through November) with gravel substrate, low percent of fine sediment relative to gravel and moving water where adult fish disperse their eggs into rocky, gravel substrate (Wallace and Zaroban 2013). Eggs will remain in the gravel until hatching in late winter/early spring and the emergent young will also remain in the spaces between the gravel for several months until they are large enough to freely swim. Whitefish have been documented to spawn as close as approximately 2.5 miles downstream of the dam.

Other game fish present in the Payette River include: Smallmouth Bass, Largemouth Bass, Channel Catfish, Black Crappie, Bluegill, Pumpkinseed, Yellow Perch and Rainbow Trout (IDFG fish planner: <http://fishandgame.idaho.gov/ifwis/fishingplanner>). Non game introduced fishes also make up part of the fish community including common carp and Brown Bullhead.

Upstream from Black Canyon Reservoir, the gradient of the river increases with cold water species increasing in abundance. Approximately 26 RM upstream of Black Canyon Reservoir, the South Fork and North Fork Payette rivers join to form the Payette River. The South Fork of the Payette River supports self-sustaining populations of wild Rainbow Trout and whitefish. The North Fork of the Payette River has been severely altered by railroad and highway construction and provides only a marginal fishery for salmonids. In less altered sections, such as the Cabarton Reach on the North Fork, salmonids (primarily whitefish) are more abundant. Only one tributary to Black Canyon Reservoir, Squaw Creek, supports a resident population of Bull Trout in the upper reaches (Reclamation 2004a). No fish species listed under the ESA occur within the project area.

## **Wildlife**

Wildlife present in the surrounding project area includes mammals, fur bearers, birds, reptiles and amphibians; species can be grouped into a variety of management classifications including native, non-native, game, non-game, resident, and migratory. Most species, however, are not present in the project area due to the continued anthropogenic activities that are associated with the operations of the existing powerplant facilities and other land management activities in the area unrelated to the project.

Much of the wildlife in the area inhabits the sagebrush-grass ecosystem type habitat. The vegetation diversity of the sagebrush-grass habitat community provides cover for many

species including mule deer, whitetail deer, mountain lion, and game birds; however, habitat quality on most of the uplands has been substantially reduced by livestock grazing.

The Montour WMA Area Activity Plan (WMA Plan) identifies and describes many species present in the Payette River valley including several species that are considered to be ‘sensitive species’ by the BLM (BLM 2013). Wildlife species considered sensitive (but not federally listed) that potentially occur in the action area include: Yellow-billed Cuckoo (*Coccyzus americanus occidentalis*), Northern goshawks (*Accipiter gentilis*), ferruginous hawk (*Buteo regalis*), Long-billed curlew (*Numenius americanus*), Columbia Spotted frog (*Rana luteiventris*), and 10 bat species (Reclamation 2006).

The WMA Plan lists numerous bird species as being present including more than 100 species of migratory song birds; 17 species of raptors (including osprey, based on a nest currently located on one of the transmission poles); 8 species of owls; 8 woodpecker species; 35 species of waterfowl, wading birds, shorebirds, and other water related species (migratory species may only be present seasonally). EO 13186 defines the responsibilities of federal agencies to protect migratory birds under Migratory Bird Treaties (MBT) to which the United States is a signatory. The EO mandates that all federal agencies cooperate with the USFWS to increase awareness and protection of the nation’s migratory bird resources.

Many introduced species are present, some through intentional introductions and others illegally. The IDFG exclusively manages the fish and wildlife communities of the state of Idaho (Idaho Statute Title 36). One species of particular concern is the bullfrog because of their ability to eliminate native amphibians, which are suffering population declines on a global scale (Kiesecker, Blaustein, and Belden 2001). IDFG has indicated that bullfrogs are present in the wetlands at Montour WMA.

### **3.8.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. For fisheries, there would be no change in fish communities or habitat in this reach of the Payette River due to operation of the project. Fish habitat would continue to be largely influenced by unregulated runoff in the basin, effects of climate variability, and

seasonal redistribution of sediment. For terrestrial wildlife species, there would be no change in their habitat or distribution from what exists today as a result of project operations.

### **Alternative B – Proposed Action**

Black Canyon Dam and Reservoir are operated by Reclamation for diversion of irrigation water and generation of hydroelectric power. The reservoir has no storage or flood control function (Reclamation 2004b). Additionally, the O&M of water in the Payette River system includes provision of salmon flow augmentation water to Brownlee Reservoir (Reclamation 2004c).

Under the Proposed Action, Francis-type turbines spiral cases would be installed which have a high rate of entrainment mortality to fish; however, entrainment survival has not been quantified at Black Canyon Reservoir. Literature review of *Fish Entrainment and Turbine Mortality* by the Electric Power ReAEArch Institute (EPRI 1992) and *Biological Criteria for the Design of Advanced Hydropower Turbines* by Idaho Department of Energy (Cada, Coutant, and Whitney 1997) provides information on the quality and types of turbines and expected rates of fish entrainment and mortality. Small-sized individuals have been shown to have higher rates of entrainment survival associated with Francis-type turbines. Both game and non-game species could be entrained. Under normal operations (No Action alternative) entrainment losses are not expected to have a noticeable impact on the fisheries in Black Canyon Reservoir or in the Payette River below the dam. Whitefish, the only native salmonid present in the project area, may be entrained but suitable habitat exists in the river below Black Canyon Dam for those fish to survive and spawn. The loss of a small percentage of whitefish from the reservoir would likely have an insignificant effect on these populations. Furthermore, most game fishes in the reservoir are stocked routinely by IDFG in order to maintain a put and take fisheries for species not naturally found in the basin and at levels above what would occur with natural reproduction.

Temporary impacts to the fish community and fish habitat may occur as a result of two or more construction-related drawdown periods. During the drawdowns associated with the proposed construction activities, fish and fish habitat may be adversely affected from:

1. Sediment that has been mobilized from within Black Canyon Reservoir and transported through the dam into the lower Payette River; and
2. Lack of overwintering habitat within the reservoir when the reservoir is drawn down.

Inflow from the Payette River into Black Canyon Reservoir during the proposed construction period is dependent on climate variables; therefore, scheduling drawdowns to minimize climatic effects is not possible. The existing weather conditions, flows, and upstream activities (i.e., fires, debris jams) may also contribute to additional sediment mobilization and transport. An analysis of frequency hydrographs for Black Canyon Reservoir (Niehaus 2013),

suggest that there is a likelihood of being able to complete the proposed work without requiring dramatic flow changes. Following construction, regular operations of the reservoir pool would be maintained and the regulated hydrograph would be similar to the operations under the No Action alternative. These operations would provide habitat similar to what is present under the No Action alternative for aquatic species that inhabit the project area. The addition of new trashracks and a trash rake would reduce the frequency of future drawdowns for maintenance (drawdowns currently occur annually to clean the existing trashracks).

### ***Blasting***

Temporary impacts to fish may occur during construction as a result of blasting. Impacts are only expected to occur during and in the immediate vicinity of the blasting event. No significant long-term or population-level impacts are expected as a result of blasting because of the short duration, distance of the event to water, and the small area of exposure relative to the project area.

Blasting, as described in Section 3.5, may have a short-term but adverse impact to resident fish in the immediate reservoir area, even though the main blasting area is approximately 40 to 100 feet away from this area. The adverse effect of underwater blasting on fish has been extensively documented. Swim bladder rupture caused by rapid contraction and overextension in response to the explosive shock waveform is the most common cause of mortality and injury to fish (Wiley, Gaspin, and Goertner 1981). Hemorrhaging in the pericardial and coelomic cavities is also commonly observed injuries. Damage to the kidney, liver, and spleen has also been observed, and are possibly related to the rapid contraction and expansion of the swim bladder (Keevin and Hemen 1995). Teleki and Chamberlain (1978) found that the magnitude of the blasting effect on fish depends on several physical and biological characteristics including detonation velocity, density of material to be blasted, and charge weight. Additionally, fish shape, swim bladder development, and location of the fish in the water column are important biological characteristics. The explosion pressure wave and resulting fish kill is influenced by the interaction of additional physical components including the type of explosive, water depth, and bottom composition (Teleki and Chamberlain 1978).

### ***Fish Habitat***

Temporary short-term impacts to fish habitat may occur during and after construction as a result of increased seasonal sediment deposition resulting from the transport of suspended sediments from Black Canyon Reservoir into the downstream river. Temporary impacts could occur if the timing of sediment occurs during the incubation period for naturally spawning salmonids (November through March) resulting in reduced quality of habitat and decreased hatching success. Impacts would be reduced when increases in the hydrograph “flushing flows” mobilize and transport sediment out of the project area. Flushing flows

would occur through managed releases from Black Canyon, as described in the mitigation plan, natural fluctuations, and salmon flow augmentation releases (NOAA Fisheries 2008a).

Natural fluctuations in the Payette River hydrograph would provide “flushing” type flows that would provide benefits above those of managed flows; both actions would remediate possible future impacts from the Proposed Action; however, in-season impacts to the current recruitment year for fall spawning salmonids could still occur. Natural fluctuations in the hydrograph can provide flows capable of mobilizing sediment at any time during the year but are most frequent between April and June (<http://www.usbr.gov/pn/hydromet/>). Flows that exceed the generation capacity of the hydroelectric units are released over the spillway and provide the best opportunity to transport sediment out of the project area. On average the spillway flows range from approximately 1,000 to 2,000 cfs between April and June based on the water years 1928 to 1989 (MWH 2003); however, the range of flows reported in the MWH study have been exceeded five times in the last 25 years. No adverse long-term impacts are expected to occur because of the mitigation measures and expected fluctuations in the natural hydrograph.

### *Fish Community*

Temporary impacts to the fish communities may occur during and after construction as a result of increased sediment deposition resulting from the transport of suspended sediments from Black Canyon Reservoir into the downstream river. The flow of water released from the dam would not exceed natural flows for the basin; however, the amount of suspended sediment released from the reservoir may exceed levels expected by natural seasonal variability. The increased levels of suspended sediment may displace fishes, cause abrasion and suffocation of fishes, and smother the eggs of fall spawning salmonids including whitefish. Whitefish may be more sensitive than other fishes because of their spawning habits. Empirical data on population level effects within the project area to any fish species resulting from increased sediment is limited.

The IDFG conducted fish surveys aimed at describing the abundance and distribution of whitefish in 2009 and 2013 (Koenig 2013). Data from these surveys indicate that all species of fishes present in the river may be displaced during an event that mobilizes sediment. The data may also suggest that larger individuals may be less vulnerable because they migrate to avoid short-term disturbances. Short-term effects can be observed in the population abundance following such an event, however, a lack of data exists to show if these impacts are significant to the population of individual species. Individual fish would redistribute after the water quality and aquatic habitat return to a more pre-disturbance condition and fish would naturally immigrate into the project area from downstream habitats. The migration of fishes within the system would lessen the effects within the project area.

The loss of recruitment to the whitefish population that may result from the Proposed Action would not be known for several years. Although, impacts may be observed in the younger year classes during surveys conducted following the construction, several factors would lessen the long-term population level effects including:

1. Whitefish typically reach sexual maturity by age 3 and live to over 20 years (Wallace and Zaroban 2013). An early maturing and longer lived species like whitefish may show less population level effects because of potential for recruitment from a large portion of the population.
2. Adult fish temporarily displaced or that seasonally migrate would naturally immigrate back to the area.
3. Mitigation measures to improve the aquatic habitat are believed to provide suitable spawning habitat for future spawning events and rearing habitat for young year classes.

Working with the IDFG, a mitigation plan will be developed that would address the effects of the Proposed Action on the fish community, fish habitat, water quality, and recreation.

Short-term impacts to other species within the fish community may occur; however, immigration from downstream areas within and outside of the project area would reduce the potential for long-term effects whereas whitefish are not widely distributed outside of the project area downstream of the dam.

#### *Wildlife*

Temporary impacts to wildlife may occur during construction, such that construction noise and activity could cause many species to avoid the area. Additionally, some wildlife could become habituated to the disturbance. Some small mammals, reptiles, and amphibians may be inadvertently injured or killed by the construction activities. Most of these animals are expected to leave the area as construction progresses. By the time construction begins migratory birds would be finished nesting. (One osprey nest is known to exist on a transmission pole within the construction area.) If work takes place on the transmission pole where the osprey nest is located, it would occur when the nest has been abandoned for the season. If adult birds are present, they may be temporarily displaced by noise and activity. However, as ospreys are adaptable, their habitat would not be negatively impacted and the installation of the transmission lines may provide for additional perches or nest platforms. During construction activities, care would be taken to minimize harassment or injury to wildlife. No adverse long-term or population-level impacts are expected as a result of the Proposed Action.

## Mitigation

To mitigate for temporary impacts to the fishery, a mitigation plan is being developed through a collaborative effort between IDFG and Reclamation that has identified both effects that have occurred and those that are likely to result from the Proposed Action (Appendix B). This mitigation plan would address the effects of the Proposed Action on the fish community, fish habitat, water quality, and recreation during any stage of the project. The mitigation plan would also include a monitoring component for fish (in both the reservoir and downstream river), water quality (see Appendix B), and habitat with each being conducted pre-, during, and post-construction. The plan would also involve a component of adaptive management because the effects of the Proposed Action cannot be fully determined until construction has been completed and subsequent monitoring conducted.

Entrainment occurs annually through the project; however, losses due to entrainment have not been identified as a concern through the collaborative efforts to identify existing potential effects. Methods used to reduce entrainment and increase entrainment survival, if they were identified as a concern, may include fish screens and improving passage conditions within the turbine (“fish friendly” turbines), respectively. Fish screens have not been identified as a preferred method of managing the reservoir fishery. Fish friendly turbines were also considered but due to the small size of the desired turbine, their narrow economic efficiency and having an unknown or marginally better fish survival, based on the available literature; the conventional Francis turbine was selected. Stocking by IDFG and natural recruitment from upstream fish communities maintain recreational fisheries in the reservoir. Entrainment from the reservoir to the river provides a minimal contribution to the downstream fishery. No measures are currently in place to transport entrained fishes back to the reservoir. Natural recruitment, immigration from within and outside the project area and improvements to the existing fish habitat in the river would maintain recreational fisheries in the river portion of the project area.

Environmental monitoring, described in the mitigation plan, would provide information about the extent of impacts during the construction activities and through adaptive management the appropriate levels of mitigation can occur.

If a yet-to-be determined mitigation activity takes place, to satisfy mitigation for the proposed construction of the Black Canyon Diversion Dam projects that qualifies for consultation and coordination under NEPA, a separate NEPA effort would be undertaken specific to the selected mitigation activity.

## Cumulative Effects

Past, present, and reasonably foreseeable future agricultural water quality impacts, when added to the potential sediment releases from this project, would be minor. Sediment released

from Black Canyon Reservoir into the lower Payette River may be deposited in the streambed as the river flows downstream to the Snake River affecting the quality of spawning and rearing habitat for fall spawning salmonids. During past drawdowns, an increase in turbidity (an indicator of sediment) has been documented. Increased turbidity can displace fishes, causing abrasion and suffocation, and smother the eggs of fall spawning species.

The majority of past reservoir drawdowns have occurred to address O&M issues. Specifically for the proposed project, a reservoir drawdown occurred in late 2012 and early 2013 for a geophysical survey. This past event, in combination with the possibility of two or more drawdowns during the proposed project construction period, may be considered a cumulative impact. Additionally, this impact, when added to agricultural water quality impacts in the area, may be a cumulative impact of sediment deposition in the lower Payette River, which may have an impact to water quality and affect the fish community.

To address the potential cumulative impacts, Reclamation is preparing mitigation plans that address potential sediment deposition and potential impact to the fish community. Reclamation is preparing a mitigation plan with IDFG that monitors the fish community pre- and post-construction, and commits to returning the fishery to pre-construction quality. Additionally, production agriculture, through BMPs is continually improving water quality of agricultural runoff. This too would decrease the deleterious effects of sedimentation on the fish community.

## **3.9 Threatened and Endangered Species**

### **3.9.1 Affected Environment**

Outside the project area, there are several TES of flora and fauna potentially occurring along the Payette River. Species listed with a federal designation can be considered listed, proposed, or candidate species and they can have designated or proposed critical habitat. Species presence data from state and federal sources, such as the USFWS, Reclamation, and IDFG, have been reviewed for preparation of this document. In total, one threatened fish with designated critical habitat; two proposed species; one mammal and one plant (with proposed critical habitat); and three candidate species (one mammal, one bird, and one tree) are known to potentially occur within basins adjacent to or potentially along the Payette River but not known to exist within the project area.

Federal protection is afforded to those species listed or proposed as threatened or endangered by the USFWS under the ESA of 1973 (16 U.S.C. 1531-1544, 87 Stat. 884).

The following species listed under the ESA by the USFWS may occur in Gem County as of January 2016:

- Bull Trout (Threatened and Designated Critical Habitat)
- Yellow-billed Cuckoo (Threatened)
- Slickspot peppergrass (Proposed and Proposed Critical Habitat)
- Canada Lynx (Threatened)
- Northern Idaho ground squirrel (Threatened)
- Whitebark pine (Candidate)

### **Bull Trout (*Salvelinus confluentus*) – Threatened and Designated Critical Habitat**

Columbia River Basin Bull Trout (*Salvelinus confluentus*) were listed by the USFWS as threatened in 1998 (63 FR 31647). In 1999, USFWS determined threatened status for all populations of Bull Trout within the coterminous (lower 48) United States (64 FR 58910).

On September 30, 2010, the USFWS final rule designated critical habitat for Bull Trout throughout their U.S. range, including approximately 18,795 miles of streams and 488,252 acres of lakes and reservoirs in Idaho, Oregon, Washington, Montana, and Nevada. It covers five times more marine and freshwater habitat than the USFWS' 2005 designation.

Black Canyon Reservoir, the main Payette River downstream of Black Canyon Reservoir, and the Payette River upstream of Black Canyon Reservoir to the confluence of the North and South Forks of the Payette have not been proposed as Bull Trout critical habitat or identified as Bull Trout core areas; however, portions of Squaw Creek (tributary to Black Canyon Reservoir) and the Middle Fork and South Fork of the Payette River are designated as essential for conservation because of the presence of only resident life history expression, low numbers, low habitat, and no connectivity (USFWS 2010).

Recent sampling surveys performed by IDFG in 2006 and 2013 suggest Bull Trout are not present in Black Canyon Reservoir (Kozfkay 2013). Limited surveys, prior to 1991 through 1998, detected Bull Trout in the headwaters of Squaw Creek (Steed 1999). They have also been observed in the Second Fork Squaw Creek, Third Fork Squaw Creek, and Squaw Creek (Burton 1999; USFWS 2003; Bradley 2003).

Threats to Bull Trout include land management practices such as logging, grazing, and road construction, where such practices have degraded habitat through increased sedimentation of spawning gravels, high stream temperatures, and poor water quality (Burton 1999; USFWS 2003). Additional threats to Bull Trout, throughout their distribution, include dams and other barriers (such as impassable culverts) that block adult migrations and access to spawning

habitat, and introduced non-native fishes (such as brook trout) that can hybridize with, compete with, and prey on Bull Trout (BNF 2003; USFWS 2005).

Bull Trout are dependent on cold, clean, and generally complex habitat features associated with the higher elevation headwater areas of the Squaw Creek watershed as opposed to the generally warm water fish habitat associated with Black Canyon Reservoir and waters downstream of the dam. The presence of Bull Trout in Black Canyon Reservoir or the Payette River downstream of the dam, suggests a migratory life history has never been documented and continues to be unlikely (Reclamation 2004c).

#### **Yellow-billed Cuckoo (*Coccyzus americanus*) – Threatened**

The Yellow-billed Cuckoo is a neotropical species that breeds in North America and winters primarily south of the U.S.-Mexico border. Cuckoos may go unnoticed because they are slow moving, use few vocalizations, and prefer dense vegetation. In the West, they favor areas with a dense understory of willow (*salix spp.*) combined with mature cottonwoods (*Populus spp.*) and generally within 100 meters of slow or standing water (Gaines 1974; Gaines 1977; Gaines and Laymon 1984). It feeds on insects, mostly caterpillars, but also beetles, fall webworms, cicadas, and fruit (primarily berries). Populations seem to fluctuate dramatically in response to fluctuations in caterpillar abundance. These fluctuations are erratic, but not necessarily cyclic (Kingery 1981).

A petition to list the Yellow-billed Cuckoo (*Coccyzus americanus*) was filed in 1998. The petitioners stated that “habitat loss, overgrazing, tamarisk invasion of riparian areas, river management, logging, and pesticides have caused declines in Yellow-billed Cuckoo.” In the 90-day finding published on February 17, 2000, USFWS indicated that these factors may have caused loss, degradation, and fragmentation of riparian habitat in the western United States, and that loss of wintering habitat may be adversely affecting the cuckoo. In December, 2013, the USFWS proposed to list the Western Distinct Population Segment (DPS) of the Yellow-billed Cuckoo as threatened and initiated the 12-month review period. Following the review period the listing was found warranted and the bird was listed as threatened.

Most Idaho records are of isolated, non-breeding individuals (USFWS 1985). Although occasional reports of this bird are noted, including several birds at Lawyers Creek in Lewis County in 1979, six sightings in the vicinity of Lake Walcott State Park between 1978 and 2005, and six at Cartier Slough WMA on the Henry’s Fork of the Snake River in 1980, nesting attempts or young have only been observed in southeastern Idaho. Although it has been suggested breeding populations of Yellow-billed cuckoos in Idaho are extirpated (Reese and Melquist 1985), suitable habitat exists in multiple locations in southeastern Idaho where limited breeding is thought to occur.

In response to the proposed listing in 2013, Reclamation conducted surveys during the summer of 2014 at four areas within the Snake River Corridor (South Fork Snake River,

McTucker Bottoms, Cartier Slough WMA, and Fort Boise WMA). The above locations were chosen based on potential Yellow-billed Cuckoo habitat availability as it relates to Reclamation operations. Yellow-billed Cuckoos are found in large, dense riparian habitats along rivers, lakes, and reservoirs. Reclamation's water operations on the upper Snake River (i.e., Snake River above Brownlee Reservoir) have the potential to impact the dense riparian vegetation and water critical to Yellow-billed Cuckoos.

In the Pacific Northwest (Washington, Oregon, Idaho), the species is generally considered rare. In Idaho it is only known to occur in the southeastern portion of the state, primarily along the South Fork Snake River. It has been suggested that the number of breeding pairs within the state is as low as 10, while some researchers suggest the species no longer breeds in Idaho, with isolated sightings being attributed to annual migration. Yellow-billed Cuckoos are also extremely rare in Washington and Oregon, occurring primarily west of the Cascades Range. The available data suggest that the number of breeding pairs in Oregon are extremely low, with pairs numbering in the single digits, and that the Yellow-billed Cuckoo have likely been extirpated as a breeder in Washington.

Reclamation's objective was to determine Yellow-billed Cuckoo presence and identify potential breeding/nesting activity at select locations in the upper Snake River basin by conducting presence/absence surveys with sampling protocols designed to identify nesting locations to confirm breeding pairs. In total, there were 18 days of sampling effort with a total of 4,191 survey minutes (approximately 70 hours) accounting for 368 samples (Table 3-3).

During Reclamation's investigations, one Yellow-billed Cuckoo response was reported. The response was documented at Fort Boise WMA on June 16. Subsequent surveys in the same area produced no call back, and thus this occurrence was possibly from a migrant bird not yet on a nesting site. No other call backs were recorded during the rest of the surveys. Additionally, no Yellow-billed Cuckoo were observed during physical observation during the entire survey period. Although recording one call back was unexpected, it should not be surprising as the last estimate of nesting pairs in Idaho is believed to be no more than 10 to 20 breeding pairs within the Snake River Basin in Idaho (Reynolds and Hinckley 2005).

**Table 3-3. Yellow-billed Cuckoo data summary for the 2014 field season.**

Location	Date	Time Surveyed (min)	Samples	Encounters
South Fork Snake River	6/18/2014	275	18	0
	7/9/2014	240	14	0
	7/10/2014	210	20	0
	7/22/2014	200	22	0
	7/23/2014	241	21	0
	8/4/2014	215	20	0
	8/5/2014	210	12	0
McTucker Bottoms WMA	6/17/2014	295	25	0
	7/8/2014	270	21	0
	8/6/2014	135	22	0
Cartier Slough WMA	6/19/2014	270	17	0
	7/8/2014	210	25	0
	7/24/2014	295	20	0
	8/3/2014	270	20	0
Fort Boise WMA	6/16/2014	285	31	1
	7/11/2014	240	29	0
	7/24/2014	180	13	0
	8/7/2014	150	18	0
<b>Totals:</b>	18 days	4191 (~70 hours)	368	1

### **Slickspot peppergrass (*Lepidium papilliferum*) – Proposed and Proposed Critical Habitat**

Slickspot peppergrass was designated as a proposed species in a decision published in the October 8, 2009, Federal Register, of which review was extended as of September 9, 2011. The plant is an annual and biennial plant species. Habitat consists of openings in sagebrush stands that are protected from wind, but not from sun. The micro-sites (openings) in which slickspot peppergrass occur are much higher in clay than the surrounding sagebrush-shrub communities which are generally on well-drained soil sites. These openings or “slickspots” which give the species its name are restricted to a clay layer that is able to hold water (Mancuso and Moseley 1998). The western Snake River Plain and adjacent northern foothills in Payette, Gem, Canyon, Ada, and Elmore counties in Idaho are the main distribution range of slickspot peppergrass. Reclamation-administered land surrounding Black Canyon Reservoir and Montour WMA contains a relatively narrow fringe of sagebrush-steppe habitat and most of these areas are on relatively steep slopes which are generally poorly suited for slickspot peppergrass. According to surveys, the southern portion of Gem County outside of the proposed action area may have populations of this species. While no specific surveys

have been conducted; it is unlikely that slickspot peppergrass occurs within the immediate project area.

### **Canada Lynx (*Lynx canadensis*) – Threatened**

In 2000, the USFWS proposed Canada lynx as a threatened species in the contiguous United States as a DPS, primarily because regulations governing forest management activities on federal lands were deemed inadequate, at that time, to conserve lynx and their habitats (USFW 2013). Since listing, many federal land managers have amended land use plans to conserve lynx and their habitat. Although not quantified, climate change is likely affecting future lynx population and habitats, making them smaller and more isolated and therefore more vulnerable to threats (USFW 2013).

The lynx is a medium-sized cat with long legs, large, well-furred paws, long tufts on the ears, and a short, black-tipped tail. The lynx's long legs and large feet make it highly adapted for hunting in deep snow (USFW 2013).

In North America, lynx occur within boreal forests, tundra, and western mountains throughout Alaska and Canada extending south into the contiguous United States. Currently, lynx are found in the North Cascades Rocky Mountains (USFW 2016a). It is unlikely that lynx would occur in lower elevations of Gem County, and, therefore, are unlikely to occur in the project area.

### **Northern Idaho Ground Squirrel (*Urocitellus brunneus*) – Threatened**

The northern Idaho ground squirrel was listed as a threatened species on April 5, 2000 by the USFWS. The ground squirrel has dark reddish-gray fur with reddish-brown spots on its coat. It has a short, narrow tail, tan feet and ears, grey-brown throat, and a white eye ring (USFWS 2016).

Ground squirrel populations have been found in Adams and Valley counties of Idaho. The ground squirrel prefers dry meadows surrounded by ponderosa pine and Douglas-fir forests. Ground squirrel populations may have decreased due to the loss of native meadow habitat as a result of fire suppression, and travel corridors have become fragmented, leaving the ground squirrels to survive in isolated, non-connected habitat (USFWS 2016b). Due to the developed nature of the facilities below Black Canyon Diversion Dam, and other areas of unsuitable habitat, it is unlikely that the northern Idaho ground squirrel occurs within the project area.

### **Whitebark Pine (*Pinus albicaulis*) – Candidate**

In July 18, 2011, USFWS determined whitebark pine warrants protection and annual review of its status as a candidate species under the ESA. Threats to the whitebark pine include habitat loss and mortality from white pine blister rust, mountain pine beetle, catastrophic fire

and fire suppression, environmental effects resulting from climate change, and the inadequacy of existing regulatory mechanisms.

Whitebark pine is a 5-needled conifer classified as a stone pine distinguished by large, dense seeds that lack wings and therefore depend upon birds and squirrels for dispersal across the landscape. They are typically found in cold, windy, high elevation, or high latitude sites in western North America and as a result, many stands are geographically isolated. It is considered a keystone species because it regulates runoff by slowing the progress of snowmelt, reduces soil erosion by initiating early succession after fires and other disturbances, and provides seeds that are a high-energy food source for some birds and mammals (USFWS 2013). The species is distributed in Coastal Mountain Ranges (from British Columbia, Washington, Oregon, down to east-central California) and Rocky Mountain Ranges (from northern British Columbia and Alberta to Idaho, Montana, Wyoming, and Nevada). Whitebark pine is not expected to be within the proposed action area due to their elevation and habitat requirements.

#### **Anadromous Fish**

Prior to dam construction, salmon and steelhead dominated the fish community of the Payette River drainage according to early sources from the Columbia Basin Inter-Agency Committee of the late 1940s and early 1950s (Allen 2003). At least three species of anadromous fish utilized the Payette River, including Chinook Salmon, Sockeye Salmon, and Steelhead Trout. Pacific lamprey may have also been present. Black Canyon Diversion Dam was the first barrier to salmon migration up the Payette River. Shortly after the dam was completed in 1924, few if any anadromous fish remained in the Payette River. Despite the loss of anadromous populations, the Payette River continues to support a diverse native fish community.

NOAA Fisheries released a final BiOp on May 5, 2008; on the operations and routine maintenance of Reclamation's 12 federal dams in the Upper Snake River basin. A judicial ruling and remand in June 2006 ordered federal agencies to complete a comprehensive analysis of the combined effects of the Upper Snake projects and the Federal Columbia River Power System (FCRPS) projects on listed salmon and steelhead, which is documented in the BiOp (NOAA Fisheries 2008b).

To better meet the needs of listed fish, the Upper Snake proposed action adjusts the timing of salmon flow augmentation from the Upper Snake projects (NOAA Fisheries 2008a). The analysis, based on the best available science, combines the effects of the proposed action with the proposed actions for the FCRPS and adds the effects to the environmental baseline and cumulative effects, as required by the remand order.

The 2008 BiOp concludes that the Upper Snake proposed action, taken together with all the other actions, are sufficient to avoid jeopardy and adverse modification of critical habitat to any of the listed species.

There are no anadromous fish species listed by NOAA Fisheries within the project area; however, due to downstream salmon flow augmentation, potentially affected anadromous fish species include:

- Snake River sockeye (endangered)
- Snake River spring/summer Chinook (endangered)
- Snake River steelhead (threatened)
- Upper Columbia River spring Chinook (threatened)
- Upper Columbia River steelhead (endangered)
- Lower Columbia River steelhead (endangered)
- Middle Columbia River steelhead (endangered)
- Columbia River chum salmon (threatened)

None of the listed salmon and steelhead species occurs in the project area, and the final critical habitat for the Snake River salmon does not include the Payette River. Reclamation is required under NOAA Fisheries and the subsequent 2008 BiOp to manage and release 427,000 acre-feet from the Upper Snake River basin (including the Payette River) to aid juvenile salmon and steelhead migration.

### **3.9.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. Bull Trout and any critical habitat for Bull Trout would not be affected due to their location well above the Black Canyon Diversion Dam. There would be no effect to listed anadromous fish as they are currently covered under the existing NOAA Fisheries 2008 operations BiOp (NOAA Fisheries 2008a). There is no known documentation of Bull Trout, Slickspot peppergrass, Canada lynx, northern Idaho ground squirrels, Yellow-billed

Cuckoo, or whitebark pine within the section of the Payette River immediately below the dam or in the lands surrounding the powerplant; therefore, there would be no effect on these species.

### **Alternative B – Proposed Action**

Under the Proposed Action, the construction of a third powerplant and its subsequent operational needs would have no effect on TES, since there are no known populations of these species listed within or adjacent to the immediate project area. All activities associated with project will be confined to within a previously disturbed area. Original construction and long-term operations and maintenance activities associated with the Black Canyon Dam and powerhouse complex preclude establishment of TES or their habitats. The operation of the additional powerplant would change the amount of flow over the spillway, but Reclamation's ability to provide salmon flow augmentation for downstream anadromous fish species would not be affected, and there would be no significant effect to listed anadromous fish under the Proposed Action.

### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.10 Cultural Resources**

### **3.10.1 Affected Environment**

In 1925, the Black Canyon Diversion Dam powerplant, located at the base of the dam, went into operation to supply power directly to the Boise Project, and, by contractual agreement for transmission line use with Idaho Power Company, to portions of the Owyhee and Minidoka Projects. Following the architectural style of its previous powerplants (e.g., Minidoka), Reclamation built the Black Canyon Diversion Dam powerplant as a plain, rectangular, utilitarian, reinforced concrete structure with a low-pitched gable roof. The original purpose of the powerplant was to supply energy to the irrigation districts to pump water to irrigation canals, with any excess power to be marketed. Currently (and as originally designed), two 8-foot-diameter penstocks carry water from the reservoir through the dam to the two generators in the power house. Two 5-foot-diameter steel pump-penstocks carry water to the hydro pumps. Each of these pipes has a motor-operated slide gate on the upstream side of the dam that can be closed for maintenance or to reduce flood damage. A trashrack in the reservoir prevents entrance of logs and other large debris into both the power and pump penstocks. The dam also utilizes triangular drum gates at the top of the spillway and two 5-foot-diameter sluice gates that pass straight through the dam near river elevation.

During the winter of 1951 and 1952, additional construction was undertaken at the dam. Flashboards (8-inch steel plates) were welded onto the drum gates, raising the crest to an elevation of 2497.5 feet. Excessive water force directly below the spillway brought concerns of uplift pressure and structure instability, and broke a window on the power house. The spillway was modified by drilling additional foundation drain holes in the gallery and the downstream face of the dam. A concrete slab was also placed on the downstream face to fill the eroded areas and prevent further deterioration. In the late 1990s, Reclamation increased the level of the reservoir by 6 inches, which necessitated a 6-inch raise to the concrete wall of the debris flume. A number of other small O&M activities have also taken place over the years at both the dam and powerplant to facilitate ongoing utilization of those structures, none of which caused adverse effects to either's historic integrity.

Black Canyon Diversion Dam and powerplant were officially determined to be eligible for the NRHP by the Idaho SHPO on August 22, 1998. This eligibility was based on the pivotal role that the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original structures and their equipment, and the historic and technological contributions to dam design and construction.

No archaeological or other cultural resources of National Register eligibility exist within the area of potential effect of this proposed project.

### **3.10.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues will be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. All the existing structures would remain in their current condition, except for routine maintenance and repair. Any potential impacts to the historic dam and powerplant would be avoided, and the properties' historic integrity would be unaffected.

#### **Alternative B – Proposed Action**

Consultation pursuant to the 36 CFR 800 regulations was initiated with the Idaho SHPO over effects of the Proposed Action on the installation of the third generating unit and powerplant at Black Canyon Diversion Dam and associated historic features. Reclamation and the SHPO concur that the Proposed Action would be deemed an adverse effect to the historic integrity of

the dam and existing powerplant. This determination is based upon the fact that completion of the action would result in the alteration of part of an original significant historic structure (drilling a hole in the dam) and negative visual impact to a second significant historic structure (the existing powerplant) which would be reduced through mitigation, so only minor impacts to the historic value of the Boise Project components would occur, overall.

Mitigation measures were developed by Reclamation in coordination with the SHPO and formalized in a Memorandum of Agreement (MOA) between Reclamation and the SHPO (Appendix B). Additionally, based on the potential of implementing this project or to address any future action at the facility, a Historic American Engineering Record (HAER) study and document would be implemented.

The construction of a new powerplant would partly obstruct the view of the existing powerplant, which is in good condition and contains original equipment installed in 1925. Reclamation would take steps to lessen the visual impact of the new powerplant building in two ways. First, it would be offset from the front of the existing powerplant so as not to obstruct the public's view; and second, it would be architecturally designed to capture the look and feel of the existing historic structure. The design team provided preliminary drawings to the SHPO for comments. Relocation of the existing switchyard would be to the north of the existing structures and should not detract from the historic feeling of the current setting. The existing administration building, which is not considered a historic property of any significance, would be demolished. Relocation of the administration building (new construction) that would be sited to the south and west of its current location—and outside of the current fenced-in facility area—would likely not visually impact the historic area of the powerplant. Nevertheless, Reclamation's cultural resources staff would be consulting with the Regional design team to choose architectural elements for the new administration building that would complement, and possibly, echo, the historic elements of the original powerplant (Appendix B).

#### **Mitigation**

Since the Proposed Action alternative would adversely impact the identified historic properties, Reclamation has committed to implementing a HAER study and document. If a new powerplant is constructed, then Reclamation would lessen the visual impact of the new powerplant building by offsetting it from the existing powerplant building and have its exterior architecturally designed to capture the look and feel of the existing historic structures. In addition, interpretation of the historic dam and powerplant would be created in sign or kiosk format and placed near the river in Wild Rose Park at a vantage point from which the original powerplant is still visible. The information provided in the interpretation materials would explain the importance of the dam and original powerplant to the area, and would describe the benefits of the new generating unit and powerplant.

On August 28, 2013, SHPO representatives met with Reclamation’s Snake River Area Office Archaeologist and Pacific Northwest Regional Office Activity Manager at Black Canyon Diversion Dam for an update on the Third Unit installation project (Proposed Action). Updated drawings were shared and discussed, and the Electrical Engineer gave the group a tour of the project area to explain changes and additions, and answered questions regarding alterations to the historic properties. Details of the MOA for mitigation of the adverse effect to an eligible historic property were discussed and finalized during the meeting. On December 24, 2013, mitigation measures were formalized in a MOA (Agreement No. R14MA1704) between Reclamation and the SHPO (Appendix B).

Reclamation agrees to perform the following actions to mitigate the adverse effects of the proposed project to the Black Canyon Diversion Dam historic property (see Appendix B for complete details):

1. Adjust project designs to ensure that placement of the new powerplant would still allow a direct line-of-sight between the old powerplant and the riverside area of Wild Rose Park to the west.
2. Prepare large-format (4-inch by 5-inch) black and white contact prints, showing the current appearance and historic view of the dam, powerplant, equipment within the powerplant that is scheduled for removal, including associated structures in the yard.
3. Prepare large-format photographic copies of engineering design drawings of the dam, powerplant structure, and generators within the powerplant, including historic and descriptive narrative focusing on the design, construction, and operation of the dam.
4. Prepare interpretative materials using information collected as part to the HAER document and information on the expansion project.

### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.11 Sacred Sites and Traditional Cultural Properties**

### **3.11.1 Affected Environment**

Sacred sites are defined in EO 13007 as “any specific, discrete, narrowly delineated location on federal land that is identified by an Indian Tribe, or an Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion...” Under EO

13007, federal land managing agencies must accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, and avoid adversely affecting the physical integrity of such sacred sites (Reclamation 2004a).

Natural features and locations along the Payette River area landscape within the vicinity of Black Canyon Reservoir have held spiritual or religious significance to aboriginal tribes. These properties might include altars, vision quest sites, burial sites, and river and rock geographic features, among others. Regan Butte, a prominent geographic feature overlooking the Montour Valley, has a unique characteristic consisting of a large hole in the vertical basalt columns near the peak affords a view through the rock from great distances (Morgan 1999).

### **3.11.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. There would be no effect as a result of the No Action alternative.

#### **Alternative B – Proposed Action**

As part of its scoping process, Reclamation requested information from Tribes that traditionally and currently use the area; however, no response was received (Appendix D). The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response Reclamation assumes that there would be no adverse effects to culturally important areas with this project.

#### **Cumulative Effects**

No cumulative effects are anticipated to this resource as a result of the proposed project.

## 3.12 Indian Trust Assets

### 3.12.1 Affected Environment

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

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

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

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

The Nez Perce Tribe is a federally-recognized Tribe located at the Nez Perce Reservation in northern Idaho. The United States and the Tribe entered into three treaties (Treaty of 1855, Treaty of 1863, and Treaty of 1868) and one agreement (Agreement of 1893). The rights of the Nez Perce Tribes include the right to hunt, gather, and graze livestock on open and unclaimed lands, and the right to fish in all usual and accustomed places (Nez Perce Tribe 1995).

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

### **3.12.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. Therefore, no effects would result from the No Action alternative.

#### **Alternative B – Proposed Action**

The Proposed Action alternative would not affect any known ITAs of lands, minerals, water rights, monetary holdings, and gathering rights in the direct vicinity of the Black Canyon Diversion Dam and powerplant.

As part of its scoping process, Reclamation requested information from Tribes that traditionally and currently use the area; however, no responses were received (Appendix D). The lack of specific information about the area is not indicative of a lack of importance to Tribes. With no specific response Reclamation assumes that there would be no adverse effects to ITAs such as lands, minerals, water rights, monetary holdings, and gathering rights in the direct vicinity of the Black Canyon Diversion Dam and powerplant. The facilities at Black Canyon Diversion Dam are not open to hunting and fishing. Implementation of the Proposed Action would not affect tribal hunting and fishing rights outside of the proposed project.

#### **Cumulative Effects**

No cumulative effects are anticipated to this resource as a result of the proposed project.

## **3.13 Environmental Justice**

EO 12898 (59 FR 7629) requires federal agencies to achieve environmental justice by addressing “disproportionately high and adverse human health and environmental effects on minority and low-income populations.” To determine if environmental justice populations are present, the federal agency examines the demographics of the affected area to determine if minority (including Native American) and/or low-income populations are present. If present, the agency must determine if construction of the Proposed Action would cause

disproportionately high and adverse human health or environmental effects on the populations.

### 3.13.1 Affected Environment

Table 3-4 summarizes the racial characteristics of Emmett, Gem County within the project area and compared to Idaho overall. Information contained in the 2010 to 2014 Census of Population was used to identify these populations. The 2010 to 2014 Census data for the white racial category comprises the highest percentage for Emmett, Gem County, and Idaho (U.S. Census Bureau 2015).

**Table 3-4. Racial population summary of the City of Emmett, Gem County, and the State of Idaho.**

U.S. Census Bureau 2010 to 2014 Statistics	Emmett	Gem County	Idaho
Total Population, 2014 estimate	6,599*	16,866	1,634,464
White alone (percent), 2014 (a)	91.1%*	95.0%	93.5%
Black or African American alone (percent), 2014 (a)	0.2%*	0.2%	0.8%
American Indian and Alaska Native alone (percent), 2014 (a)	0.6%*	0.9%	1.7%
Asian alone (percent), 2014 (a)	0.7%*	1.4%	1.4%
Native Hawaiian and other Pacific Islander alone (percent), 2014 (a)	0.1%*	0.1%	0.2%
Two or more races (percent), 2014	2.6%*	2.4%	2.3%
Hispanic or Latino (percent), 2014 (b)	12.7%*	8.2%	12.0%
White alone, not Hispanic or Latino (percent), 2014	83.9%*	87.6%	82.8%
*2010 data reported (a) Includes persons reporting only one race (b) Hispanics may be of any race, so also are included in applicable race categories			

Low income populations are identified by several socioeconomic characteristics. Specific characteristics used in this description of the existing environment, as categorized by the 2009 to 2013 Census, are income (per capita income and median household income) and percentage of the population below poverty. Table 3-5 provides income and poverty information for the State of Idaho, Gem County, and City of Emmett.

**Table 3-5. Income and poverty – State of Idaho, Gem County, and City of Emmett.**

<b>Geographic Area</b>	<b>Per Capital Income</b>	<b>Median Household Income</b>	<b>People Below Poverty</b>
Idaho State	\$22,568	\$46,767	15.5%
Gem County	\$20,250	\$44,432	18.2%
City of Emmett	\$15,779	\$29,522	27.2%
*Information taken from U.S. Census Bureau: State and County Quick Facts for years 2009-2013 (U.S. Census Bureau 2015)			

The City of Emmett has the lowest per capita and median household incomes and the highest percentage of people below the poverty rate compared to Gem County and the State of Idaho.

### 3.13.2 Environmental Consequences

#### Alternative A – No Action

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove woody debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location.

The information indicates that there are few, if any, minority or low income populations in or near the project area. The impacts associated with either alternative would affect persons of all races and incomes in the same manner and would not result in any disproportionately high and adverse impacts on a particular population.

#### Alternative B – Proposed Action

Construction of the Proposed Action would not require the relocation of any residents, so no low-income or minority households would be directly affected by the project. Construction-related impacts, such as those associated with fugitive dust and noise and temporary road closures during construction, could temporarily affect these local residents and would affect all residents in the same manner, regardless of income or race. Construction of the Proposed Action would not result in any significant and adverse impacts on any low-income populations.

## Cumulative Effects

No cumulative effects are anticipated on this resource as a result of the proposed project.

# 3.14 Socioeconomics

## 3.14.1 Affected Environment

Current population trends, employment, and income for Gem County and nearby Ada, Canyon, and Payette counties are discussed below. Ada County, which contains the city of Boise and neighboring suburban communities, has a large population and thus a significant impact on use of Black Canyon Reservoir, particularly for recreation purposes.

### Population

According to the U.S. Census Bureau, the estimated population of the State of Idaho between 2000 and 2014 grew from 1,293,953, to 1,634,464, an increase of 340,511 people. Gem County is the fifth smallest county geographically with 38 percent owned by the federal government. From 2004 to 2014 the Gem County's population increased 6 percent, or almost 941. As growth in the neighboring population centers of Ada and Canyon counties slowed during the recession, the overflow into Gem County declined. People had been moving to the county to escape the crowds and congestion and enjoy a more rural lifestyle than the nearby metropolitan areas provide. Now that population in the major counties has picked up, the population in Gem County continues to grow (IDL 2015).

Most of the population in southwest Idaho is located south of Gem County along the Interstate 84 within Ada and Canyon counties in cities such as Boise (population 216,282), Nampa (population 88,211), and Meridian (population 87,743) (U.S. Census Bureau 2015). As growth in these nearby population centers increased, so did the overflow into Gem County.

The statistics for residents in Gem County as of 2014 are (U.S. Census Bureau 2015):

- Total population: 16,866
- Under 5 years old: 5.7 percent
- Under 18 years old: 23.6 percent
- 65 years old and over: 21.4 percent

The closest city to Black Canyon Reservoir is Emmett (population 6,599), the county seat of Gem County (U.S. Census Bureau 2015). Nearly one third of Gem County's population resides in Emmett, making it the county's largest city. Emmett is located in the "Valley of

Plenty,” made possible by the development of an irrigation canal system that has diverted water from the Payette River and Black Canyon Reservoir since the late 1800s when the valley began to be settled. In the early 1900s, the irrigation canal system continued to be expanded; by the 1920s, the valley was producing an abundance of orchard fruit, specifically cherries and apples. After an economic decline, brought on by the Great Depression and years of exceptional drought in the 1930s and 1940s, the economy rebounded in the 1950s. Since then, the economy has been based on agriculture, timber, and mining, each benefiting from technological advances and providing for a growing post-World War II population.

More recently, however, the area’s economy has begun to diversify by shifting from resource based manufacturing to government, services, and wholesale and retail trade. Gem County experienced a gain in population since 1990 but did not receive an equal gain in economic benefit during this time. This is due to an increasing number of Gem County residents who choose to commute out of the county to work and shop (primarily in Ada County, where Boise and its suburbs are located). After experiencing unemployment rates under 4 percent during 2006 and 2007, Gem County’s unemployment rate more than tripled to 11 percent in 2010. Since then, the rate declined more than 5 points to 5.9 percent in 2014. In this same time, the county experienced a labor force growth of 8 percent, mostly occurring between 2013 and 2014. Now, the labor force is higher than at any time in the previous decade. Total covered jobs increased by 141 from 2013 to 2014. The largest gains were in the education and health services sector, which added 65 jobs. The education and health services sector is also the industry sector with the largest increases to covered employment over the past decade with over 221. The manufacturing sector is next, with 60. The financial activities sector posted the largest wage growth over the year, growing by over \$7,500 (IDL 2015).

Agriculture and timber resource products are the two basic local industries, and the timber industry formerly provided the bulk of family wage jobs. However, the timber industry declined because of a lack of a steady supply of logs. As a result, the county’s largest employer, Boise Cascade, closed its Emmett mill. The mill later burned in an accidental fire. According to the Idaho Department of Labor (IDL), the amount of land devoted to fruit cultivation has decreased in the Emmett Valley because acreage formerly used for crops is now being utilized for housing and commercial development (Reclamation 2004a). After years of significant decline, agriculture which accounts for only 4.5 percent of covered employment, somewhat stabilized in 2008, at essentially the same job level as 2007 (IDL 2009).

## Demographics

Demographic information is from 2005 to 2009 and not all information is available for this county. The median age of persons in Gem County was 41.2 years, an increase from 37.5 years in 2000. There were 16,064 households in Gem County with an average of 2.55 persons per household in 2009. The 2009 median household income of Gem County was \$41,847,

which was below the statewide median household income of \$46,183 in 2009. The percentage of individual residents below the poverty level (12.8 percent) was lower than the percentage of state residents (13.5 percent) below the poverty level (U.S. Census Bureau 2009). In 2009, 81.6 percent of Gem County residents over 25 years of age were high school graduates, and 10.3 percent had at least a bachelor's degree. By comparison, 87.7 percent of all Idaho residents over 25 years of age were high school graduates, and 23.7 percent had at least a bachelor's degree. In 2008, 90 percent of Gem County's population was white and 10 percent was Hispanic or Latino.

### **3.14.2 Environmental Consequences**

#### **Alternative A – No Action**

Under the No Action alternative, the new third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and woody debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location. The existing powerplant would continue to have a maximum generating capacity of 10.2 MW.

#### **Alternative B – Proposed Action**

The Proposed Action would include the construction of a third hydroelectric generating unit and associated projects at Black Canyon Diversion Dam. The third hydroelectric generating unit would produce an additional 12.5 MW of electricity and would be the primary source of electrical generation at Black Canyon Diversion Dam. During periods of high flow in the Payette River, the two existing hydroelectric generating units (combined 10.2 MW) would be utilized in concert with the new hydroelectric generating unit (12.5 MW) for a combined maximum electrical output of 22.7 MW. During periods of low flow in the Payette River, the proposed third hydroelectric generating unit will be operated solely due to its modern and efficient capability.

The electricity produced by the Proposed Action would be first used by 10 irrigation districts in southern Idaho and two Tribes. Electricity generated in excess of the demand from the 10 irrigation districts and the 2 Tribes will be marketed by BPA. Using the current BPA public tier 1 rate of \$31.5 MWh, and assuming all three hydroelectric generating units were operated at full capacity (22.7 MW), the addition of the third hydroelectric generating unit would generate additional revenue of approximately \$3.5 M per year.

Under the Proposed Action alternative, construction activities would bring a short-term temporary economic boost to the local economy, likely lasting only a year or two. Although the ethnographic demographics would not change much, during the period of construction numerous benefits would be derived from the influx of the working staff, housing, material needs, etc. Once construction is finished, any gains and changes in the economy and demographics would slowly diminish to a level similarly described in Alternative A.

#### **Cumulative Effects**

No cumulative effects are anticipated on this resource as a result of the proposed project.

## **3.15 Climate Change**

### **3.15.1 Affected Environment**

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

In 2009, Reclamation completed the River Management Joint Operating Committee (RMJOC) Climate Change Study in collaboration with the BPA and the USACE, to adopt climate change and hydrology datasets for their longer-term planning activities in the Columbia-Snake River Basin. The RMJOC, a subcommittee of the Joint Operating Committee that was established through direct funding MOAs between BPA, Reclamation, and the USACE. Four reports were generated as a result of this work and include:

- *Report - Part I: Future Climate and Hydrology Datasets* (December 2010)
- *Report - Part II: Reservoir Operations Assessment – Reclamation Tributary Basins* (January 2011)
- *Report - Part III: Reservoir Operations Assessment – Columbia Basin Flood Control and Hydropower* (June 2011).
- *Report – Part IV - Summary Report* (September 2011)

These reports can be downloaded online at <http://www.usbr.gov/pn/programs/studies.html> under the “Climate Change Studies” subheading.

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

For the Payette River, peak monthly period inflow to reservoirs did not vary significantly from the historical inflow nor did a shift in the timing of the peak flow occur. However, as with other sub-basins, a significant decrease in summer inflow was expected. Reservoir storage volume was expected to increase significantly in the spring months due to an increase of flow (likely due to increased snowmelt and precipitation in general) above historical conditions, with a decrease during the summer months. Surface water deliveries were generally unaffected. More information on this sub-basin and others in the Snake River basin can be found at the above link.

In addition to the RMJOC Climate Change Study, Reclamation completed the first Report to Congress (2011) in response to the requirements in the SECURE Water Act that was enacted in 2009.

### **3.15.2 Environmental Consequences**

#### **Alternative A – No Action**

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

Under the No Action alternative, a third hydroelectric unit or associated facilities would not be constructed. The Black Canyon Diversion Dam and powerplant would remain operating under existing constraints and at the existing generation capacity. The current switchyard would remain at its current location and any safety compliance issues would be addressed to conform to OSHA and Reclamation Health and Safety Standards. The trash rake would not be installed to remove trash and debris from the upstream face of the dam, the controls for the existing two units would not be upgraded, and the administration/shop building would remain in its present location.

In the long term (greater than 10 years), climate change could alter precipitation patterns and river hydrology. This could result in potential increases or decreases in the magnitude and duration of flow events, alter the timing of snowmelt, increase or decrease flow regimes, and

changes river level. All of these factors could influence physical sites and biological communities - affecting species assemblages, timing, and use of the project area, and could also lead to changes in noxious and invasive weed cover. Additionally, climate change could indirectly affect soil erosion rates due to more or less precipitation. These would occur regardless of an action.

### **Alternative B – Proposed Action**

The proposed project could contribute to climate change due to the use of fossil fuel and emissions from construction equipment. The proposed project would require heavy equipment operations that would use fossil fuels and emit exhaust that partially contributes to climate change. These emissions would not be expected to affect climate change in the short or long term because the relative minor amount of vehicle/equipment emissions and would occur in a short amount of time (i.e., less than 3 years for construction).

### ***Land Use, Recreation, and Power Generation***

#### **Land Use**

Impacts to agricultural, municipal and industrial, and instream water demands from potential climate changes are difficult to project; existing information on the subject is limited. Climate change combined with the proposed project would not have significant impacts to land use.

#### **Recreation**

Instream water demands could increase resulting from climate change and could include ecosystem demands, hydropower and thermoelectric power production, industrial cooling, navigation, and recreational uses. Water demands for endangered species and other fish and wildlife could increase with ecosystem impacts due to warmer air and water temperatures and resulting hydrologic impacts (i.e., runoff timing). The timing of diversion use and hydropower production would not be a significant factor in ecosystem water use or navigation and recreational water uses.

#### **Power Generation**

Electricity demand, from hydropower generation and other sources, generally correlates with temperature (Scott and Huang 2007); therefore, river discharge (amount and timing), and reservoir water levels. Climate change may shift in timing of power production, but this action would likely be beneficial or more efficient for power production.

### ***Reservoir Operations and Hydrology***

Future projections consider warming with precipitation changes, unlike current condition which are warming trends without precipitation change. Current conditions allow runoff and storage capability for late spring and early summer or winter drafts and spring refills. Future conditions project that runoff could shift into higher volumes during the winter draft periods forcing potential changes to flood control rules (Reclamation 2011). Reservoir operations and hydrology would not significantly change due to climate change or the proposed project and if climate change does shift flows, it will be beneficial to hydropower production.

### ***Water Quality***

Water quality conditions may improve or deteriorate depending on several variables including water temperature, flow, runoff rate and timing, and the physical characteristics of the watershed (Lettenmaier et al. 2008). Climate change has the potential to alter all of these variables. Although not well understood, the timing, magnitude, and consequences of these climate change impacts on surface water ecosystems very likely would affect their capacity to remove pollutants and improve water quality (Lettenmaier et al. 2008).

### ***Fish and Wildlife***

Water use or allocation for endangered species and other fish and wildlife could decrease or shift with ecosystem impacts due to warmer air and water temperatures and resulting hydrologic impacts (i.e., runoff timing). Projected climate changes are likely to have a range of interrelated and cascading ecosystem impacts (Janetos et al. 2008). Most projected impacts are primarily associated with increases in air and water temperatures and include increased stress on fisheries that are sensitive to warming aquatic habitat. Furthermore, increases in water temperature could give a competitive advantage to aquatic organisms that favor warm water ecosystems. Other warming-related impacts include poleward shifts in the geographic range of various species, impacts on the arrival and departure of migratory species, amphibian population declines, and effects on pests and pathogens in ecosystems. Climate change can also trigger synergistic effects in ecosystems and exacerbate invasive species problems.

### **Cumulative Effects**

The past, present and foreseeable future impacts of local agriculture, when added to the impacts of this project from climate change are difficult to project. Any minor effects would be indirectly derived from agriculture. Agriculture accounts for approximately 8.1 percent of the total greenhouse gas emissions in the United States (EPA 2014). Irrigation water from Black Canyon Reservoir is primarily to grow hay and row crops. These crops use carbon dioxide and sequester carbon in vegetation biomass and soil, thereby reducing the greenhouse

gas. The overall soil carbon gain is minor (0.4 percent positive flux meaning soil sequestration slightly exceeds soil emissions) (Takle and Hofstrand 2008).

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

Effects from agriculture would be additive to climate change (livestock methane emissions, emissions from farm equipment, etc.); however, these additional inputs are minor compared to regional inputs. Additionally, hydropower has been identified as “clean energy” and does not contribute to the greenhouse emissions coal burning powerplants are known to produce.

## Chapter 4 CONSULTATION AND COORDINATION

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### 4.1 Public Involvement

Reclamation first announced its proposal for construction of the third hydroelectric generating unit at Black Canyon Diversion Dam through a news release on July 26, 2010. The announcement stated that the construction of the third hydroelectric generating unit, powerhouse, penstock, and associated facilities would utilize flows over the spillway to provide for pollution-free generation of hydroelectric power, while still maintaining flows required for irrigation and salmon augmentation downstream. It further stated that there would be opportunity for public involvement in the upcoming NEPA process.

In August of 2010, Reclamation mailed a scoping document to over 62 agencies, Indian tribes, organizations, and individuals requesting their input on concerns over the proposed powerplant installation. Reclamation also consulted with the Idaho SHPO and the ACHP the historic documentation of the existing facilities and placement and design of the new facility (November 2010). The 2011 Draft EA was mailed on June 26, 2011 to more than 60 federal, state, and local agencies, elected officials, Indian Tribes, irrigation districts, interest groups, and individuals for a 30-day comment period. These comments and Reclamation's responses are included as Appendix A.

In October of 2011, an EA was completed and a FONSI was approved and signed; however, in late 2012 and early 2013, as part of data collection needs for design, Reclamation drew down Black Canyon Reservoir to perform subsurface geotechnical analysis. These drawdowns coupled with an ice jam, remobilized large amounts of sediment, which were subsequently transported downstream. This unexpected event and the subsequent concerns regarding the reservoir fish population, water quality, and some new developments to the recreation area at Wild Rose Park prompted Reclamation to develop a revised EA that supersedes the 2011 EA and FONSI.

### 4.2 Scoping

A public meeting was held in Emmett on June 25, 2013 to address the above mentioned concerns and to allow the public a 30-day opportunity to complete comment forms. Reclamation offered presentations to the Emmett Rotary Club on October 31, 2013 and to the

Emmett Chamber of Commerce on November 19, 2013. Approximately 25 people attended both meetings.

Reclamation also mailed a scoping document to 98 Indian tribes, organizations, and individuals soliciting their concerns over the revised EA issues. The distribution list is included as Appendix E. Reclamation has continued consultation with the Idaho SHPO and the ACHP in the historic documentation of the existing facilities and placement and design of the new facility.

Following receipt of the comment forms and further communications with IDFG and IDEQ Reclamation prepared the revised Draft EA. A news release for the revised EA was issued for public review and comment for 30 days on February 12, 2016.

### **4.3 Agency Consultation and Coordination**

Due to design changes and other issues that occurred following the geophysical survey drawdown in 2012/2013 and the June 25 public meeting, Reclamation increased its coordination efforts with IDFG, IDEQ, USFWS, and SHPO in order to develop monitoring and mitigation plans for pre, during, and post construction activities.

Reclamation received a draft mitigation plan from IDFG in June 2013 and Reclamation responded to the plan in October 2013 (Appendix B). Both agencies will continue to coordinate prior to and throughout project completion regarding data collection, stocking efforts, habitat improvement, and possible sediment flushes as part of the mitigation plan.

In August of 2013, Reclamation received a letter from IDEQ requesting submittal of a Water Quality Action Plan for Black Canyon Diversion Dam (Appendix B). In October 2013, Reclamation responded to IDEQ about the continued development of a Water Quality Action Plan. The Action Plan will provide IDEQ the procedures and measures Reclamation will take to minimize sediment remobilization from Black Canyon Reservoir into the lower Payette River (Appendix B).

Reclamation received an updated October 2013 list of TES within Gem County that may be affected by the Proposed Action (Appendix C).

Because of the value of the historic integrity of the existing generating units and surrounding facilities, in November 2010 Reclamation consulted with the Idaho SHPO and the ACHP to ensure historic integrity would not be lost through the addition of a new powerplant (Appendix D). On August 28, 2013, SHPO representatives met with Reclamation's Snake River Area Office Archaeologist and Pacific Northwest Regional Office Activity Manager at Black Canyon Diversion Dam for an update on the third unit installation project. Updated drawings were shared and discussed, and the Electrical Engineer gave the group a tour of the

project area to explain changes and additions, and answered questions regarding alterations to the historic properties. Details of the MOA for mitigation of the adverse effect to an eligible historic property were discussed and finalized during the meeting. On December 24, 2013, mitigation measures were formalized in a MOA (Agreement No. R14MA1704) between Reclamation and the SHPO (Appendix B).

## **4.4 Tribal Consultation and Coordination**

A letter was sent to the Nez Perce, the Shoshone-Bannock, the Shoshone-Paiute, the Confederated Tribes of the Umatilla, and Burns Paiute Tribes on November 22, 2010, informing them of the proposed project and requesting the Tribes' information or concerns (Appendix D).

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# APPENDICES

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**APPENDIX A**  
**SCOPING, COMMENTS, AND RECLAMATION'S**  
**RESPONSES ON 2011 DRAFT EA**

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## Public Comments and Reclamation's Responses

A Draft EA was mailed on June 26, 2011, to more than 60 Federal, State, and local agencies, elected officials, Indian tribes, irrigation districts, interest groups, and individuals for a 30-day comment period which ended July 29, 2011. Comments were received from one individual via phone; from the Idaho Department of Parks and Recreation via phone; and from the Corps via a written letter. Each commenter's letter or email follows:

1. U.S. Army Corps of Engineers – letter to Reclamation dated 7/13/11
2. Mr Jeff Cook, Idaho Department of Parks and Recreation – phone message of 7/13/11
3. Mr. David Reay, Horseshoe Bend – phone message of 7/05/11

Responder	Comment	Reclamation's Response
1	<p>Section 404 of the Clean Water Act (33.U.S.C. 1344) requires a Department of the Army permit be obtained for the discharge of dredged or fill material in to the waters of the United States...Based on the information provided, the installation of the draft tubes, the construction of the cofferdam, and the installation of the earthen retention dam or retaining wall would each involve the discharge of fill material into the Payette River, thereby, requiring permits from us pursuant to Section 404 of the Clean Water Act.</p> <p>An additional concern is the choice of the Francis type turbine having the tendency to entrain fish. Was an alternative type of turbine considered.</p>	<p>Reclamation acknowledges its responsibility to obtain or have any contractor obtain the necessary permits. We cited that responsibility in Section 1.6, Table 1-1, Section 3.4.2 and 3 (Water Quality), in specific regard to both a 401 and 404 permit.</p> <p>During feasibility designs, consideration was made to utilize turbines that were "fish friendly." However, due to the small size of the desired turbine, their narrow economic efficiency, and having an unknown or marginally better fish mortality rate than the conventional Francis turbine; the conventional turbine was selected.</p>
2	Generally or specifically in favor of the bridge alternative. Is a worthwhile project.	Comment noted.

<b>Responder</b>	<b>Comment</b>	<b>Reclamation's Response</b>
3	No comment.	Acknowledged. Thank you for your consideration of the project.



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
WALLA WALLA DISTRICT, CORPS OF ENGINEERS  
BOISE REGULATORY OFFICE  
10665 WEST EMERALD STREET  
BOISE, IDAHO 83704-9754

July 13, 2011

Regulatory Division

SUBJECT: NWW-2010-514-BO1

Ms. Gretchen Fitzgerald  
Bureau of Reclamation  
Snake River Area Office  
230 Collins Road  
Boise, ID 83702-4520

Dear Ms. Fitzgerald:

This is in response to your June 29, 2011 letter requesting review and comments on the Draft Environmental Assessment for the proposed Third Hydroelectric Generating Unit at Black Canyon Dam. The facility is located in Section 22, Township 7 North, Range 1 West, Near Emmett, in Gem County ID.

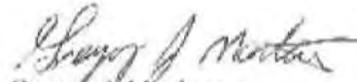
Section 404 of the Clean Water Act (33 U.S.C. 1344) requires a Department of the Army Permit be obtained for the discharge of dredged or fill material in to the waters of the United States. This includes most perennial and intermittent rivers and streams, natural and man-made lakes and ponds, and wetlands as well as irrigation and drainage canals and ditches that are tributaries to other waters of the United States.

Based on the information provided, the installation of the draft tubes, the construction of the coffer dam and the installation of the earthen retention dam or retaining wall would each involve the discharge of fill material into the Payette River, thereby requiring permits from us pursuant to Section 404 of the Clean Water Act. Additional construction for the switchyard and other buildings located in uplands will not require our approval.

An additional comment/question we have is concerning the choice of the Francis-type turbines described in the EA as having the tendency to entrain fish. The possibility of screens to divert the fish, and alternatively, an improvement to the conditions within the turbine for fish passage are mentioned as possible mitigation for the loss of fish should IDFG require it. Was, however, an alternative type of turbine considered? If so, it should have been addressed in the document and either carried forward or addressed in section 2.7 and eliminated as a practical consideration due to cost, technology or some other reason. Other viable types of turbines should not be easily dismissed in favor of the Francis-type simply based on the fishery being of low value.

We look forward to working with you on this project and thank you for the opportunity to provide comments in your planning process. If you have any questions concerning this or other regulatory matters, contact me at (208) 345-2154 or by email at [greg.j.martinez@usace.army.mil](mailto:greg.j.martinez@usace.army.mil)

Sincerely,

  
Gregory J. Martinez  
Regulatory Project Manager

**APPENDIX B**  
**IDFG MITIGATION PLAN**  
**IDEQ WATER QUALITY ACTION PLAN**  
**SHPO MEMORANDUM OF AGREEMENT**

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# **Mitigation Plan for the Black Canyon Hydroelectric Generating Unit Project**



# Mitigation Plan for the Black Canyon Third Hydroelectric Generating Unit Project

Prepared by  
U.S. Bureau of Reclamation

## Introduction

The Bureau of Reclamation (Reclamation) is proposing to construct a 12.5 megawatt (MW) powerplant and other activities, as outlined in the Project Scope and Purpose, at Black Canyon Diversion Dam (BCDD) near Emmett, Idaho (Figure 1 – Location Map). The proposed Mitigation Plan is being developed in concert with the National Environmental Policy Act (NEPA) compliance process. The draft Environmental Assessment (EA) fully documents the analysis (Attachment 1).

## Project Scope and Purpose

The purpose of the Proposed Action is to construct a 12.5 MW hydroelectric generating unit at the Black Canyon Diversion Dam to generate power using excess flows that currently pass over the top of the dam. Instead of allowing water to flow over the top of the dam, the flows will be directed through a hydroelectric generating unit to create clean, renewable energy. As this is a run-of-the river powerplant, there will not be any change in operational water shaping or salmon augmentation flows downstream. Other activities planned to proceed concurrently with construction of the new hydroelectric generating unit include:

- Constructing a new powerplant to house the unit;
- Installing a new penstock through the dam;
- Removing and replacing the existing switchyard;
- Removing and replacing the existing administration building;
- Installing a new trash-rake removal system and new trashracks;
- Modifying the existing interior powerplant; and
- Realigning transmission lines currently on Reclamation property.

## **Background**

Reclamation first announced its proposal for construction of a third hydroelectric generating unit at Black Canyon Diversion Dam via a news release on July 26, 2010 (Attachment 1). Public scoping for the proposed project was completed and included a 30-day comment period. Reclamation completed a Finding of No Significant Impact/EA in October 2011 and design plans and preparation for the construction project continued (Attachment 1). On November 9, 2012, a news release was issued to inform the public of a single reservoir drawdown expected to occur in late November to perform subsurface geotechnical analysis to support design of the project. Field work was put on hold in December due to heavy rainfall and a second drawdown was necessary to resume the data collection. A news release informing the public of the resumed data collection was issued on January 29, 2013, with the expected drawdown to occur in mid-February. These drawdowns, coupled with an ice dam upstream in the reservoir and other weather conditions, remobilized large amounts of sediment that were subsequently transported from the Black Canyon Reservoir into the lower Payette River. This unexpected event resulted in new concerns from Idaho Fish and Game (IDFG) over the sediment released into the Payette River and the potential effect on reservoir and downstream fish populations and habitat. Due to the concerns raised by IDFG and members of the local community, coupled with a new plan to close Wild Rose Park during construction of the proposed project at Black Canyon Diversion Dam, Reclamation decided to hold a public meeting to present new project developments and address public concerns with the proposed project.

Reclamation issued a news release on June 13, 2013, and held a public meeting on June 25, 2013, in the city of Emmett, Idaho to discuss the upcoming projects, the 2012/2013 drawdowns, and future drawdowns (Attachment 1). A public comment form with a 30-day response period was provided for further input. A total of seven comments were received following the open house. The source of the comments included: Emmett Mayor's Office, Gem County Commission, two irrigation districts, Payette River Recovery Commission, Idaho Conservation League, and a private citizen. The majority of comments supported the project; however, there were concerns regarding water quality and cumulative fish impacts. Based on these concerns and design changes, it was determined that the original 2011 EA should be superseded and replaced with the revised EA (Attachment 1).

## **Potential Impact from Construction**

Actual construction would not cause a noticeable increase in turbidity or suspended sediment; however, drawdowns may adversely affect water quality. Based on previous drawdowns conducted for sluice gate and dam operation and maintenance, as well as geophysical surveys in 2012/2013, increased turbidity has been documented in the riverine

system. Reservoir drawdowns will be required to install the intake structure for the new unit, installation of the trash rakes, and other work. On at least two more proposed drawdowns, the Proposed Action would have adverse effects to water quality within the riverine system below the dam, but would not likely affect the water quality in the reservoir system above the dam. The sluice gates were designed for maintenance and activities that necessitate lowering the reservoir elevations.

The period in which sediment remobilized from the reservoir during drawdowns would be short term in duration, but of likely high concentrations. Based upon previous reservoir drawdowns, it is expected that turbidity would range from 50 to 1,000+ Nephelometric Turbidity Units (NTUs) over background conditions during the descending phase of the drawdowns, but should improve to near ambient conditions once the reservoir begins to refill. The effects of sediment remobilization would dissipate downstream as the released sediment is relocated to point bars and along the river banks. In addition, the effects would be further minimized following the spring freshet, which would rework any point bars or bank storage, cleaning gravels and refreshing mud flats along the length of the Payette River. While posing a short-term increase in turbidity, the temporary nature of the sediment releases would be addressed through the Water Quality Action plan (Attachment 1). This plan would address best management practices (BMPs) for sediment concentration reduction, monitoring, and a short-term activity exemption from water quality standards during the drawdown periods associated with the construction activities proposed at Black Canyon Diversion Dam.

Any point discharges from the switchyard would be contained in an approved system, as well as for the new powerplant and administration building. These systems would be incorporated into the designs of the facilities. Under the Proposed Action, a general stormwater permit would be acquired to address any run-off from construction activities.

During construction of the third hydroelectric generating unit, standard construction BMPs would be implemented to control potential short-term impacts to water quality as a result of the potential installation of a cofferdam and possible blasting operations approximately 40 to 100 feet away from the tailrace. If water quality impacts were to occur, they would be short term and associated with minor sedimentation or turbidity issues. However, these issues are typically controlled through stormwater permits and construction BMPs.

## **Mitigation**

In order to offset potential environmental impacts resulting from construction related activities, impacts were evaluated using multiple approaches. First, Reclamation engaged in discussions with IDFG and the Idaho Department of Environmental Quality (IDEQ) including several meetings to discuss the impacts and identify possible mitigation measures.

Second, immediately following the 2012/2013 drawdown, IDFG provided a summary of the effects using the best available data. Third, Reclamation biologists conducted a functional assessment, using professional judgment and a review of the previously mentioned data, to describe impacts and determine the level and type of associated compensatory mitigation required.

## **Mitigation Goals and Objectives**

The Proposed Action may have adverse effects to the fisheries and lotic habitat resulting from water quality within the riverine system below the dam. The goal of this Mitigation Plan is to off-set the functional losses resulting from the project and will be based on:

1. Actions that occurred during the drawdown conducted for geophysical surveys in 2012/2013.
2. Two or more proposed drawdowns conducted during the installation of the hydroelectric generating unit.

Specific objectives of the Mitigation Plan are as follows:

1. Identify the type of function lost and/or altered and the associated level of loss and/or degree of alteration to the fisheries and lotic habitat within the study area.
2. Identify a location for mitigation.
3. Restore, enhance, and create the attributes, consistent with objective 1, necessary to equal the function lost and/or altered at the physical, biological, and chemical levels.
4. Monitor the mitigation sites to determine the long-term viability of the project and ensure project success in meeting objective 3.

## **Mitigation Work Plan**

Black Canyon Reservoir and the lower Payette River are popular fisheries and recreation areas. The drawdown of Black Canyon Reservoir in 2012/2013 resulted in mobilization and transport of sediment from the reservoir into the downstream river. Due to lack of empirical data (from any agency), determining the impacts from the drawdown on water quality, sedimentation, and the fish community is impossible. However, anecdotal information received from local sources suggests impacts to the fisheries and sediment distribution within the lower river. Upon hearing concerns of impacts, Reclamation collaborated with IDFG and IDEQ to define a path forward. Reclamation requested to financially compensate IDFG to perform a fish survey of both the Black Canyon Reservoir and the lower Payette River. Without a baseline fish survey to compare results against, quantifying the precise impact to the fisheries is not possible. However, Reclamation will agree to financially compensate

IDFG to restock (translocate) fish into the Black Canyon Reservoir and the lower Payette River based upon an agreement between Reclamation and IDFG.

### ***Fish Monitoring***

Reclamation will continue partnering with IDFG to provide funding for fish monitoring in Black Canyon Reservoir and the lower Payette River. Reclamation and IDFG have agreed that two more fish surveys are required: one survey post-construction, prior to restocking (translocation); and one survey three years after restocking (translocation) to quantify the restocking (translocation) effort.

### ***Fish Restocking***

Restocking (translocation) fish species into Black Canyon Reservoir and the lower Payette River (if determined beneficial) directly mitigates for potential impacts to the fisheries in both locations. Reclamation and IDFG biologists will collaborate to determine the level of restocking (translocation). Reclamation will financially compensate IDFG for the agreed restocking (translocation) effort.

### ***Recreation***

In order to mitigate for recreational impacts caused by activities associated with the construction of the proposed project, Reclamation proposes to financially compensate IDFG for a to-be-negotiated improvement that will benefit recreation within the area of potential impact.

### ***Sediment Migration***

To mitigate for sediment mobilization from Black Canyon Reservoir into the lower Payette River during the 2012/2013 drawdown and from activities associated with the proposed project, Reclamation proposes three mitigation actions:

1. Reclamation has partnered with IDEQ to develop a Water Quality Action Plan (Attachment 1). Reclamation will financially support all activities listed within the Water Quality Action Plan.
2. Reclamation will collaborate with IDFG and IDEQ to develop a sediment monitoring plan. The proposed sediment monitoring plan will provide Reclamation, IDEQ and IDFG with data on the movement of sediment within the lower Payette River. Reclamation will financially support this activity. A draft sediment monitoring plan will be detailed under a separate cover and completed by fall 2014.

3. Reclamation will work with IDEQ and IDFG to investigate operational changes at Black Canyon Diversion Dam to provide seasonal flushing flow to aid in improving lotic habitat. Reclamation will financially support this activity. A draft investigation of flushing flows will be detailed under a separate cover.

## **Site Selection**

Mitigation for the project will take place in Black Canyon Reservoir and the lower Payette River; all locations are within the action area. The proposed mitigation project sites are located in the same geologic, climatic setting as the proposed construction project and possess physical, chemical, and biological attributes consistent with the proposed construction project. The proposed mitigation sites are highlighted on Figure 2.

## **Performance Standards**

Performance standards are as follows:

1. Re-establishment of a fishery in the lower Payette River and Black Canyon Reservoir to estimated pre-construction levels. The establishment of these fish communities will occur through natural immigration and translocation (by IDFG) from nearby waters.
2. Improvements to IDFG owned property at Plaza Bridge.
3. Recorded water quality data for the lower Payette River throughout construction.
4. Documentation on the mobilization and transport of sediment throughout the lower Payette River portion of the action area.

## **Project Success**

Project success will be determined by Reclamation's (and IDFG where noted) ability to meet the performance standards. Annual meetings throughout the construction phase of the project will provide an opportunity to track and discuss the completion of objectives.

The Mitigation Plan is the result of a collaborative effort between Reclamation and IDFG that identified both effects resulting from the construction of the project and mitigation options. Reclamation developed this plan using the best available science, incorporating mitigation options identified through the collaborative process while considering the objectives identified by IDFG, including:

1. Review the fish communities and recreational fisheries present at both waters before the next proposed drawdown;

2. Propose fisheries monitoring efforts designed to document the response of the fish population subsequent to planned drawdowns;
3. Provide a monetary valuation of costs associated with monitoring impacts and re-establishing fish populations using the best data available; and
4. Provide a framework for applying mitigation monies to meet mitigation plan objectives.

## **Financial Assurances**

The Northwest Power Planning and Conservation Act (NPPCA) (Northwest Power Act, 16 U.S.C. 839) authorizes Reclamation and BPA to undertake additions, replacements, and improvements at federal projects in the region; and directs the BPA Administrator (Administrator) to acquire renewable resources to the maximum extent practicable. Additionally, the Energy Policy Act of 1992 (42 U.S.C. § 13201, Section 2406) which states in part and authorizes without further appropriation and without fiscal year limitation, the expenditure of funds that the Administrator determines necessary for the respective project. Funding for all proposed mitigation activities will be procured with these funds, with the exception of operation changes to Black Canyon Diversion Dam. Operational changes to Black Canyon Diversion Dam will be funded through Reclamation's annual operating budget. Pending funding availability from these sources, Reclamation will be able to conduct the mitigation work and the subsequent monitoring and management.

## **Provision for Termination**

If construction of the new hydroelectric generating facility does not take place, this Mitigation Plan will be renegotiated and replaced with an appropriate Mitigation Plan that addresses the 2012/2013 reservoir drawdown.

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# **IDEQ Water Quality Action Plan**



# **BLACK CANYON DIVERSION DAM WATER QUALITY ACTION PLAN BUREAU OF RECLAMATION PACIFIC NORTHWEST REGION**

Version 1.2

November 4, 2013

## **PAYETTE RIVER SYSTEM**

### **General**

The Payette River system comprises a portion of the Boise Project called the Payette Division. The Payette Division consists of the following Reclamation facilities:

- Deadwood Reservoir, on the Deadwood River a tributary to the South Fork Payette River
- Cascade Reservoir, on the North Fork Payette River
- Black Canyon Diversion Dam, on the Payette River
- Surplus drainage from the Arrowrock Division

### **Black Canyon Dam**

Black Canyon Diversion Dam is located on the Payette River near the town of Emmett, Idaho. The dam was authorized by Congress in 1922, and construction was completed in 1924. The dam is a 183-foot-high concrete gravity structure with an ogee overflow spillway. Black Canyon Diversion Dam is operated and maintained by Reclamation for irrigation water supply, informal flood control, and power generation. Current power plant capacity is 10.2 megawatts. Reclamation has begun investigations and activities to upgrade the powerplant by adding a third hydroelectric generating unit at the dam. Upon completion, total generation capacity at the dam will be 22.7 megawatts. Total active capacity at Black Canyon Diversion Dam is 44,700 acre-feet, with no designated dead space. Normal water surface elevation is 2498.0 feet; maximum water surface elevation is 2500.0 feet.

Through most of the irrigation season, the water surface at Black Canyon Diversion Dam is maintained at or near maximum elevation (2500.0 feet) to ensure water deliveries to

the irrigation districts and to provide maximum hydraulic head for hydropower generation at the powerplant (see Figure 1). Drawdown of the reservoir occurs at the end of the irrigation season in preparation for winter. Typically, the lake is drafted approximately 20 to 35 feet below full pool and up to 46 feet below full pool during the winter. Deeper drafts are occasionally required for maintenance or operational considerations. Typically these drafts are of short duration and have lowered the reservoir by as much as 68 feet. This very low level was reached for the geotechnical investigation for the third powerplant upgrade in February of 2013. The previous low elevation occurred in January 2009 when the reservoir was lowered to 2452 feet, approximately 46 feet below full pool, for sluice gate maintenance. Additional low elevations will be required for the proposed construction of the new third hydroelectric generating unit at the dam and for sluice gate maintenance.

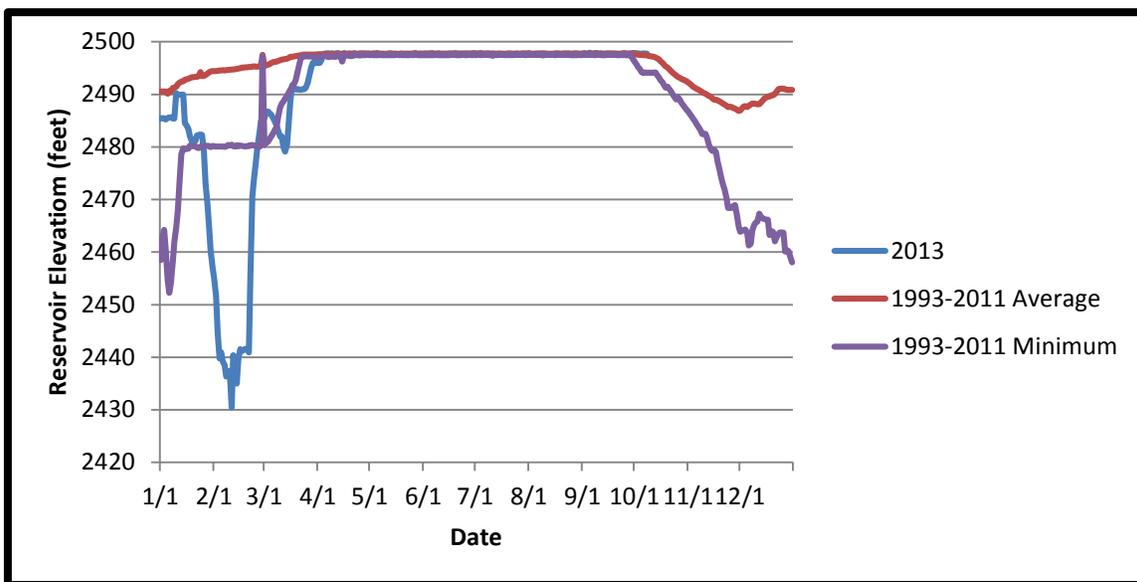
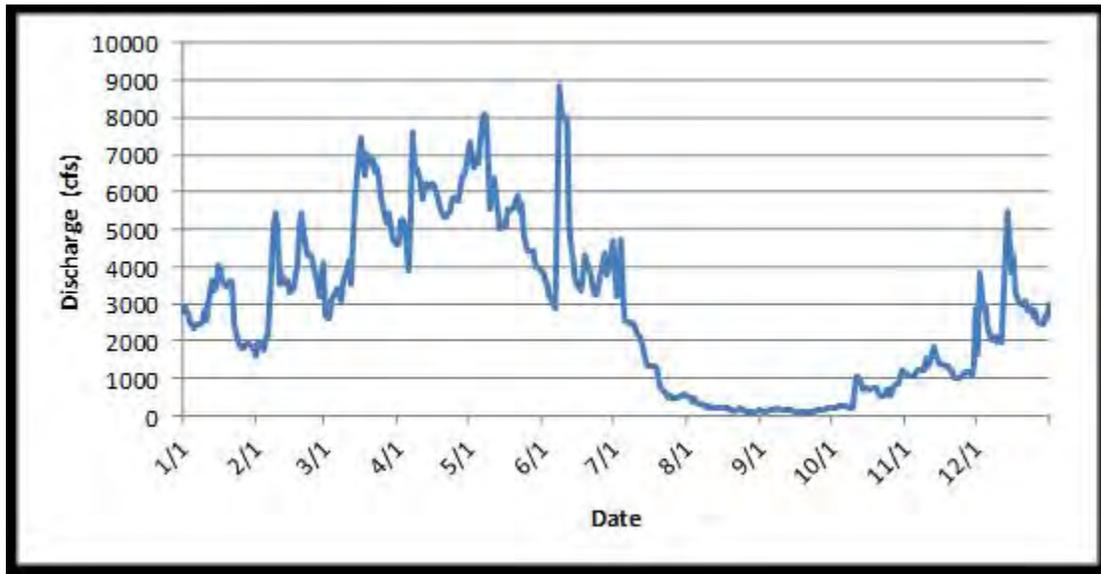


Figure 1. Black Canyon Dam Reservoir elevations 1993-2013 (Source: Reclamation Soil and Laboratory data).

The average annual hydrograph at approximately 14 miles below the project at the U.S. Geological Survey (USGS) gage (USGS 13250000 Payette River near Letha, Idaho) during the period between 1993 and 2013 is shown in Figure 2. Low flows typically occur during the late summer to early fall months. Discharges during this time period are typically less than 100 cubic feet per second (cfs). High flows occur during the spring and can range from 5,000 to 9,000 cfs on average. These high spring flows are effective in scouring and redistributing any stored sediments below the dam and reworking downstream gravel bars. “Gaged flow” is comprised of powerplant discharges, spillway

flow, seepage, including other miscellaneous inflows unaffected by Black Canyon Diversion Dam.



**Figure 2.** Payette River near Letha annual average hydrograph 1993-2013 (USGS gage 13250000).

## Flow Augmentation

Reclamation's actions in the Payette River system include the provision of flow augmentation to benefit migrating salmon and steelhead. Reclamation has provided flow augmentation to benefit anadromous fish since 1991. Longstanding disputes over water allocation were addressed by the 2004 Nez Perce Water Rights Settlement (Settlement) and the Snake River Water Rights Act of 2004 (P.L. 108-447), which includes provisions for Reclamation's continued delivery of flow augmentation water for a 30-year period.

Under the Settlement, Idaho Code § 42-1763B was reenacted to authorize the rental and protection to the state line of up to 427,000 acre-feet of water annually for flow augmentation from traditional sources for the 30-year term of the agreement. It further provides that Reclamation could rent or acquire for protection to the state line, 60,000 acre-feet of water from natural water right holders along the Snake River. Also, authorized was the release and protection of water stored in reservoir powerhead space to increase the reliability of 427,000 acre-feet for flow augmentation subject to limitations outlined in the agreement. These provisions improve Reclamation's ability to obtain

water for flow augmentation by increasing the reliability of obtaining 427,000 acre-feet, and allowing as much as 487,000 acre-feet in years of adequate water supplies. Reclamation can deliver up to 150,000 acre-feet of water from the Payette River system for flow augmentation. This water is delivered from the Deadwood and Cascade Reservoirs and is ultimately routed through the Black Canyon Diversion Dam to the Snake and Columbia River systems.

## **Water Quality and Monitoring**

Reclamation's regional and local water quality monitoring programs serve several purposes for both Idaho Department of Environmental Quality (IDEQ) and Reclamation. By providing laboratory support as well as collecting reservoir and river data, Reclamation and IDEQ are able to track current conditions in the river and reservoir system. Additionally, IDEQ is better able to determine Total Maximum Daily Loads (TMDL) implementation progress and in some cases best management practice (BMP) effectiveness. This information provides the foundation of an informative feedback loop for TMDLs in the Cascade Reservoir, Boise, and Payette subbasins as well as for operational decisions made by Reclamation.

### **Water Quality**

The Payette River below Black Canyon Diversion Dam is part of a long-term monitoring program that has been in place for over 30 years. In order to adequately cover a majority of Reclamation reservoirs throughout the Pacific Northwest, the regional reservoir program limits monitoring for a specific reservoir to once every 3 years. However, due to the local interests in the Payette River, Reclamation has funded or participated in long-term monthly monitoring below the dam. Samples have been collected intermittently since the early 1970s; with the best representation of monthly data occurring since 1985 (see Figure 3 and Figure 4). Note – figures also include turbidity data collected during the most recent drawdown to illustrate the magnitude of the sediment mobilization that occurred during that event.

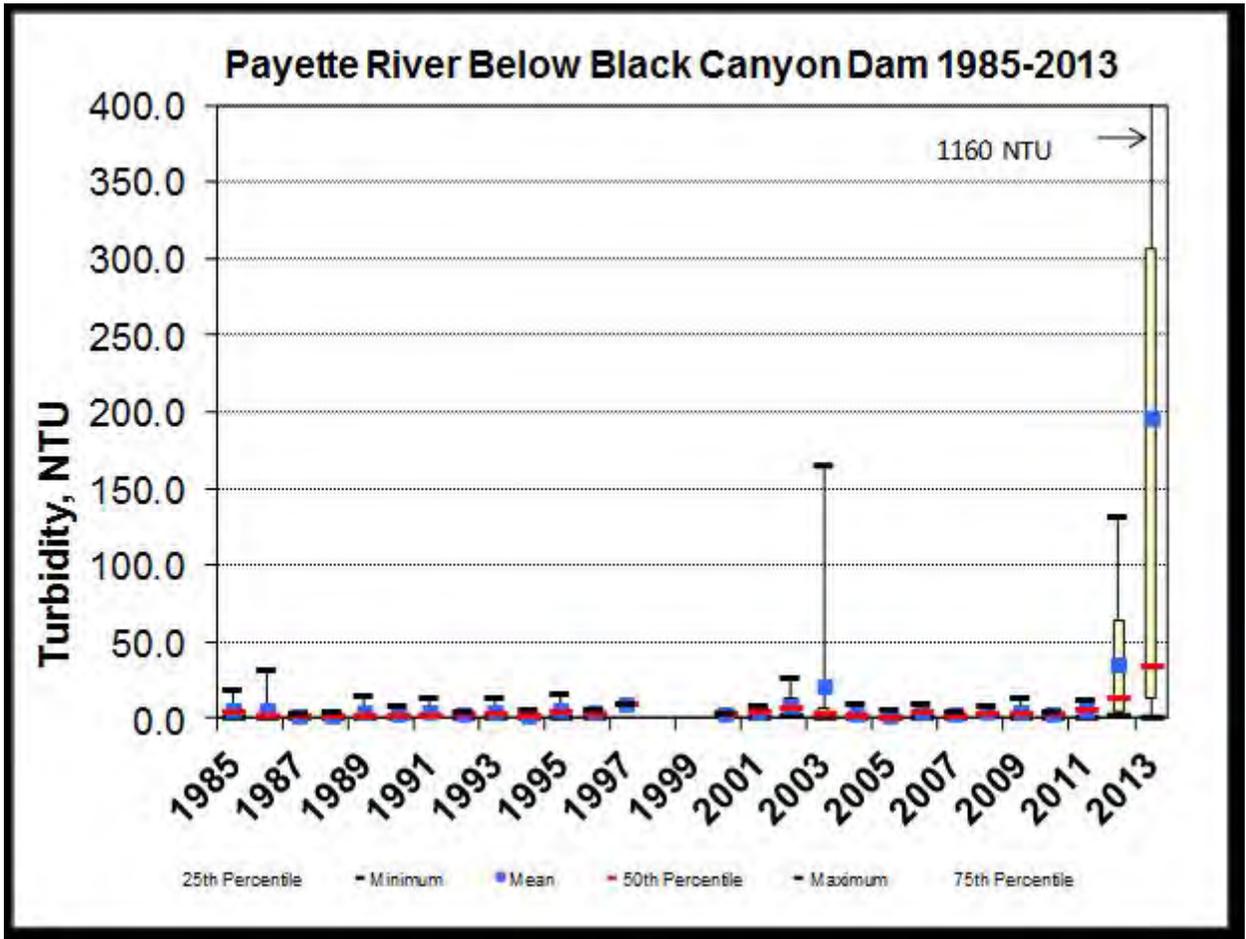
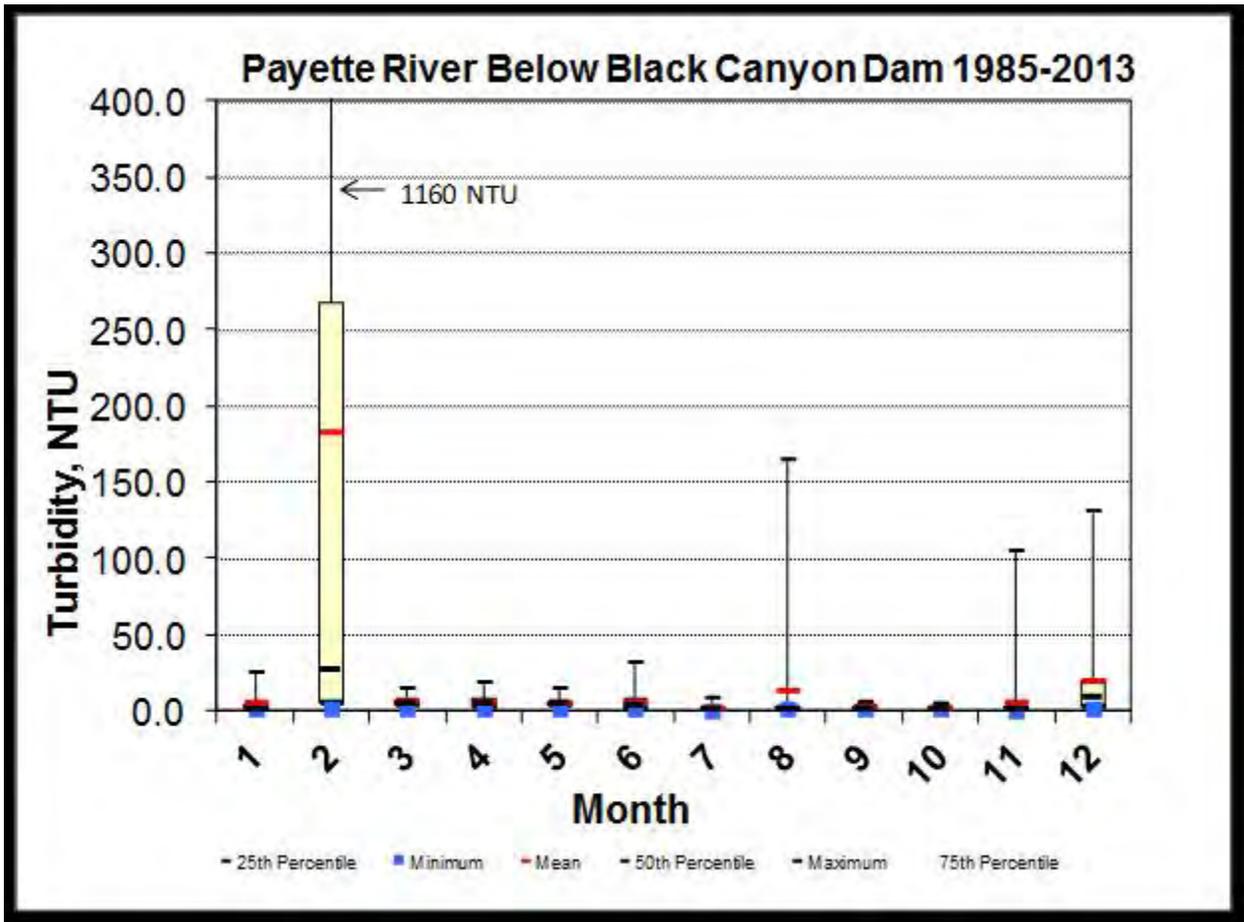


Figure 3. Annual Box and Whisker Plots of turbidity below Black Canyon Diversion Dam. Turbidity is displayed in Nephelometric turbidity units (NTU) a standard measurement unit for turbidity. (Source: Reclamation Soil and Laboratory data)



**Figure 4. Monthly Box and Whisker Plots of turbidity below Black Canyon Diversion Dam. Turbidity is displayed in NTU a standard measurement unit for turbidity. (Source: Reclamation Soil and Laboratory data)**

Samples are collected above the dam at the Montour Wildlife Management Area and immediately below the dam. The samples are analyzed at Reclamation’s Regional Soil and Water Laboratory (Laboratory) for total suspended solids, suspended sediment concentration, volatile solids, turbidity, among other parameters. The sampling and analysis costs for the Payette River system are approximately \$10,000 per year under these conditions.

At Black Canyon Diversion Dam, Reclamation collects surface and bottom water samples near the dam and water samples below the dam as part of the regional reservoir monitoring plan. The samples are collected every 3 years and are analyzed for trace metals, mercury, arsenic, specific conductance, sulfate, total Kjeldahl nitrogen, turbidity, alkalinity, ammonia, biological oxygen demand, chemical oxygen demand, chloride,

residual chloride, dissolve oxygen, fluoride, nitrate, nitrite, total organic carbon, pH, ortho-phosphate, total phosphorus, hardness, chlorophyll a, silica, bacteria, and boron. The sampling and analyses costs average \$3,000 for each sampled year. These data are available on STORET (EPA's database) and from Reclamation's internal database by request.

## **Water Conservation**

Additionally, Reclamation partners with irrigation districts and stakeholders to promote water conservation. The goal of these projects is to accurately measure and reduce the amount of water diverted from the Payette River, thereby leaving more water in the system. The types of conservation projects include canal lining and piping, automation, telemetry, water measurement, and drain reuse. Lining and piping of canals alone can conserve an estimated 20 to 30 percent of the water diverted from the river.

## **Laboratory Services**

Reclamation's Pacific Northwest Laboratory provides sample collection, field and laboratory analyses for water quality studies throughout the region. The Laboratory provides water quality information related to operation, maintenance, and resource planning issues at Reclamation project facilities. It also assists States, Tribes, watershed councils, and irrigation districts in their watershed planning and restoration efforts. Laboratory data is used for activities such as TMDL development, trend analysis, wetland design, drain water characterization, groundwater quality management, facility compliance monitoring, reservoir nutrient budgets, and special investigations.

Reclamation's Laboratory has also provided in-kind services to other entities within the Boise and Payette River region. Reclamation's Laboratory currently has an agreement with local irrigation districts and the Snake River Area Office to collect samples from the Payette River system. Reclamation analyzes the samples for nutrients, sediment, and turbidity. The annual cost for processing the water quality samples from the Boise and Payette subbasins averages \$30,000.

The Laboratory has also provided analysis services to the IDEQ as part of their Cascade Reservoir monitoring project. The samples taken from the reservoir are analyzed for nutrients, sediment, and chlorophyll. The in-kind services for this project averaged \$6,000 annually for the laboratory analyses. It is anticipated that in-kind services can resume but will depend on future funding levels, project location, and need.

## **COMMUNITY PARTICIPATION**

### **Watershed Advisory Groups/Technical Advisory Committee Meetings**

Reclamation has attended and participated in the Payette and Boise River Watershed Advisory Groups (WAG). In addition, Reclamation has served on various technical advisory committees (TAC) in the Boise River basin. The WAGs represent the stakeholders from different watersheds throughout the region, including the Lower Payette River. Reclamation serves in a technical and advisory role to other entities in the nonpoint source community. Reclamation has provided financial assistance to irrigation districts, system operators, and other similar nonpoint source entities for water quality evaluation and watershed improvements.

Reclamation has participated in, or plans to participate in the development and implementation of other TMDLs within the Snake River basin. While no explicit nonpoint source load allocations have been assigned to Reclamation in any of the previous TMDLs, Reclamation has consistently provided technical and financial assistance to help ensure that the water quality characterization of the river and reservoirs is accurate. Reclamation plans to participate in future WAG meetings to work with stakeholders in understanding how climate and operations affect water quality in the reservoir and river system based on available information. These efforts will depend on funding and stakeholder cooperation.

### **Operational Planning Meetings**

Reclamation will meet with IDEQ as needed to discuss the construction schedule and anticipated reservoir elevations, including discussions pertaining to ongoing BMPs and adaptive management of BMPs that Reclamation and IDEQ deem appropriate

## **PROPOSED BEST MANAGEMENT PRACTICES**

### **General**

Reclamation is committed to continue implementation of BMP's for water quality improvement or enhancement. Reclamation develops its appropriated budget 3 years in advance. As part of the budgeting process, funding for BMP programs and participation

in the WAG and TAC meetings is included. By including these programs in its annual budgeting cycle, Reclamation anticipates the available financial resources (subject to Congressional appropriations) to continue its commitment to support water quality related activities in the Payette River Basin.

## **Operations**

Reclamation uses observed reservoir contents, weather, water supply forecasts, historical records, trends in water use, and anecdotal information provided by spaceholders and other state and federal agencies to conserve water and avoid, whenever possible, water quality problems that have been identified in reservoirs and associated river reaches. The timing of reservoir drawdowns for the construction of the third hydroelectric generating unit at Black Canyon Diversion Dam is constrained by the need to maintain the reservoir at full pool volumes during the irrigation season.

Reclamation will commit to increasing communication with IDEQ concerning antecedent system conditions, operational constraints, continued monthly water quality monitoring, twice weekly monitoring during planned reservoir drawdowns outside of the normal operating conditions of 20 to 35 feet, and expediting construction to minimize the period in which the reservoir is drawn down to levels lower than normal operating conditions. If construction proceeds on the new hydroelectric generating unit, Reclamation will need to draw the reservoir down to approximately elevation 2430 feet two or more times during the construction phase of the plant upgrade. If construction of the new hydroelectric generating unit takes place, Reclamation will commit to:

1. Assessing, streamlining, and expediting construction to minimize these drawdown periods if feasible; and
2. Meet with IDEQ as needed to discuss the construction schedule and anticipated reservoir elevations. These meetings will also serve as a forum to discuss ongoing BMPs and adaptive management of BMPs that Reclamation and IDEQ deem appropriate.

## **Water Quality Monitoring**

The Laboratory is funded through fees charged for sample analysis. The number of samples varies by project and the fees can be exchanged for in kind services. The Laboratory will continue to collect and analyze samples as part of the Payette River monitoring program. The frequency of these monitoring events will continue to be

conducted monthly, with additional bi-weekly sampling events occurring during drawdown events outside of the normal operating elevations (see Attachment A – Water Quality Monitoring Plan).

## **Sediment Monitoring**

Reclamation is investigating several sediment monitoring options. The first of these would be to establish monitoring sites and take regular Wolman pebble count readings before and after each drawdown. Alternatively, Reclamation may use hydroacoustic profiling technology to map the deposition of sediment within selected transects over time. Sediment transport modeling may also be utilized.

## **Communication Protocol**

Reclamation commits to notifying IDEQ when conditions at Black Canyon Diversion Dam have the potential to cause non-compliance with water quality standards. Reclamation's advanced notice will explain to the extent possible when the combination of pool elevation, inflow, and weather patterns will be detrimental to exceed water quality standards below the reservoir and the length of time for which the elevation is expected to be at that level. The notice will also include the steps Reclamation is taking to minimize the length of time and magnitude of any potential exceedance.

Reclamation will continue to participate in WAG and TAC meetings. Additional meetings to exchange information can be scheduled at any time. It may be prudent to schedule meetings in the fall prior to drawdown events to review current water quality conditions or potential water quality problems. In years when threshold levels and flows are not approached, Reclamation and IDEQ may both decide that the meeting can be cancelled by exchange of e-mail or phone calls.

## **Potential Future Water Quality Enhancement Activities**

Through Reclamation's participation in TMDL development and implementation of habitat enhancement programs additional opportunities may exist to improve water quality near Black Canyon Diversion Dam and Reservoir. Reclamation is committed to implementing water quality projects as they are identified and as funds become available.

## **Summary**

Discharges from Reclamation facilities are generally considered nonpoint source pollution. Reclamation voluntarily attempts to meet all IDEQ water quality targets and

compliance measures while balancing irrigation delivery, contractual delivery obligations, power generation commitments, and other competing needs. Reclamation will strive to balance all water quality objectives and believes that this is best accomplished by working collaboratively with IDEQ on implementation plans, actively participating in watershed advisory groups, and assisting IDEQ in data collection for TMDL development and review. This action plan is designed to outline those water quality monitoring projects, BMP implementations, and operational considerations that Reclamation will undertake to address water quality issues in the Payette River below Black Canyon Diversion Dam. If construction of the third hydroelectric generating unit does not take place, this Action Plan shall be modified to include only the existing monitoring program.



# **Attachment A.**

## **Water Quality Monitoring Program for the Third Hydroelectric Generating Unit at Black Canyon Diversion Dam, Boise Project.**

### **Purpose**

The purpose of proposed water quality monitoring program is to collect turbidity and total suspended solids (TSS) information to describe conditions pre-project, and during project construction in Black Canyon Reservoir and just downstream of the Reservoir. Reclamation staff currently monitors water quality in the Payette River system. The Payette River below Black Canyon Diversion Dam is part of a long-term monitoring program that has been in place for over 30 years. If construction of the third hydro-generator does not take place, this water quality monitoring program shall be modified to include only the existing monitoring program.

### **Water Quality Studies:**

Data collection will include field data and laboratory analysis. Samples will be collected using two Hydrolab<sup>®</sup> units at two sites and will be coordinated with the activities of the phased third hydro-generating unit project to describe turbidity and TSS concentrations before, and during construction. Additional data related to suspended sediment concentration (SSC) in the Payette River may be collected during year two of the project.

### **Sample Collection and Laboratory Analysis:**

**1. Phase I: Pre-Construction** - Turbidity and TSS concentrations related to the current operation of Black Canyon Diversion Dam will be collected at two sites in the two months prior to construction of the third hydroelectric generating unit project. Data may also be used to determine background concentrations of TSS and turbidity.

**Parameters to be Collected:** Turbidity and TSS data will be collected at each site. SSC will be collected at the Payette River at Bridge using USGS methods for sampling and analysis. Field data such as temperature, pH, conductivity, and dissolved oxygen will be

measured at the time of sample collection. Profile field data will be collected at reservoir sampling sites EMM015 and BLA101.

A. **EMM015:** Payette River at Bridge 0.5M Below Black Canyon Dam (43°92'20" 116°44'20"). Surface and bottom samples will be collected.

B. **BLA101:** Payette River Near Montour (43°55'94" 116°20'14"). Surface and bottom samples will be collected. *If BLA101 is not accessible, GAR002: Payette River near Horseshoe Bend, may be used.*

**Sampling Frequency:** Once a month in the two months prior to construction.

**2. Phase II: Construction** (for at least two periods) - Turbidity, TSS, and SSC concentrations related to the construction drawdown for the two years of the third hydroelectric generating unit project. Data may also be used to determine background concentrations of TSS and turbidity.

**Parameters to be Collected:** Same as Phase I.

**Sampling Locations:** Same as Phase I.

**Sampling Frequency:** Twice a week at the EMM015 location, and once a week at the BLA101 location. Sample collection will be during drawdown to minimum construction pool and during the two drawdown construction periods.

**3. Phase III: Post-Construction** - Turbidity and TSS concentrations related to the new operation of the hydro-generating unit will be collected in the two months after construction to evaluate affects.

**Parameters to be Collected:** Same as Phase I.

**Sampling Locations:** Same as Phase I.

**Sampling Frequency:** Once a month in the two months after construction.

**Reporting:** Data will be summarized to describe the turbidity, TSS, and SSC concentrations related to the operation of the Black Canyon Diversion Dam before, and during construction. The data may be provided to the U.S. Army Corps of Engineers.

**Additional Commitments:** In regards to recommendations made by the IDEQ, Reclamation commits to:

1. Notify the public of the construction work prior to the activity.
2. Notify the City of Fruitland (approximately 35 miles downstream of Black Canyon Diversion Dam) who captures drinking water from an intake downstream of the dam. Contact name: Mr. Jerry Campbell (jcampbell@fruitland.org) at 208-452-4421.
3. Notify the IDEQ before each drawdown begins and provide them an estimate of the duration in days we expect the drawdown to encompass.

## Monitoring Plan Costs for Third Hydro-generation Unit at Black Canyon Diversion Dam Project

<b>PRECONSTRUCTION</b>			
ACTIVITY	FREQUENCY	STAFF DAYS	COST
<b>Data Collection</b>	----	----	----
<b>Continuous Data Collection</b>	Hourly	----	----
Installation	One Time	2	1,476
Calibration and Download	Monthly	4	2,952
<b>Sample Collection</b> (2 Sites - EMM015 and BLA101)	Monthly	4	2,952
<b>Laboratory Analysis</b>	Monthly	----	1,000
<b>Equipment</b>	----	----	----
Two hydrolabs with turbidity and temperature probes, memory, and an internal battery pack	----	----	0
Miscellaneous Supplies for Installation	----	----	500
<b>ANNUAL TOTAL</b>		10	8,880

## Monitoring Plan Costs for Third Hydro-generation Unit at Black Canyon Diversion Dam Project

<b>BEGINNING OF CONSTRUCTION - DRAWDOWN</b>			
ACTIVITY	FREQUENCY	STAFF DAYS	COST
<b>Data Collection</b>	----	----	----
<b>Continuous Data Collection</b>	Hourly	----	----
Calibration and Download	Monthly	10	7,381
<b>Sample Collection</b> (2 Sites - EMM015 and BLA101)	Monthly	14	10,334
<b>Laboratory Analysis</b>	Monthly	----	1,000
<b>Equipment Maintenance - Miscellaneous</b>	----	----	250
<b>ANNUAL TOTAL</b>		24	18,965

<b>CONSTRUCTION – RESERVOIR DRAWDOWN</b>			
<b>ACTIVITY</b>	<b>FREQUENCY</b>	<b>STAFF DAYS</b>	<b>COST</b>
<b>Data Collection</b>	----	----	----
<b>Continuous Data Collection</b>	Hourly	----	----
Calibration and Download	Monthly	10	7,381
Instrument Removal	One Time	1	738
<b>Sample Collection</b> (2 Sites - EMM015 and BLA101)	Monthly	6	0
<b>Laboratory Analysis</b>	Monthly	----	500
<b>Equipment Maintenance - Miscellaneous</b>	----	----	250
<b>Data Summary</b>	One time	5	3,691
<b>ANNUAL TOTAL</b>		22	12,560
<b>WQ MONITORING PROJECT TOTAL</b>		56	40,405

# **SHPO Memorandum of Agreement**



**MEMORANDUM OF AGREEMENT**

**between**  
**Idaho State Historic Preservation Office**  
**and**  
**Bureau of Reclamation**  
**Pacific Northwest Region, Snake River Area Office**

This Memorandum of Agreement (MOA) is entered into by Bureau of Reclamation, Pacific Northwest Region, Snake River Area Office (Reclamation) and the Idaho State Historic Preservation Office (SHPO) to define their respective roles in resolving the adverse effects of the installation of the Third Generating Unit and Powerplant at Black Canyon Diversion Dam.

**1. Background**

Reclamation is proposing to expand the Black Canyon Diversion Dam facility to allow for additional hydroelectric power generation. The Black Canyon Diversion Dam exists on the Payette River five miles northeast of Emmett, Idaho at T7N, R1W, NW ¼ SW ¼ Section 22 on Northeast Emmett, Idaho 7.5" USGS topographic quad. Plans include the addition of a new generating unit in a new powerhouse building, a new 12.5 ft. diameter penstock, a steel debris chute, a trash-rake debris removal system, and a new switchyard.

For Section 106 purposes, the area of potential effect (APE) for the present project is considered to be the dam, the powerhouse yard, the administration building, and the switchyard. The historic properties located within the APE include the dam, the existing powerhouse, the existing switchyard, and a portion of the original railway used to transport equipment into the existing powerhouse. The dam was constructed from 1922-1924, and the initial hydroelectric powerhouse was completed in 1925. The dam and powerplant were determined eligible for listing on the National Register of Historic Places by the Idaho State Historic Preservation Officer on August 22, 1998. This eligibility was granted due to the pivotal role the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original equipment, and the historic and technological contribution of the structure.

On April 21, 2010, Reclamation engineering and cultural resources staff first consulted with Idaho SHPO personnel regarding this proposed project. During that meeting it was agreed that this proposed action would be deemed an adverse effect. This decision was based upon the fact that completion of the action will result in the alteration of part of an original significant historic structure (drilling a hole in the dam), and negative visual impacts to a second significant historic structure (the existing powerplant).

**2. Authority**

This MOA is entered into under the authority of the National Historic Preservation Act of 1966 as amended, as specified in the regulations in 36 CFR 800, and specifically in Section 6(c) – Resolution of Adverse Effects without the Advisory Council on Historic Preservation.

**3. Purpose**

This MOA will serve to define the necessary actions for thorough documentation of the historic properties in their current state, preserve a public view of the original powerplant, and offer public interpretation of the historic properties and the expansion project. The subject document represents the agency's compliance with the Section 106 process and its commitment to preserving and protecting the cultural resources within its ownership and on its land.

### 3. Objective

This is a mitigation document. The primary objective of this MOA is to stipulate how the adverse effects of Federal actions (e.g. undertakings per the National Historic Preservation Act) on the involved historic property will be resolved.

### 4. Implementing Actions

The SHPO and Reclamation agree that the undertaking shall be implemented in accordance with the following stipulations in order to take into account the effects of the undertaking on historic properties, and adherence to the terms of this agreement satisfies the Section 106 responsibilities for addressing the effects of the undertaking on historic properties.

a. Reclamation will:

- (1) Adjust project designs to ensure that placement of the new powerplant will still allow a direct line-of-sight between the old powerplant and the riverside area of Wild Rose Park to the west. This will provide a direct visual connection between the original power house and the members of the community who visit and utilize the adjacent park, continuing a more than 80-year-old tradition.
- (2) Consult the National Park Service to determine/verify the proper level of documentation, and obtain SHPO concurrence regarding that level. Then perform Historic American Engineering Record (HAER) documentation of Black Canyon Diversion Dam and Powerplant. The document (presumed to be Level II) will be researched and prepared by a professional historical researcher, and completed in accordance with National Park Service and Library of Congress standards and guidelines for HAER documentation. The HAER data set will include the following items:
  - i. Large-format (4 by 5-inch negative size) black and white photographs showing the current appearance of the dam, powerplant, equipment within the powerplant that is scheduled to be removed, and associated structures in the yard, such as the current switchyard, office complex and machine shop that are also scheduled to be removed;
  - ii. Large-format (4 by 5-inch negative size) photographic copies of historic views of the Black Canyon Diversion Dam, powerplant, and associated structures;
  - iii. Large-format photographic copies of engineering design drawings of the Black Canyon Diversion Dam, the powerplant structure, and the generators and other equipment within the powerplant and their placement within the powerplant;
  - iv. Written historic and descriptive narrative, focusing on the design, construction and operation of the Black Canyon Diversion Dam and Powerplant;
  - v. Sketch drawings as needed to illustrate the narrative report.
- (3) Prepare interpretive materials (such as signage in either singular or kiosk format) using information collected as part of the HAER documentation and information on the expansion project. Materials shall include public displays at Wild Rose Park, preferable situated within the line-of-sight of the original powerplant and dam. The information should explain the importance of the dam and original powerplant to the area and describe the benefits of the new generating unit and powerplant.

b. SHPO will:

- (1) Provide concurrence on the National Park Service recommendation for level of HAER documentation;

1967, as amended, which prohibits discrimination based on age against those who are at least 40 years of age; and the Equal Pay Act of 1963.

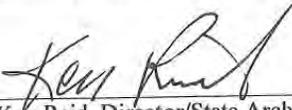
**9. Signatures**

Reclamation and SHPO will abide by the terms and provisions expressed or referenced herein.

ACTING FOR

  
\_\_\_\_\_  
Jerrold D. Gregg, Area Manager  
Snake River Area Office  
Bureau of Reclamation

Dec. 24, 2013  
Date

  
\_\_\_\_\_  
Ken Reid, Director/State Archaeologist  
Idaho State Historic Preservation Office

Dec 11, 2013  
Date

~ End of Document ~



**APPENDIX C**  
**AGENCY CONSULTATION AND COORDINATION**

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United States Department of the Interior  
IDAHO FISH AND WILDLIFE OFFICE

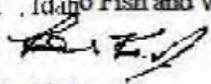
1387 S. Vinnall Way, Room 368  
Boise, Idaho 83709  
Telephone (208) 378-3243



JUL 08 2010

Memorandum

To: Area Manager, Snake River Area Office, Bureau of Reclamation Boise, Idaho  
(Attention: Lesa Stark)

From: Acting State Supervisor, Idaho Fish and Wildlife Office, Fish and Wildlife  
Service, Boise, Idaho 

Subject: Semi-annual Species List Update  
CONS-250c

The Idaho Fish and Wildlife Office of the Fish and Wildlife Service (Service) is providing you with an updated list of threatened, endangered, proposed, and candidate species that occur in Idaho. This memorandum and list are being provided to your agency via electronic mail.

Recent changes in species and critical habitat status are as follows:

Greater sage-grouse (*Centrocercus urophasianus*) has been listed as a candidate species under the Endangered Species Act of 1973, as amended, in a decision published in the March 5, 2010 Federal Register. Please reference the attachment for a list of Idaho counties where Greater sage-grouse can be found.

The public comment period for bull trout (*Salvelinus confluentus*) proposed critical habitat closed April 5, 2010. The Service is currently reviewing comments and a final bull trout critical habitat designation should be published prior to September 29, 2010. Please reference the attachment for a list of Idaho counties where bull trout proposed critical habitat can be found.

The attached list meets the regulatory requirements for obtaining a species list from the Service under section 7(c) of the Endangered Species Act. Please note that, due to time constraints, the attached list contains information regarding species occurrences by county rather than by your agency's administrative boundaries. Please use it to verify the species present in the counties where you are developing projects. Be aware that the attached list does not contain species under the National Marine Fisheries Service's (NOAA Fisheries) jurisdiction. If you have questions regarding species under the NOAA Fisheries' jurisdiction, please call (208) 378-5696.

Area Manager, Snake River Area Office, Bureau of Reclamation  
July 1, 2010 Semi-Annual Species List Update

Candidate species have no protection under the Act, but are included in the attached list for your early planning consideration. Candidate species could be proposed or listed during the project planning period. The Service advises an evaluation of potential effects on candidate species that may occur in the project area; this may expedite section 7 consultation under the Act should the species become listed.

Please note that this will likely be the last semi-annual species list you will receive that the Service generates specifically for your agency. Our efforts are being focused towards the deployment of a web-based system that will allow you to generate your own project-specific species lists. Instructions will be provided to your agency prior to deployment of the new web-based species list system.

Information about Federal agency obligations under section 7 of the Act has been provided to your agency in the past. Additional information on the section 7 process is also available on the Service website at <http://www.fws.gov/idaho/agencies.htm> (last accessed June 16, 2010). If you would like us to send you any of this information again, or if you have any questions regarding the information we have provided, please contact Bob Kibler at (208) 378-5255. Thank you for your continued interest in the conservation of threatened and endangered species.

Attachment (1)

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Amphibian	Bird	Bird
Common Name	Columbia spotted frog- Great Basin population	Greater Sage- Grouse	Yellow-billed cuckoo
Scientific Name	<i>Rana huachucae</i>	<i>Centrocercus urophasianus</i>	<i>Coccyzus americanus</i>
Status	[C]	[C]	[C]
Ada		x	x
Adams		x	
Bannock		x	x
Bear Lake		x	
Benewah			
Bingham		x	x
Blaine		x	x
Boise			x
Bonner			
Bonneville		x	x
Boundary			
Butte		x	
Camas		x	
Canyon			x
Caribou		x	
Cassia		x	x
Clark		x	x
Clearwater			
Custer		x	x
Elmore		x	x
Franklin		x	
Fremont		x	x
Gem		x	
Gooding		x	
Idaho			x
Jefferson		x	x
Jerome		x	
Kootenai			x
Latah			x
Lemhi		x	x
Lewis			x
Lincoln		x	
Madison		x	x
Minidoka		x	x
Nez Perce			
Oncida		x	
Owyhee	x	x	x
Payette		x	
Power		x	
Shoshone			
Teton			
Twin Falls	x	x	x
Valley			
Washington		x	

[C] Candidate Species  
[P] Proposed Species

[T] Threatened Species  
[E] Endangered Species

[CH] Designated Critical Habitat  
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Mammal	Mammal	Mammal	Mammal	Mammal	Mammal
Common Name	Canada lynx		Grizzly bear	Northern Idaho ground squirrel	Selirk Mountain caribou	Southern Idaho ground squirrel
Scientific Name	<i>Lynx canadensis</i>		<i>Ursus arctos horribilis</i>	<i>Spermophilus brunneus brunneus</i>	<i>Ranifer tarandus caribou</i>	<i>Spermophilus brunneus eremicus</i>
Status	[T]	[CH]	[T]	[T]	[E]	[C]
Ada						
Adams	x			x		x
Bannock						
Bear Lake	x					
Benewah	x					
Bingham						
Blaine	x					
Boise	x					
Bonner	x		x		x	
Bonneville	x		x			
Boundary	x	x	x		x	
Butte	x					
Camas	x					
Canyon						
Caribou	x					
Cassia						
Clark	x		x			
Clearwater	x					
Custer	x					
Elmore	x					
Franklin	x					
Fremont	x		x			
Gem						x
Gooding						
Idaho	x					
Jefferson	x					
Jerome						
Kootenai	x					
Latah	x					
Lemhi	x					
Lewis						
Lincoln						
Madison	x					
Minidoka						
Nez Perce	x					
Oneida						
Owyhee						
Pavette						x
Power						
Shoshone	x					
Teton	x		x			
Twin Falls						
Valley	x			x		
Washington				x		x

[C] Candidate Species  
[P] Proposed Species

[T] Threatened Species  
[E] Endangered Species

[CH] Designated Critical Habitat  
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Fish	Fish	Fish	Fish	Fish
Common Name	Bull trout			Kootenai River white sturgeon	
Scientific Name	<i>Salvelinus confluentus</i>			<i>Acipenser transmontanus</i>	
Status	[T]	[CH]	[PCH]	[E]	[CH]
Ada	x		x		
Adams	x	x			
Bannock					
Bear Lake					
Benewah	x	x	x		
Bingham					
Blaine	x		x		
Boise	x		x		
Bonner	x	x	x		
Bonneville					
Boundary	x	x	x	x	x
Butte	x		x		
Camas	x		x		
Canyon					
Caribou					
Cassia					
Clark					
Clearwater	x		x		
Custer	x		x		
Elmore	x		x		
Franklin					
Fremont					
Gem	x		x		
Gooding					
Idaho	x		x		
Jefferson					
Jerome					
Kootenai	x	x	x		
Latah					
Lemhi	x		x		
Lewis	x		x		
Lincoln					
Madison					
Minidoka					
Nez Perce	x	x	x		
Oneida					
Owyhee	x		x		
Pavette	x				
Power					
Shoshone	x	x	x		
Teton					
Twin Falls					
Valley	x		x		
Washington	x	x	x		

[C] Candidate Species  
[P] Proposed Species

[T] Threatened Species  
[E] Endangered Species

[CH] Designated Critical Habitat  
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Mollusk	Mollusk	Mollusk	Mollusk	Mollusk
Common Name	Banbury Springs	Bliss Rapids snail	Bruneau hot springsnail	Snake River physa snail	Utah (Desert) valvata snail
Scientific Name	<i>Larix sp.</i>	<i>Talorconcha serpenticola</i>	<i>Pyrgolepsis brunneensis</i>	<i>Habia (Physa) natricinia</i>	<i>Valvata utahensis</i>
Status	[E]	[T]	[E]	[E]	[E]
Ada				x	
Adams					
Bannock					x
Bear Lake					
Benewah					
Bingham					x
Blaine					x
Boise					
Bonner					
Bonneville					x
Boundary					
Butte					
Camas					x
Canyon				x	
Caribou					
Cassia				x	x
Clark					
Clearwater					
Custer					
Elmore		x		x	
Franklin					
Fremont					x
Gem					
Gooding	x	x		x	x
Idaho					
Jefferson					x
Jerome		x		x	x
Kootenai					
Latah					
Lemhi					
Lewis					
Lincoln					x
Madison					x
Minidoka				x	x
Nez Perce					
Oneida					
Owyhee			x	x	
Pavette				x	
Power					x
Shoshone					
Teton					
Twin Falls		x		x	x
Valley					
Washington				x	

[C] Candidate Species  
[P] Proposed Species

[T] Threatened Species  
[E] Endangered Species

[CH] Designated Critical Habitat  
[PCH] Proposed Critical Habitat

Listed, Proposed, and Candidate Species Designated and Proposed Critical Habitat in Idaho (Last Updated 6/25/2010)

Grouping	Plant	Plant	Plant	Plant	Plant	Plant	Plant
Common Name	Christ's paintbrush	Goose Creek milkvetch	Macfarlane's four-o'clock	Slickspot peppergrass	Spalding's catchfly	Ute ladies'-tresses	Water Howellia
Scientific Name	<i>Castilleja christii</i>	<i>Astragalus anserrinus</i>	<i>Mirabilis macfarlanei</i>	<i>Lepidium papilliferum</i>	<i>Silene spaldingii</i>	<i>Spiranthes dikei</i>	<i>Howellia aquatilis</i>
Status	[C]	[C]	[T]	[T]	[T]	[T]	[T]
Ada				x			
Adams							
Bannock							
Bear Lake							
Benevah					x		x
Bingham						x	
Blaine							
Boise							
Bonner							
Bonneville						x	
Boundary							
Butte							
Camas							
Canyon				x			
Caribou							
Cassia	x	x					
Clark							
Clearwater							
Custer							
Elmore				x			
Franklin							
Fremont						x	
Gem				x			
Gooding							
Idaho			x		x		
Jefferson						x	
Jerome							
Kootenai					x		x
Latah					x		x
Lemhi							
Lewis					x		
Lincoln							
Madison						x	
Minidoka							
Nez Perce					x		
Oneida							
Owyhee				x			
Pavetta				x			
Power							
Shoshone					x		x
Teton							
Twin Falls							
Valley							
Washington							

[C] Candidate Species  
[P] Proposed Species

[T] Threatened Species  
[E] Endangered Species

[CH] Designated Critical Habitat  
[PCH] Proposed Critical Habitat





## United States Department of the Interior Fish and Wildlife Service Idaho Fish And



### Wildlife Office

1387 S. Vinnell Way, Room 368 Boise, Idaho 83709 Telephone (208) 378-5243  
<http://www.fws.gov/idaho>

### **U.S. Fish and Wildlife Service -Idaho Fish and Wildlife Office Endangered, Threatened, Proposed, and Candidate Species With Associated Proposed and Critical Habitats in Idaho 10/23/2013**

#### **This Letter and Species List**

The U.S. Fish and Wildlife Service (Service) is providing this letter in response to your inquiry regarding federally listed, proposed, and candidate species, and proposed and designated critical habitats that may occur in Idaho. Use the attached Species List to ensure compliance with Sections 7 and 9 of the Endangered Species Act (Act). As a federal agent or designated non-federal representative, use this list in conjunction with best available information to assess whether a proposed action may affect these species or their habitats. If you determine a proposed action may affect a species or their habitats, contact the Service to initiate informal or formal consultation. This list is only valid for a period of 90 days.

#### **Candidate Species Conservation**

Though Candidate species have no protection under the Act, they are included in the Species List for early planning consideration. Candidate species could be proposed or listed during the project planning period. The Service advises project proponents to evaluate potential effects to Candidate species that may occur in the project area. Should the species be listed, this may expedite Section 7 consultation under the Act.

#### **Effects Beyond Idaho**

If the anticipated effects of an action extend beyond the range of Idaho, please contact the appropriate Service Contact for lists of species and habitats occurring in those adjacent states.

#### **U.S. Fish and Wildlife Service Contacts**

Idaho -Idaho Fish and Wildlife Office, Bob Kibler, [bob.kibler@fws.gov](mailto:bob.kibler@fws.gov), (208) 378-5255 Montana -Montana Ecological Services Field Office, (406) 449-5225 Nevada -Nevada Fish and Wildlife Office, (775) 861-6300 Oregon -LaGrande Field Office, (541) 962-8584 Utah -Utah Ecological Service Field Office, (801) 975-3330 Washington -Eastern Washington Field Office, (509) 891-6839 Wyoming -Wyoming Ecological Services Field Office, (307) 772-2374

#### **NOAA Fisheries Species**

Listed or proposed species that are under National Marine Fisheries Service's (NOAA Fisheries) jurisdiction do NOT appear on the Service's Species Lists. In Idaho, please contact NOAA Fisheries at (208) 378-5696 or visit NOAA Fisheries' webpage at <http://www.nwr.noaa.gov/Species-Lists.cfm> for consultation information.

#### **Additional Information**

To obtain additional information about the Act, please visit one of the Service's internet sites at <http://www.fws.gov/endangered/laws-policies/index.html>, <http://www.fws.gov/idaho/agencies.htm>, or speak with a Service Contact.

# U.S. Fish and Wildlife Service Idaho Fish and Wildlife Office

## CANDIDATE, PROPOSED AND LISTED SPECIES & PROPOSED AND DESIGNATED CRITICAL HABITAT IN IDAHO

Common Name	Herps			Birds					Mammals				Fish		Mollusks			Plants						
	Columbia Spotted Frog (Great Basin Population)	Greater Sage-Grouse	Yellow-Billed Cuckoo	Canada Lynx	Grizzly Bear	Northern Idaho Ground Squirrel	Selkirk Mountains Woodland Caribou	Southern Idaho Ground Squirrel	North American Wolverine	Bull Trout	Kootenai River White Starfish	Banbury Springs Lizard	Bass	Bass	Bronze Frog	Snake River Physa	Goose Creek Milkweed	Mudflat's Four-O'Clock	Packer's Milkweed	Sludspot Peppergrass	Spadling's Catchfly	Ute Ladies-Tresses	Water Howellia	Whitebark Pine
Scientific Name	<i>Rana maculipes</i>	<i>Cathartes aura</i>	<i>Coccyzus americanus</i>	<i>Lynx canadensis</i>	<i>Ursus arctos horribilis</i>	<i>Spermophilus tridecemlineatus</i>	<i>Rangifer tarandus caribou</i>	<i>Spermophilus tridecemlineatus</i>	<i>Gulo gulo luscus</i>	<i>Salvelinus fontinalis</i>	<i>Asplenium transmontanum</i>	<i>Lacerta</i> sp.	<i>Fryer's Salamander</i>	<i>Physalopsis</i>	<i>Physa</i>	<i>Astragalus</i>	<i>Mimulus</i>	<i>Astragalus</i>	<i>Lupinus</i>	<i>Silene</i>	<i>Spartanacis</i>	<i>Howellia</i>	<i>Pinus</i>	
Ada		C	P							T														
Adams		C		T		T		C	P	T-DCH														C
Bannock		C	P						P															
Bear Lake		C		T					P															
Benewah				T					P	T-DCH											T		T	
Bingham		C	P						P														T	
Blaine		C	P	T					P	T-DCH														C
Boise			P	T					P	T-DCH														C
Bonner				T	T		E		P	T-DCH														C
Bonneville		C	P	T	T				P														T	C
Boundary				T-DCH	T		E-DCH		P	T-DCH	E-DCH													C
Butte		C		T					P	T-DCH														C
Camas		C	P	T					P	T-DCH														C
Canyon															E				P-PCH					
Caribou		C		T					P															
Cassia		C	P												E	C								
Clark		C	P	T	T				P															C
Clearwater				T					P	T-DCH														C
Custer		C	P	T					P	T-DCH														C
Elmore		C	P	T					P	T-DCH			T		E				P-PCH					C
Franklin		C		T					P															
Fremont		C	P	T	T				P													T		C
Gem		C						C	P	T-DCH										P-PCH				C

Table Key: C = Candidate Species    P = Proposed Species    T = Threatened Species    E = Endangered Species    PCH = Proposed Critical Habitat    DCH = Designated Critical Habitat

## U.S. Fish and Wildlife Service Idaho Fish and Wildlife Office

### CANDIDATE, PROPOSED AND LISTED SPECIES & PROPOSED AND DESIGNATED CRITICAL HABITAT IN IDAHO

Common Name	Herps	Birds	Mammals						Fish	Mollusks			Plants													
	Columbia Spotted Frog (Great Basin Population)	Greater Sage-Grouse	Yellow-Billed Cuckoo	Canada Lynx	Grizzly Bear	Northern Idaho Ground Squirrel	Selkirk Marmot	Woodland Caribou	Southern Idaho Ground Squirrel	North American Wolverine	Bull Trout	Kootenai River White Sturgeon	Banbury Springs Liana	Bass Rapids Shell	Braunton Hot Springs Animal	Snake River Physa	Goose Creek Milkweed	MacFarlane's Four-O'Clock	Packard's Milkweed	Silkyfoot Poppygrass	Syadine's Carduus	Ute Ladies-Tresses	Water Howellia	Whitebark Pine		
Scientific Name	<i>Rana maculipes</i>	<i>Centrocercus urophasianus</i>	<i>Coccyzus americanus</i>	<i>Lynx canadensis</i>	<i>Ursus arctos horribilis</i>	<i>Spermophilus tereticaucis brunneus</i>	<i>Mongolotaxus merriami caribou</i>	<i>Spermophilus tereticaucis endemicus</i>	<i>Gale gulo leucis</i>	<i>Schelusaurus cephalopus</i>	<i>Acipenser transmontanus</i>	<i>Lima</i> sp.	<i>Trochovoncha serpentina</i>	<i>Pygulopsis braxatoris</i>	<i>Physa</i> sp.	<i>Astragalus anserinus</i>	<i>Malva</i> sp.	<i>Astragalus crinitus var. packardii</i>	<i>Lepidium papillifera</i>	<i>Silene spaldingii</i>	<i>Sperandis abotensis</i>	<i>Hesperis matronalis</i>	<i>Pinus contorta</i>			
Gooding		C										E	T													
Idaho				T					P	T-DCH							T				T				C	
Jefferson		C	P	T					P														T			
Jerome			C										T		E											
Kootenai			P	T					P	T-DCH												T		T		
Latah				T					P													T		T		
Lemhi		C	P	T					P	T-DCH															C	
Lewis										T-DCH												T				
Lincoln		C	P																							
Madison		C	P	T					P														T			
Minidoka		C	P												E											
Nez Perce				T						T-DCH												T				
Oneida		C																								
Owyhee	C	C	P							T-DCH				E	E							E-PCH				
Payette		C						C		T					E			C				P-PCH				
Power		C	P																							
Shoshone				T					P	T-DCH													T		T	C
Teton				T	T				P																C	
Twin Falls	C	C											T		E										C	
Valley				T		T			P	T-DCH															C	
Washington		C					T		C	P	T-DCH					E									C	

Table Key: C = Candidate Species      P = Proposed Species      T = Threatened Species      E = Endangered Species      PCH = Proposed Critical Habitat      DCH = Designated Critical Habitat



# Black Canyon

## *IPaC Trust Resource Report*

Generated January 20, 2016 08:53 AM MST, IPaC v2.3.2

This report is for informational purposes only and should not be used for planning or analyzing project level impacts. For project reviews that require U.S. Fish & Wildlife Service review or concurrence, please return to the IPaC website and request an official species list from the Regulatory Documents page.



IPaC - Information for Planning and Conservation (<http://ecos.fws.gov/ipac/>): A project planning tool to help streamline the U.S. Fish & Wildlife Service environmental review process.

IPaC Trust Resource Report

US Fish & Wildlife Service

## IPaC Trust Resource Report



NAME

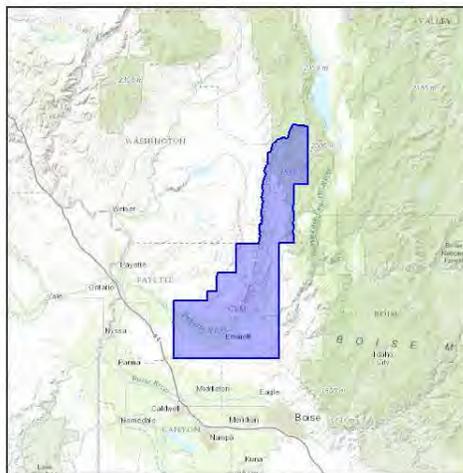
Black Canyon

LOCATION

Gem County, Idaho

IPAC LINK

<http://ecos.fws.gov/ipac/project/3HXLQ-JDCZV-AFFJW-6NYKM-XKOSLM>



## U.S. Fish & Wildlife Contact Information

Trust resources in this location are managed by:

### **Idaho Fish And Wildlife Office**

1387 South Vinnell Way, Suite 368

Boise, ID 83709-1657

(208) 378-5243

## Endangered Species

Proposed, candidate, threatened, and endangered species are managed by the [Endangered Species Program](#) of the U.S. Fish & Wildlife Service.

**This USFWS trust resource report is for informational purposes only and should not be used for planning or analyzing project level impacts.**

For project evaluations that require FWS concurrence/review, please return to the IPaC website and request an official species list from the Regulatory Documents section.

[Section 7](#) of the Endangered Species Act **requires** Federal agencies to "request of the Secretary information whether any species which is listed or proposed to be listed may be present in the area of such proposed action" for any project that is conducted, permitted, funded, or licensed by any Federal agency.

**A letter from the local office and a species list which fulfills this requirement can only be obtained by requesting an official species list from the Regulatory Documents section in IPaC.**

The list of species below are those that may occur or could potentially be affected by activities in this location:

### Conifers and Cycads

**Whitebark Pine** *Pinus albicaulis*

Candidate

**CRITICAL HABITAT**

No critical habitat has been designated for this species.

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=R00E](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=R00E)

### Fishes

**Bull Trout** *Salvelinus confluentus*

Threatened

**CRITICAL HABITAT**

There is final critical habitat designated for this species.

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=E065](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E065)

### Flowering Plants

**Slickspot Peppergrass** *Lepidium papilliferum*

Proposed Endangered

**CRITICAL HABITAT**

There is proposed critical habitat designated for this species.

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=Q34X](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q34X)

## Mammals

**Canada Lynx** *Lynx canadensis* Threatened

CRITICAL HABITAT

There is **final** critical habitat designated for this species.

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=A073](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A073)

**Northern Idaho Ground Squirrel** *Urocitellus brunneus* Threatened

CRITICAL HABITAT

**No critical habitat** has been designated for this species.

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=A0EK](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=A0EK)

## Critical Habitats

This location overlaps all or part of the critical habitat for the following species:

**Bull Trout Critical Habitat** Final designated

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=E065#crithab](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=E065#crithab)

**Slickspot Peppergrass Critical Habitat** Proposed

[https://ecos.fws.gov/tess\\_public/profile/speciesProfile.action?spcode=Q34X#crithab](https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=Q34X#crithab)

## Migratory Birds

Birds are protected by the [Migratory Bird Treaty Act](#) and the [Bald and Golden Eagle Protection Act](#).

Any activity which results in the take of migratory birds or eagles is prohibited unless authorized by the U.S. Fish and Wildlife Service (1). There are no provisions for allowing the take of migratory birds that are unintentionally killed or injured.

Any person or organization who plans or conducts activities that may result in the take of migratory birds is responsible for complying with the appropriate regulations and implementing appropriate conservation measures.

Additional information can be found using the following links:

- Birds of Conservation Concern  
<http://www.fws.gov/birds/management/managed-species/birds-of-conservation-concern.php>
- Conservation measures for birds  
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/conservation-measures.php>
- Year-round bird occurrence data  
<http://www.fws.gov/birds/management/project-assessment-tools-and-guidance/akn-histogram-tools.php>

The following species of migratory birds could potentially be affected by activities in this location:

<b>Bald Eagle</b> <i>Haliaeetus leucocephalus</i>	Bird of conservation concern
Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B008</a>	
<b>Black Rosy-finch</b> <i>Leucosticte atrata</i>	Bird of conservation concern
Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0J4">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0J4</a>	
<b>Brewer's Sparrow</b> <i>Spizella breweri</i>	Bird of conservation concern
Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HA">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0HA</a>	
<b>Burrowing Owl</b> <i>Athene cucularia</i>	Bird of conservation concern
Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0NC">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0NC</a>	
<b>Calliope Hummingbird</b> <i>Stellula calliope</i>	Bird of conservation concern
Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0K3">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0K3</a>	
<b>Cassin's Finch</b> <i>Carpodacus cassinii</i>	Bird of conservation concern
Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0J6">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?sPCODE=B0J6</a>	

<b>Eared Grebe</b> <i>Podiceps nigricollis</i> Season: Breeding	Bird of conservation concern
<b>Ferruginous Hawk</b> <i>Buteo regalis</i> Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06X">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06X</a>	Bird of conservation concern
<b>Fox Sparrow</b> <i>Passerella iliaca</i> Season: Breeding	Bird of conservation concern
<b>Greater Sage-grouse</b> <i>Centrocercus urophasianus</i> Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06W">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06W</a>	Bird of conservation concern
<b>Green-tailed Towhee</b> <i>Pipilo chlorurus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0IO">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0IO</a>	Bird of conservation concern
<b>Lewis's Woodpecker</b> <i>Melanerpes lewis</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HQ</a>	Bird of conservation concern
<b>Loggerhead Shrike</b> <i>Lanius ludovicianus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FY</a>	Bird of conservation concern
<b>Long-billed Curlew</b> <i>Numenius americanus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B06S</a>	Bird of conservation concern
<b>Olive-sided Flycatcher</b> <i>Contopus cooperi</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0AN">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0AN</a>	Bird of conservation concern
<b>Peregrine Falcon</b> <i>Falco peregrinus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FU</a>	Bird of conservation concern
<b>Rufous Hummingbird</b> <i>selasphorus rufus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0E1">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0E1</a>	Bird of conservation concern
<b>Sage Thrasher</b> <i>Oreoscoptes montanus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0ID">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0ID</a>	Bird of conservation concern
<b>Short-eared Owl</b> <i>Asio flammeus</i> Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HD</a>	Bird of conservation concern
<b>Swainson's Hawk</b> <i>Buteo swainsoni</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B070">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B070</a>	Bird of conservation concern
<b>Upland Sandpiper</b> <i>Bartramia longicauda</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HC">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HC</a>	Bird of conservation concern

<b>Western Grebe</b> <i>aechmophorus occidentalis</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FA">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FA</a>	Bird of conservation concern
<b>White Headed Woodpecker</b> <i>Picoides albolarvatus</i> Year-round <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HU">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0HU</a>	Bird of conservation concern
<b>Williamson's Sapsucker</b> <i>Sphyrapicus thyroideus</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FX">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0FX</a>	Bird of conservation concern
<b>Willow Flycatcher</b> <i>Empidonax traillii</i> Season: Breeding <a href="https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F6">https://ecos.fws.gov/tess_public/profile/speciesProfile.action?spcode=B0F6</a>	Bird of conservation concern

## Refuges

Any activity proposed on [National Wildlife Refuge](#) lands must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

**There are no refuges in this location**

## Wetlands in the National Wetlands Inventory

Impacts to [NWI wetlands](#) and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal Statutes.

For more information please contact the Regulatory Program of the local [U.S. Army Corps of Engineers District](#).

### DATA LIMITATIONS

The Service's objective of mapping wetlands and deepwater habitats is to produce reconnaissance level information on the location, type and size of these resources. The maps are prepared from the analysis of high altitude imagery. Wetlands are identified based on vegetation, visible hydrology and geography. A margin of error is inherent in the use of imagery; thus, detailed on-the-ground inspection of any particular site may result in revision of the wetland boundaries or classification established through image analysis.

The accuracy of image interpretation depends on the quality of the imagery, the experience of the image analysts, the amount and quality of the collateral data and the amount of ground truth verification work conducted. Metadata should be consulted to determine the date of the source imagery used and any mapping problems.

Wetlands or other mapped features may have changed since the date of the imagery or field work. There may be occasional differences in polygon boundaries or classifications between the information depicted on the map and the actual conditions on site.

### DATA EXCLUSIONS

Certain wetland habitats are excluded from the National mapping program because of the limitations of aerial imagery as the primary data source used to detect wetlands. These habitats include seagrasses or submerged aquatic vegetation that are found in the intertidal and subtidal zones of estuaries and nearshore coastal waters. Some deepwater reef communities (coral or tubercid worm reefs) have also been excluded from the inventory. These habitats, because of their depth, go undetected by aerial imagery.

### DATA PRECAUTIONS

Federal, state, and local regulatory agencies with jurisdiction over wetlands may define and describe wetlands in a different manner than that used in this inventory. There is no attempt, in either the design or products of this inventory, to define the limits of proprietary jurisdiction of any Federal, state, or local government or to establish the geographical scope of the regulatory programs of government agencies. Persons intending to engage in activities involving modifications within or adjacent to wetland areas should seek the advice of appropriate federal, state, or local agencies concerning specified agency regulatory programs and proprietary jurisdictions that may affect such activities.

Wetland data is unavailable at this time.





## United States Department of the Interior

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

OCT 07 2013

IN REPLY REFER TO:

PN-3821  
ENV-6.00

Mr. Joe Kozfkay  
Regional Fisheries Manager  
Idaho Department of Fish and Game  
3101 S. Powerline Road  
Nampa, ID 83686

Subject: Bureau of Reclamation Response to Idaho Department of Fish and Game (IDFG)  
Mitigation Plan, Third Hydroelectric Generating Unit to Black Canyon Diversion Dam  
Project, Payette Division, Boise Project, Idaho

*Joe*  
Dear Mr. Kozfkay:

In 2011, Reclamation made the decision to add a third hydroelectric generating unit to Black Canyon Diversion Dam, Emmett, Idaho. In late 2012 and early 2013, as part of data collection needs for designing the project, Reclamation drew down Black Canyon Reservoir to perform subsurface, geotechnical analysis. While drawdowns occur on a fairly routine basis in order to perform maintenance on the intake structure, the late 2012 and early 2013 drawdowns were deeper than normal. During the 2013 drawdown, an ice bar formed in the reservoir. When the ice bar shifted, it transported a large amount of sediment that had been deposited on the reservoir floor to the dam. The sediment was subsequently carried along with discharges to the downstream river channel. Reclamation could not have anticipated this event. Subsequently, IDFG expressed concerns regarding the reservoir fish population and potential effects of the sediment on downstream fish populations and habitat.

In June 2013, IDFG provided Reclamation with a draft *Mitigation Plan for Fish, Wildlife, and Habitat Losses Incurred Due to Additional Hydroelectric Power Development at Black Canyon Dam, Idaho* (draft Mitigation Plan) prepared by you, and Mr. Rick Ward, Region 3 Environmental Staff Biologist. IDFG's draft Mitigation Plan identifies environmental concerns as a result of the early 2013 drawdown event, and future reservoir drawdown(s) scheduled during the construction phase of the third hydroelectric generating unit project.

Reclamation subsequently met with IDFG regarding your draft Mitigation Plan. Both agencies agreed there is a lack of data related to fish and habitat for the reservoir and river system, and additional data is needed before Reclamation's mitigation plan is completed.

To that end, Reclamation agrees to:

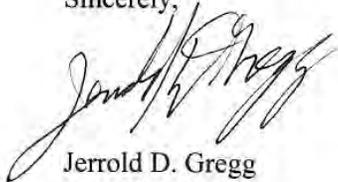
1. Provide funding for the previously agreed-upon fish surveys (Black Canyon Reservoir and the portion of the Payette River immediately downstream from the dam, including the survey IDFG conducted in July 2013); and
2. Communicate with IDFG prior to any non-routine activities that Reclamation believes may affect the fish populations in the reservoir and/or downstream from the dam.

Once additional data is gathered, Reclamation will work with IDFG on the appropriate next steps.

Reclamation fully understands that activities associated with the early 2013 reservoir drawdown resulted in an increased amount of sediment being passed through the dam, and to the downstream river channel. However, it is important to note that varying amounts of sediment are carried by the Payette River to Black Canyon Diversion Dam, and that some of the sediment is discharged to the downstream river channel during routine dam operations. History has shown that the impacts of these types of events on the fishery are temporary in nature.

If you have any questions or concerns, please contact Mr. Christopher Vick, Project Manager, at 208-378-6547 or via email at [cvick@usbr.gov](mailto:cvick@usbr.gov).

Sincerely,



Jerrold D. Gregg  
Area Manager



STATE OF IDAHO  
DEPARTMENT OF  
ENVIRONMENTAL QUALITY

1445 North Orchard • Boise, Idaho 83706 • (208) 373-0550  
www.deq.idaho.gov

C.L. "Butch" Otter, Governor  
Curt Fransen, Director

August 2, 2013

**CERTIFIED MAIL # 7012 2210 0001 8456 3714**  
**RETURN RECEIPT REQUESTED**

Chris Vick, P.E., PMP  
Project Manager, Pacific Northwest Region  
Bureau of Reclamation  
1150 N. Curtis Rd. Suite 100  
Boise, ID 83706-1234

RE: Black Canyon Dam Third Hydro Unit Drawdown

Dear Mr. Vick:

This Warning Letter is to inform the Bureau of Reclamation of apparent violations of the Idaho Department of Environmental Quality (Department) Water Quality Standards at the Black Canyon Dam near Emmett, Idaho.

On February 3, 2013, through February 18, 2013, the Bureau of Reclamation (BOR) action of a drawdown at the Black Canyon Dam caused exceedance of the state of Idaho's turbidity standard. The Department of Environmental Quality Water Quality Standards provide, "Turbidity, below any applicable mixing zone set by the Department shall not exceed background turbidity by more than fifty (50) NTU instantaneously or more than twenty-five (25) NTU for more than ten (10) consecutive days." IDAPA 58.01.02.250.02.e. The Bureau of Reclamation documented that for a period of sixteen (16) days beginning on February 3, 2013, through February 18, 2013, Turbidity standards were exceeded.

BOR project monitoring data from the bridge @ 0.5 mi below the dam shows turbidity exceedances occurring for 16 days from February 3 through February 18 with highest turbidity, 1160 NTU, observed on February 12. Background turbidity of 5 NTU was collected in the Payette River near Montour on 2-12-2013. Monthly samples taken downstream at Letha Bridge and the Payette River, above the confluence with the Snake River, report no turbidity exceedances.

BOR Monitoring Data

Date	NTU corrected for background at Montour	Dam Discharge	BOR Pool Level
2/3/13	55	1557.24	2444.76
2/4/13	150	1392.4	2439.78
2/5/13	462	1290.21	2440.94
2/6/13	209	1332.6	2439.15
2/7/13	575	1284.58	2438.53
2/8/13	1045	1254.22	2436.35
2/9/13	380	1350.36	2437.12
2/10/13	696	1336.93	2437.4
2/11/13	1045	1483.59	2430.47
2/12/13	1155	1420.57	2440.36
2/13/13	193	1492.5	2436.69
2/14/13	542	1412.71	2435.02
2/15/13	857	1327.76	2439.66
2/16/13	95	1252.76	2441.52
2/17/13	58	1293.49	2441.18
2/18/13	57	1311.2	2441.4

As a result of a reservoir drawdown that exceeded normal operation and maintenance levels, excess sediment was discharged into the Payette River below Black Canyon Dam. Fish kills were documented by the Idaho Department of Fish and Game. The City of Fruitland public drinking water system encountered taste and odor complications, and the Payette River below the dam is now experiencing caving sediment bars that pose potential threats to recreationalists.

We appreciate the BOR's efforts to notify the Department of increased levels of turbidity in the river and recognize the BOR's attempts to mitigate turbidity by modifying management practices. The BOR is revising the Environmental Assessment to formally address the downstream effects of reservoir drawdown. Additionally, BOR has been responsive to requests for increased communications with both the public and resource management entities. The Department would also like to acknowledge the attempt BOR has taken to collect data on the discharge event, and to augment its monitoring plan to include recommendations made by the Department for future drawdowns.

The continuation of the Black Canyon Third Hydrogeneration Unit Project will likely require additional reservoir drafting in excess of regular operation and maintenance levels. DEQ's rules allow the potential to grant a variance or exemption that may apply to discharge activities of this nature. These must be requested before any infraction and would only be applicable for a specified period of time. The Department would encourage BOR to refer to its October 21, 2010, American Falls Reservoir Action Plan as an example of best management practice and to use that plan as an example in drafting a Water

Bureau of Reclamation  
August 2, 2013  
Page 3

Quality Action Plan for Black Canyon Dam. The Department requests from BOR, no later than August 2014, a submittal of an Action Plan to develop procedures and measures so that future water quality violations can be mitigated or avoided. The Department is willing to work collaboratively with BOR to develop this Action Plan to develop procedures and measures so that future water quality violations can be mitigated or avoided.

Again, this is only a Warning Letter at this time. The Department is not pursuing formal enforcement; however, the Department does retain the option to pursue enforcement in the future if the violations reoccur.

We look forward to the submittal of a submittal of an Action Plan to address water quality at Black Canyon and the improved relationship and increased communication regarding reservoir drawdown at the Black Canyon Dam Third Hydro-generation Unit Project.

If you have questions or need further information please contact Julia Achabal at (208) 373-0321 or by email at [Julia.Achabal@deq.idaho.gov](mailto:Julia.Achabal@deq.idaho.gov).

Sincerely,



Lance Holloway  
Surface Water Manager  
Boise Regional Office  
Idaho Department of Environmental Quality

Cc: Susan Hamlin, Attorney General's Office  
AJ Maupin, Enforcement Coordinator  
Barry Burnell, Water Quality Division Administrator





## United States Department of the Interior

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

IN REPLY REFER TO:

PN-3821  
WTR-7.00

OCT 17 2013

Mr. Lance Halloway  
Surface Water Manager  
Idaho Department of Environmental Quality  
1445 North Orchard  
Boise, ID 83706

Subject: Black Canyon Dam Third Hydro Unit Drawdown in February 2013

Dear Mr. Halloway:

The Bureau of Reclamation is in receipt of the August 2, 2013, letter from Idaho Department of Environmental Quality (IDEQ), entitled Black Canyon Dam Third Hydro Unit Drawdown. In 2011, Reclamation made the decision to add a third hydroelectric generating unit to Black Canyon Diversion Dam, Emmett, Idaho. In late 2012 and early 2013, as part of data collection needs for designing the project, Reclamation drew down Black Canyon Reservoir to perform subsurface, geotechnical analysis. While drawdowns occur on a fairly routine basis in order to perform maintenance on the intake structure, the late 2012 and early 2013 drawdowns were deeper than normal. During the 2013 drawdown, an ice bar formed in the reservoir. When the ice bar shifted, it transported a large amount of sediment that had been deposited on the reservoir floor to the dam. The sediment was subsequently carried along with discharges to the downstream river channel. Reclamation could not have anticipated this event.

Upon noticing an increase in turbidity in the Payette River, Reclamation proactively informed IDEQ of the situation and that Reclamation would increase the turbidity monitoring frequency to ensure any effects of the drawdown were properly documented. Reclamation subsequently provided all water quality monitoring data to IDEQ.

It is our understanding that the release of sediment from Black Canyon Reservoir into the Payette River is considered a non-point source of pollution, and requires voluntary application of best management practices (BMPs) under the State of Idaho Water Quality Standards. In addition, the State of Idaho's nonpoint source management plan calls for "strong working partnerships and collaboration with appropriate...Federal agencies". Reclamation hopes to continue our partnership and collaboration with IDEQ as demonstrated during the 2013 event. To address potential future sediment issues at Black Canyon Dam, and to develop appropriate BMPs, Reclamation will continue to work closely with IDEQ to investigate actions to minimize impact of sediment remobilization from Black Canyon Reservoir into the lower Payette River. As requested, Reclamation is developing a Water Quality Action Plan for Black Canyon Diversion Dam. The Action Plan will provide IDEQ the procedures and measure Reclamation will take to

minimize sediment remobilization from the Black Canyon Reservoir into the lower Payette River.

Reclamation fully understands that activities associated with the early 2013 reservoir drawdown resulted in an increased amount of sediment being passed through the dam, and to the downstream river channel. However, it is important to note that varying amounts of sediment are carried by the Payette River to Black Canyon Diversion Dam, and that some of the sediment is discharged to the downstream river channel during routine dam operations. History has shown that the impacts of these types of events on the fishery are temporary in nature.

If you have any questions or concerns, please contact Mr. Christopher Vick, Project Manager, at 208-378-6547 or via email at [cvick@usbr.gov](mailto:cvick@usbr.gov).

Sincerely,

JERROLD D. GREGG

Jerrold D. Gregg,  
Area Manager

cc: Mr. Jim Wertz  
Director  
U.S. Environmental Protection Agency  
Idaho Operations Office  
950 W. Bannock, Suite 900  
Boise, ID 83702  
(w/copy of incoming)

bc: PN-3821 (Vick), PN-6520 (Lay)  
MSF-1100 (Beardsley), MSF-3100 (Hoffman), MSF-3110 (Coulter), MSF-6100 (Reavis),  
MSF-6121 (Fitzgerald) (w/incoming to each)

WBR:CVick:chunter:10/11/2013:208-378-6547:PN-3821  
T:\SRW1000\workfiles\Black Canyon\Black Canyon 3rd Unit\2013\Halloway, Lance IDEQ Response Letter.docx

**APPENDIX D**  
**CULTURAL AND TRIBAL CORRESPONDENCE**

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IN REPLY REFER TO:

# United States Department of the Interior

## BUREAU OF RECLAMATION

Snake River Area Office  
230 Collins Road  
Boise, Idaho 83702-4520

MSF-6135  
ENV-1.10

Mr. Tom McCulloch  
Program Analyst, Office of Federal Agency Programs  
Advisory Council on Historic Preservation  
Old Post Office Building  
1100 Pennsylvania Avenue, NW, Suite 803  
Washington, DC 20004-2501

Subject: Invitation for Consultation on the Addition of a Third Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho, Payette Division, Boise Project

Dear Mr. McCulloch:

The Bureau of Reclamation wishes to notify the Advisory Council on Historic Preservation (Council) about a plan to construct a third, separate hydroelectric generating unit at Black Canyon Diversion Dam (Figure 1). The dam is located in Gem County on the Payette River near Emmett, Idaho about 24 miles northwest of Boise (Figure 2). Reclamation invites the Council to join in consultation with Reclamation, relevant Indian Tribes and the Idaho State Historic Preservation Officer (SHPO) regarding mitigation of adverse effects resulting from the proposed action.

### Historic Significance

With the discovery of gold in the Boise Valley in the early 1860s, the increasing population created a need for agricultural production to feed the growing community. By 1870, farming in the Boise Valley was well established, but most farming was limited to lands along the river and the development of new lands was hindered by lack of reliable irrigation facilities. This problem also plagued the areas outside the Boise Valley, including the Payette River to the north. The formulation of the Reclamation Service in 1902 paved the way for large-scale water control features and irrigation systems to be developed. Black Canyon Diversion Dam on the Payette River was authorized for construction on June 26, 1922, and is part of the 121,000-acre Payette Division of the Boise Project. The Payette Division includes lands between the Payette and Boise Rivers and lands north of the Payette River which are serviced by the Emmett Irrigation District. The dam was constructed from 1922-1924, and the initial hydroelectric powerhouse was completed in 1925. The primary function of the facility is to provide Payette river stream flow for agricultural irrigation, with hydroelectric power generation designated as a secondary function.

Black Canyon Diversion Dam is a concrete gravity type dam with an ogee overflow spillway. The dam has a structural height of 183 feet. The original storage capacity was 44,700 acre-feet but heavy siltation has reduced the capacity to a volume of 29,600 acre-feet. Water is diverted by gravity into the Black Canyon Main Canal on the south side of the Payette River and by two

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direct connected turbine-driven hydro-pumps, located within the existing powerhouse, to serve the Emmett Irrigation District Canal on the north side of the river. The two-unit powerplant, housed within the same powerhouse, had an initial total capacity of 8,000 kilowatts. The unit's electrical components were upgraded in 1995 to provide the additional capability of generating up to 10,000 kilowatts of power, with a potential to generate up to 10,200 kilowatts with further upgrade of the turbines. The powerplant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes.

### **Description of Undertaking**

The proposed project is the expansion of the Black Canyon Diversion Dam facility (Figure 3) to allow for additional hydroelectric generation. This operational improvement would increase plant efficiency, flexibility, reduce spillage, provide for additional renewable hydropower, and assist in providing salmon augmentation flows for downstream utilization.

The final design is currently being created by Reclamation's Denver-based Technical Service Center (TSC). Plans will include installation of a third 10 MW generating unit in a new powerhouse building, a new 11 ft. diameter penstock, and a steel debris chute. The demolition and relocation of a combination office/shop building, and the removal of the existing switchyard, and installation of a new switchyard will also take place. Installation of the penstock would include punching a hole through the dam adjacent to the location of the existing penstocks (Figure 4), and excavating rock in order to set the penstock along its line to the powerhouse.

The normal pool level of Black Canyon Reservoir at the forebays is 2,483 ft. The reservoir would have to be lowered below an elevation of 2,468 ft. to enable the construction of the penstock penetration. (It is important to note that this lowered elevation is considered to be within the normal operation of the reservoir, and lowering the reservoir to this level occurs every few years for regular maintenance activities.) The penstock will be founded on the front face of the dam and on rock parallel to the existing penstocks, although partly buried in the ground. Careful removal of existing rock mass will be required in proximity to the base of the dam and in proximity to the existing penstocks, which will be accomplished through the use of chemical, non-explosive expansive agents and mechanical excavators.

The existing powerhouse will be unaffected, except by the construction of the new powerhouse within its viewshed. Reclamation will take steps to lessen the visual impact of the new powerhouse building. First, it will be offset from the front of the existing powerhouse so as not to obstruct the public's view. Second, the new powerhouse will be designed to capture the look and feel of its fellow. According to the Reclamation publication "Analysis/Review/Update of 2003 Feasibility Study for Construction of a 3<sup>rd</sup> Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho," the new powerhouse would architecturally reflect and promote the existing historic character of the site (Figure 5). On page 25 of that report, it is stated that:

"In order to preserve the historic qualities of the site, the powerhouse superstructure will be architecturally similar to the existing powerhouse with precast concrete walls and a metal sloped roof structure with insulation and membrane water proofing. The powerhouse substructure will be constructed of cast-in-place concrete."

The overall footprint of the new powerplant is slightly larger than its existing counterpart to accommodate the new generating unit and additional office space, but the height of the building is still under consideration. The current design includes an interior crane system similar to the one existing in the original powerhouse (Figure 6). However, there may be a change in the design to lower the height of the roof by almost half by eliminating the interior crane and instead positioning a large mobile crane outside the building. This exterior crane would not be a permanent structure and would instead be deployed as needed. That decision will be made in the near future.

In addition, the existing (original) switchyard (Figure 7) would be removed and a new, larger switchyard would be created to the north of the existing powerhouse on top of a basalt bench.

A third component is the demolition and relocation of the combination office/shop building. This structure was added to the facility in the mid- to late 1960's to provide offices, training facilities, and a maintenance work area in support of the dam. The current proposal is to construct a new office building outside of the fenced facility to the south, but still on Reclamation property. (This plan is not yet final, and therefore does not appear within the area of potential effect as outlined below.)

Construction on this project is slated to begin near the end of 2012 and continue for a two-year construction window.

#### **Identification of the Area of Potential Effect (APE) and Historic Properties Within**

For Section 106 purposes, the APE for the present project is considered to be the dam, the powerhouse yard, and the switchyard. Figures 8 and 9 present the changes that are proposed within the APE.

The historic properties located within the APE include a portion of the dam, the existing powerhouse, the existing switchyard, and a portion of the original railway used to transport equipment into the existing powerhouse. The dam and powerplant were determined eligible for listing on the National Register of Historic Places by the Idaho State Historic Preservation Officer on August 22, 1998. This eligibility was granted due to the pivotal role the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original equipment, and the historic and technological contribution of the structure.

On April 21, 2010, Reclamation engineering and cultural resources staff first consulted with Idaho SHPO personnel regarding this proposed project. During that meeting it was agreed that this proposed action would be deemed an adverse effect. This decision was based upon the fact that completion of the action will result in the alteration of part of an original significant historic structure (drilling a hole in the dam), and negative visual impacts to a second significant historic structure (the existing powerplant).

#### **Recommended Actions to Mitigate Adverse Effects**

During the initial on-site meeting with SHPO staff, Reclamation personnel discussed basic details of the project. The goal of the meeting was to attempt to preliminarily identify and possibly pre-empt any adverse effects.

The proposed size and placement of the new powerhouse in relation to the existing powerhouse caused concern to the SHPO. As presented at that time, the new building would be larger and its location directly in front would almost completely obscure the view of the existing historic powerhouse. Discussion ensued about moving the footprint of the new building to the north far enough to keep the original powerhouse in view of the public park and parking lot just downstream. That view is a critical element in the experience of the area. Project management agreed to revisit the building plans to see if this could be accomplished, and as a result of this consideration the current proposal now offsets the footprint of the new powerplant far enough to the north that the existing powerplant will still be visible to the public from the nearby park. As mentioned above, there is also discussion to lower the height of the roof by half of the original proposal by removing the interior crane system, but a final decision on this proposed change is yet to be made.

The fact that no Historic American Buildings Survey/ Historic American Engineering Record (HABS/HAER) documentation yet exists for Black Canyon Diversion Dam was also a concern to the SHPO, and it was agreed by both parties that this should be undertaken prior to project actions. Reclamation project management has since secured funding for HABS/HAER documentation of the powerhouse and dam in their current state and this will be accomplished as part of the mitigation effort.

As final design of the project specifics is still underway, further consultation is planned with SHPO to identify new or unexpected effects. Reclamation will be working in consultation with the SHPO to develop a Memorandum of Agreement pursuant to 36 CFR Part 800, which would formalize the mitigation measures mentioned in the preceding paragraph. Please advise this office as to whether the Council wishes to join in this consultation by contacting me directly at 208-383-2248 or via email at [jgregg@usbr.gov](mailto:jgregg@usbr.gov); or you may contact my staff archeologist Ms. Jenny Huang at 208-383-2257 or via email at [jhuang@usbr.gov](mailto:jhuang@usbr.gov), if you have any questions regarding this letter.

Sincerely,

ACTING FOR

**C.J. BEARDSLEY**

Jerrold D. Gregg  
Area Manager

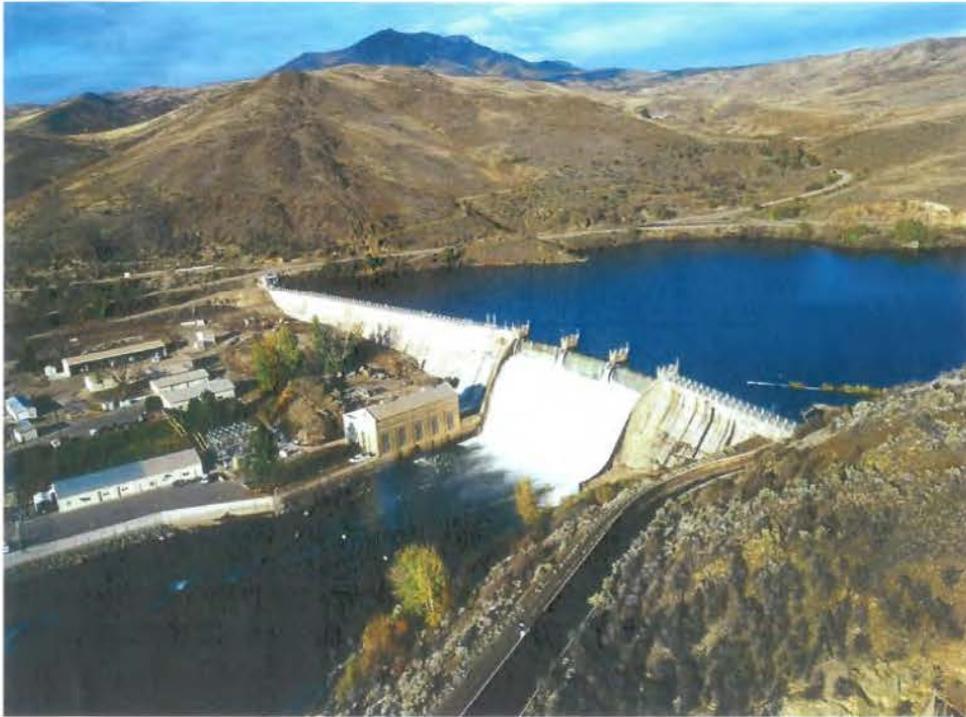
Enclosure

bc: PN-3824 (Tiedeman)

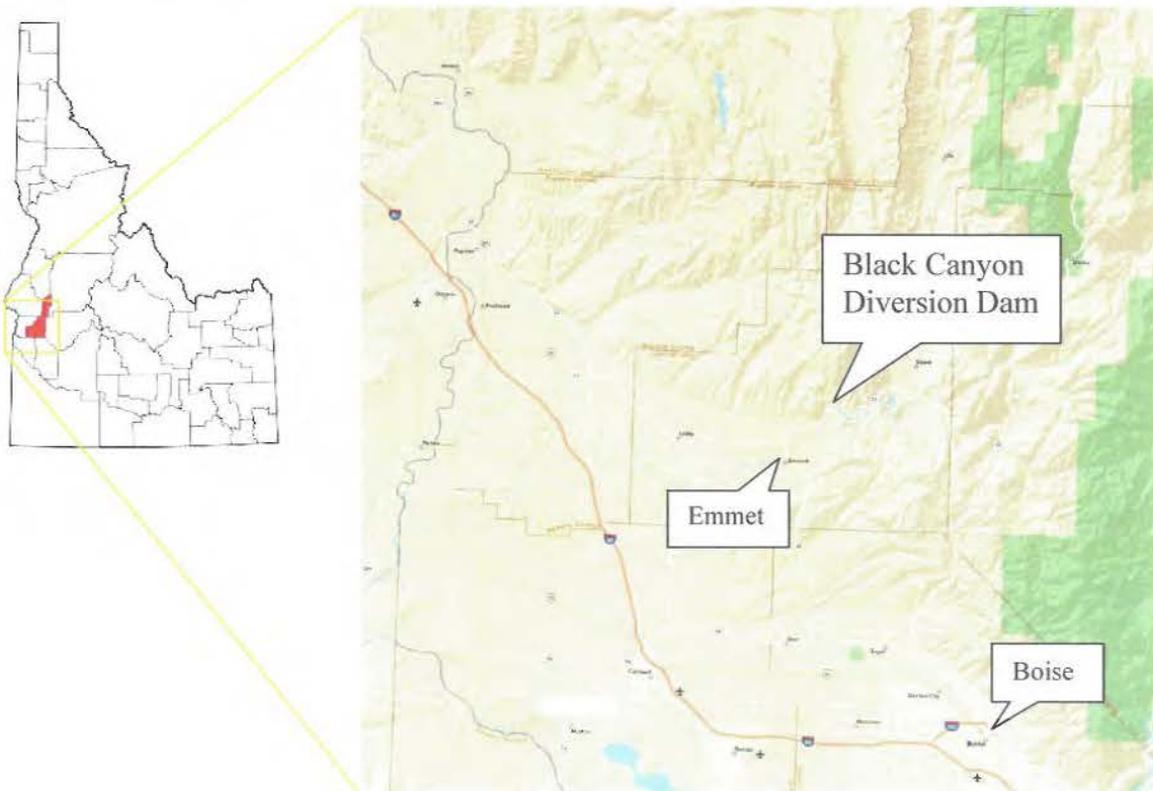
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MSF-6121 (Fitzgerald), MSF-3100 (Hoffman) (w/encl to each)

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**Figure 1.** Black Canyon Diversion Dam. (Photo by David Walsh, Reclamation, Photo Number C3-100-7231)



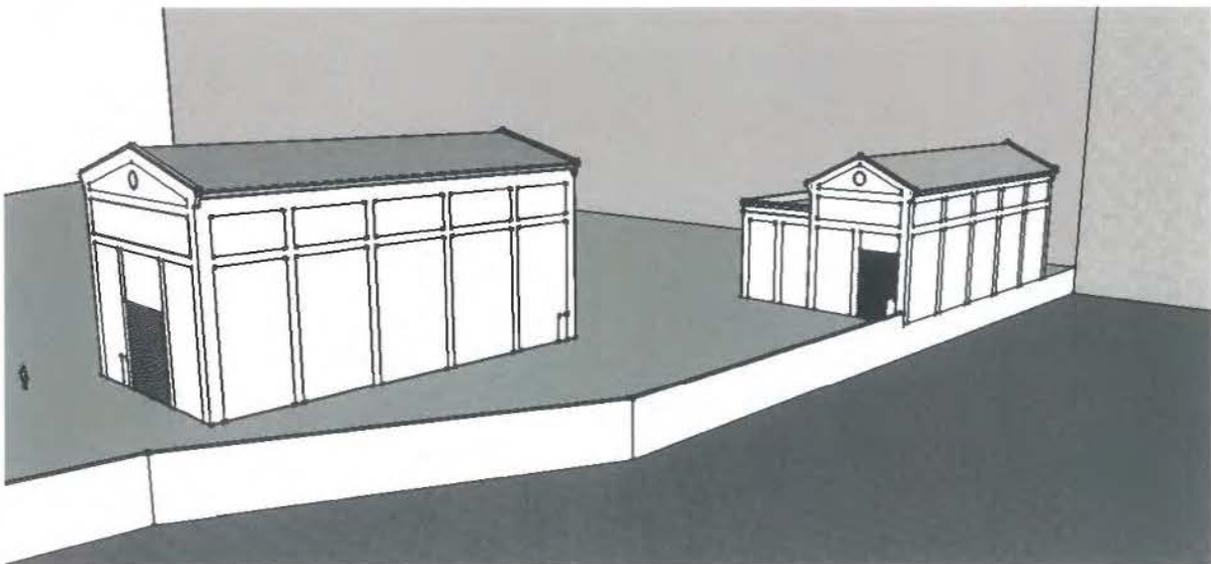
**Figure 2.** Location of Black Canyon Diversion Dam, 5 miles northeast of Emmet, Idaho.



**Figure 3.** View into the Black Canyon Diversion Dam facility powerhouse yard with the office/shop building at left, the existing switchyard just behind it, and the powerhouse building to the left of the tree. (Photo by John Tiedeman, Reclamation)



**Figure 4.** General penstock installation area (outlined in green) behind the powerhouse. (Photo by John Tiedeman, Reclamation)



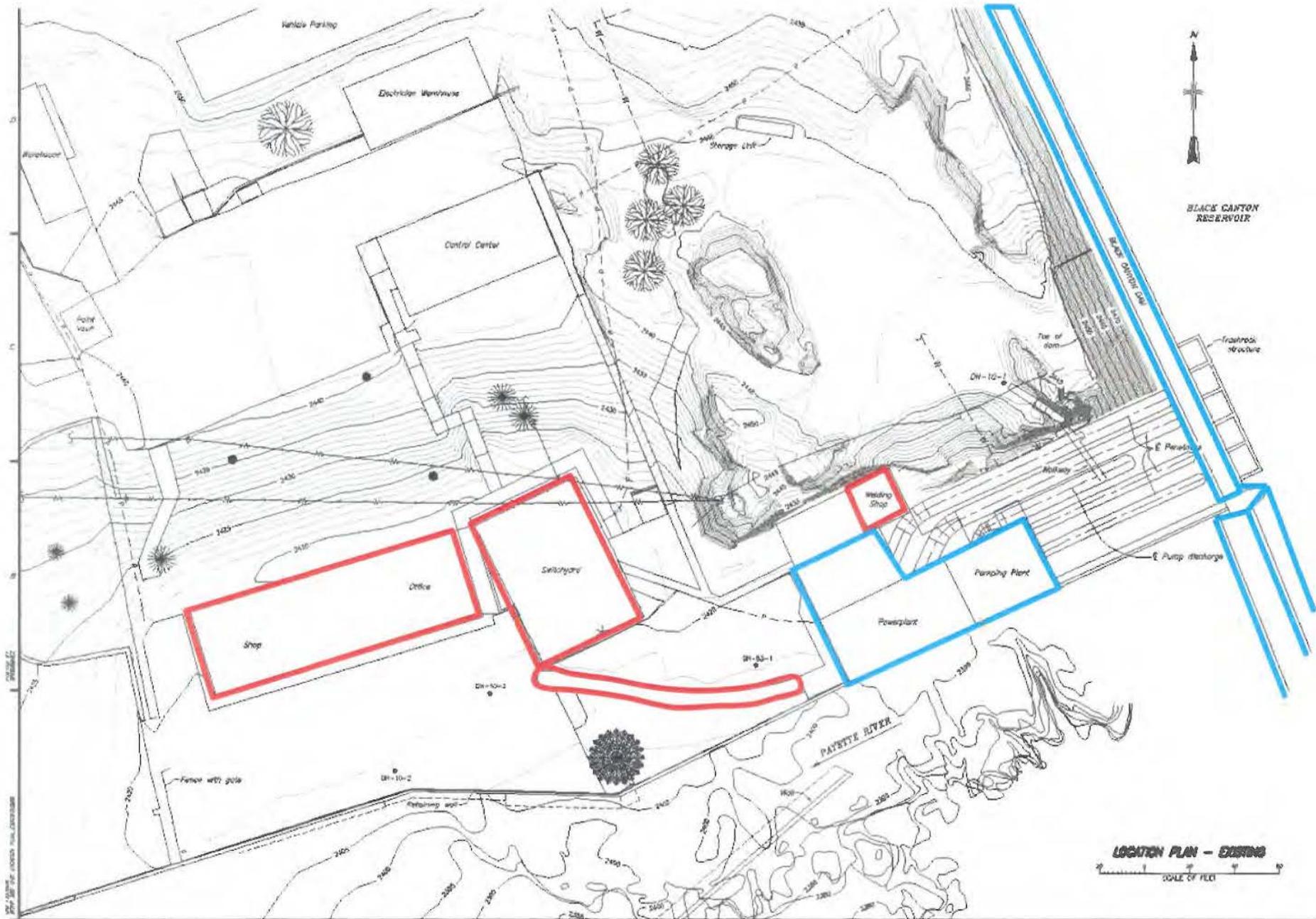
**Figure 5.** Artist's rendering of the new powerhouse (at left) in both design style and position relative to the existing powerhouse (at right). The dam is located directly behind the existing powerhouse, with the river in the foreground.



**Figure 6.** Interior view of the existing powerhouse with its internal crane system situated on a runner just below the roof frames. The top portion of a generating unit is seen at bottom left. (Photo by John Tiedeman, Reclamtaion)



**Figure 7.** The location and nature of the existing (original) switchyard. This switchyard will be removed and a new one constructed atop the basalt bench in the background (right). (Photo by John Tiedeman, Reclamation)



**Figure 8.** Schematic drawing of the existing Area of Potential Effect. The Dam and Powerhouse are outlined in blue. The existing office/shop, switchyard, railroad section and welding shop are outlined in red to signify that these facilities will be removed during the proposed project.



6135



# United States Department of the Interior

BUREAU OF RECLAMATION  
Snake River Area Office  
230 Collins Road  
Boise, Idaho 83702-4520



MSF-6135  
ENV-1.10

NOV 7 2010

Honorable McCoy Oatman  
Chairman  
Nez Perce Tribal Executive Committee  
P.O. Box 305  
Lapwai, ID 83540

**Subject:** Invitation for Consultation on the Addition of a Third Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho – Boise Project

Dear Chairman:

The Bureau of Reclamation wishes to notify the Tribal Council about a plan to construct a third, separate hydroelectric generating unit at Black Canyon Diversion Dam (Figure 1). The dam is located in Gem County on the Payette River near Emmett, Idaho, about 24 miles northwest of Boise (Figure 2). Reclamation invites the Tribal Council to join in consultation with Reclamation and the Idaho State Historic Preservation Officer (SHPO) regarding mitigation of adverse effects resulting from the proposed action. The Advisory Council on Historic Preservation has also been invited to consult; a decision on their involvement is pending.

### Historic Significance

With the discovery of gold in the Boise Valley in the early 1860s, the increasing population created a need for agricultural production to feed the growing community. By 1870, farming in the Boise Valley was well established, but most farming was limited to lands along the river and the development of new lands was hindered by lack of reliable irrigation facilities. This problem also plagued the areas outside the Boise Valley including the Payette River to the north. The formulation of the Reclamation Service in 1902 paved the way for large-scale water control features and irrigation systems to be developed. Black Canyon Diversion Dam on the Payette River was authorized for construction on June 26, 1922, and is part of the 121,000-acre Payette Division of the Boise Project. The Payette Division includes lands between the Payette and Boise Rivers and lands north of the Payette River which are serviced by the Emmett Irrigation District. The dam was constructed from 1922-1924, and the initial hydroelectric powerhouse was completed in 1925. The primary function of the facility is to provide Payette River stream flow for agricultural irrigation with hydroelectric power generation designated as a secondary function.

Black Canyon Diversion Dam is a concrete gravity type dam with an ogee overflow spillway. The dam has a structural height of 183 feet. The original storage capacity was 44,700 acre-feet but heavy siltation has reduced the capacity to a volume of 29,600 acre-feet. Water is diverted by gravity into the Black Canyon Main Canal on the south side of the Payette River and by two direct connected turbine-driven hydro-pumps, located within the existing powerhouse, to serve the Emmett Irrigation District Canal on the north side of the river. The two-unit powerplant, housed within the same powerhouse, had an initial total capacity of 8,000 kilowatts. The unit's electrical components were

upgraded in 1995 to provide the additional capability of generating up to 10,000 kilowatts of power, with a potential to generate up to 10,200 kilowatts with further upgrade of the turbines. The powerplant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes.

### **Description of Undertaking**

The proposed project is the expansion of the Black Canyon Diversion Dam Facility (Figure 3) to allow for additional hydroelectric generation. This operational improvement would increase plant efficiency, flexibility, reduce spillage, provide for additional renewable hydropower, and assist in providing salmon augmentation flows for downstream utilization.

The final design is currently being created by Reclamation's Denver-based Technical Service Center. Plans will include installation of a third 10 MW generating unit in a new powerhouse building, a new 11-foot diameter penstock, and a steel debris chute. The demolition and relocation of a combination office/shop building and the removal of the existing switchyard and installation of a new switchyard will also take place. Installation of the penstock would include punching a hole through the dam adjacent to the location of the existing penstocks (Figure 4), and excavating rock in order to set the penstock along its line to the powerhouse.

The normal pool level of Black Canyon Reservoir at the forebays is 2,483 feet. The reservoir would have to be lowered below an elevation of 2,468 feet to enable the construction of the penstock penetration. (It is important to note that this lowered elevation is considered to be within the normal operation of the reservoir, and lowering the reservoir to this level occurs every few years for regular maintenance activities.) The penstock will be founded on the front face of the dam and on rock parallel to the existing penstocks, although partly buried in the ground. Careful removal of existing rock mass will be required in proximity to the base of the dam and in proximity to the existing penstocks, which will be accomplished through the use of chemical, non-explosive expansive agents and mechanical excavators.

The existing powerhouse will be unaffected except by the construction of the new powerhouse within its viewshed. Reclamation will take steps to lessen the visual impact of the new powerhouse building. First, it will be offset from the front of the existing powerhouse so as not to obstruct the public's view. Second, the new powerhouse will be designed to capture the look and feel of its fellow. According to the Reclamation publication "Analysis/Review/Update of 2003 Feasibility Study for Construction of a 3<sup>rd</sup> Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho," the new powerhouse would architecturally reflect and promote the existing historic character of the site (Figure 5). On page 25 of that report, it is stated that:

"In order to preserve the historic qualities of the site, the powerhouse superstructure will be architecturally similar to the existing powerhouse with precast concrete walls and a metal sloped roof structure with insulation and membrane water proofing. The powerhouse substructure will be constructed of cast-in-place concrete."

The overall footprint of the new powerplant is slightly larger than its existing counterpart to accommodate the new generating unit and additional office space, but the height of the building is still under consideration. The current design includes an interior crane system similar to the one existing in the original powerhouse (Figure 6). However, there may be a change in the design to

lower the height of the roof by almost half by eliminating the interior crane and, instead, positioning a large mobile crane outside the building. This exterior crane would not be a permanent structure and would be deployed as needed. That decision will be made in the near future.

In addition, the existing (original) switchyard (Figure 7) would be removed and a new, larger switchyard would be created to the north of the existing powerhouse on top of a basalt bench.

A third component is the demolition and relocation of the combination office/shop building. This structure was added to the facility in the mid- to late 1960s to provide offices, training facilities, and a maintenance work area in support of the dam. The current proposal is to construct a new office building outside of the fenced facility to the south, but still on Reclamation property. (This plan is not yet final and, therefore, does not appear within the area of potential effect as outlined below.)

Construction on this project is slated to begin near the end of 2012 and continue for a 2-year construction window.

#### **Identification of the Area of Potential Effect (APE) and Historic Properties Within**

For Section 106 purposes, the APE for the present project is considered to be the dam, the powerhouse yard, and the switchyard. Figures 8 and 9 present the changes that are proposed within the APE.

The historic properties located within the APE include a portion of the dam, the existing powerhouse, the existing switchyard, and a portion of the original railway used to transport equipment into the existing powerhouse. The dam and powerplant were determined eligible for listing on the National Register of Historic Places by the Idaho State Historic Preservation Officer on August 22, 1998. This eligibility was granted due to the pivotal role the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original equipment, and the historic and technological contribution of the structure.

On April 21, 2010, Reclamation engineering and cultural resources staff first consulted with Idaho SHPO personnel regarding this proposed project. During that meeting, it was agreed that this proposed action would be deemed an adverse effect. This decision was based upon the fact that completion of the action will result in the alteration of part of an original significant historic structure (drilling a hole in the dam), and negative visual impacts to a second significant historic structure (the existing powerplant).

Reclamation is also concerned with the potential existence of Indian Trust Assets within the APE. At this time, Reclamation would like to enter into formal consultation with the Nez Perce Tribe.

#### **Recommended Actions to Mitigate Adverse Effects**

During the initial on-site meeting with SHPO staff, Reclamation personnel discussed basic details of the project. The goal of the meeting was to attempt to preliminarily identify and possibly pre-empt any adverse effects.

The proposed size and placement of the new powerhouse in relation to the existing powerhouse caused concern to the SHPO. As presented at that time, the new building would be larger and its location directly in front would almost completely obscure the view of the existing historic

powerhouse. Discussion ensued about moving the footprint of the new building to the north far enough to keep the original powerhouse in view of the public park and parking lot just downstream. That view is a critical element in the experience of the area. Project management agreed to revisit the building plans to see if this could be accomplished and, as a result of this consideration, the current proposal now offsets the footprint of the new powerplant far enough to the north that the existing powerplant will still be visible to the public from the nearby park. As mentioned above, there is also discussion to lower the height of the roof by half of the original proposal by removing the interior crane system, but a final decision on this proposed change is yet to be made.

The fact that no Historic American Buildings Survey/Historic American Engineering Record (HABS/HAER) documentation yet exists for Black Canyon Diversion Dam was also a concern to the SHPO, and it was agreed by both parties that this should be undertaken prior to project actions. Reclamation project management has since secured funding for HABS/HAER documentation of the powerhouse and dam in their current state, and this will be accomplished as part of the mitigation effort.

As final design of the project specifics is still underway, further consultation is planned with Tribes and SHPO to identify new or unexpected effects. Reclamation will be working in consultation with the SHPO to develop a Memorandum of Agreement pursuant to 36 CFR Part 800, which would formalize the mitigation measures mentioned in the preceding paragraph. Please advise this office as to whether the Tribal Council wishes to join in this consultation by contacting me directly at 208-383-2246; or you may contact Ms. Jenny Huang, Archeologist, at 208-383-2257 or via email at JHuang@usbr.gov if you have any questions regarding this letter.

Sincerely,  
JERROLD D. GREGG

Jerrold D. Gregg  
Area Manager

Enclosure

bc: SRA-1000 (Gregg), SRA-1008 (Adams), MSF-1100 (Beardsley), MSF-6100 (Reavis), MSF-6121 (Fitzgerald), MSF-3100 (Hoffman), PN-3824 (Tiedeman) (w/encl to each)

WBR:JHuang:kloomis:11/12/10:208-383-2257:MSF-6135  
T:\SRW1000\workfiles\6135\2010\FINAL Tribes Letter BCD 3rd Unit\_Nov 10 2010.docx

Identical Letter Sent To:

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

Continued on next page.

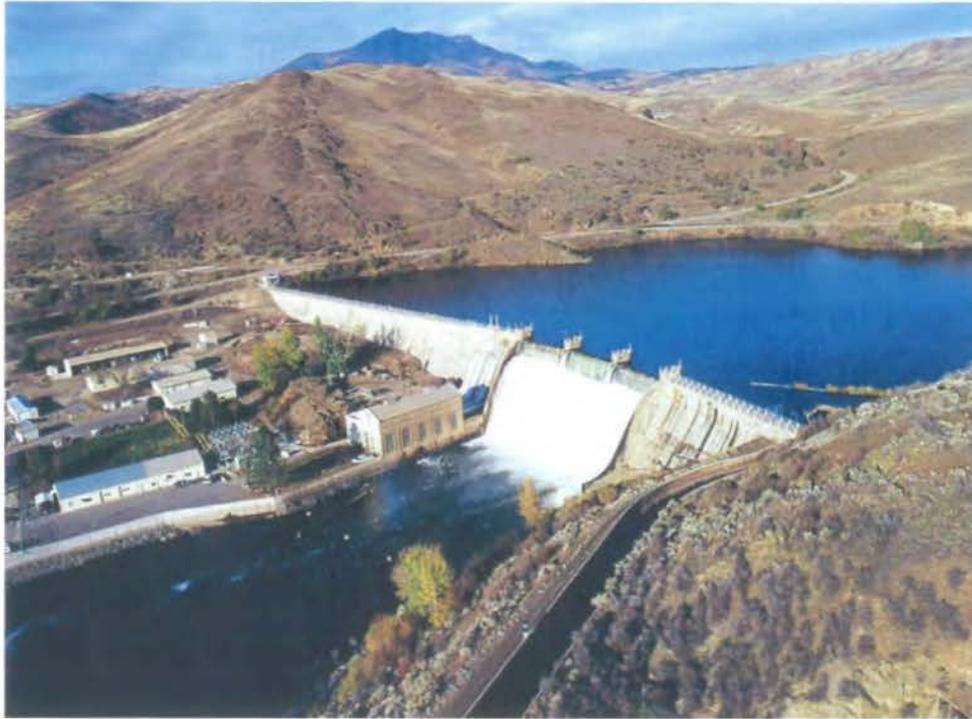
Continued from previous page.

Honorable Robert C. Bear  
Chairman  
Shoshone-Paiute Tribal Council  
P.O. Box 219  
Owyhee, NV 89832-0219

Honorable Elwood Patawa  
Chairman  
Confederated Tribes of the  
Umatilla Indian Reservation  
Nixya 'awii Governance Center  
46411 Timi'ne Way  
Pendleton, OR 97801

Honorable Diane Teeman  
Chair  
Burns Paiute Tribe  
100 Pasigo Street  
Burns, OR 97720





**Figure 1.** Black Canyon Diversion Dam. (Photo by David Walsh, Reclamation, Photo Number C3-100-7231)



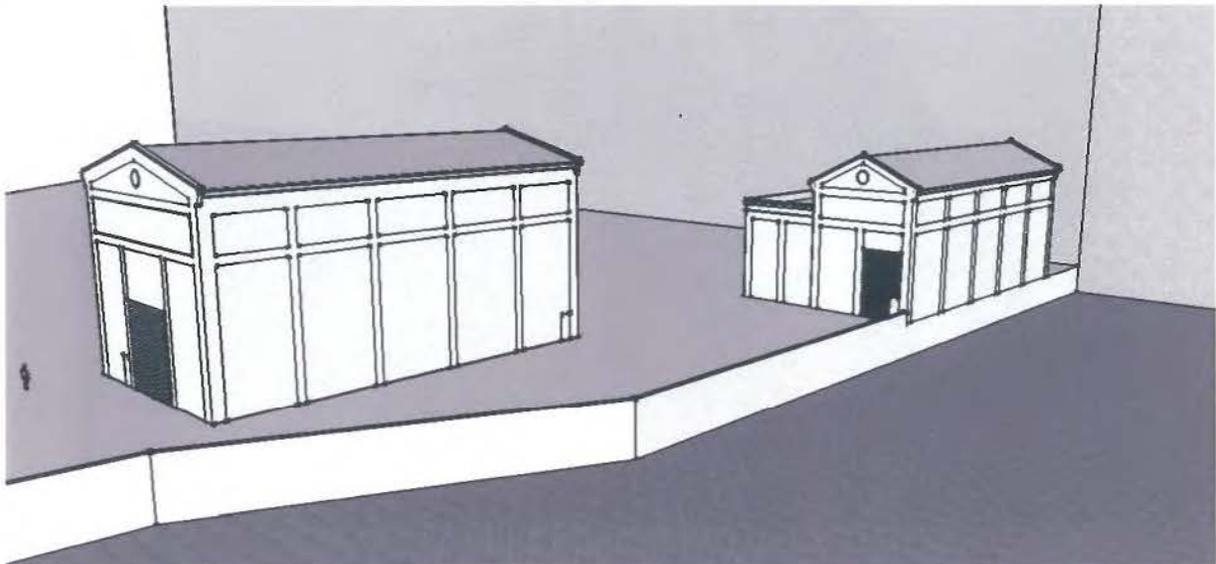
**Figure 2.** Location of Black Canyon Diversion Dam, 5 miles northeast of Emmet, Idaho.



**Figure 3.** View into the Black Canyon Diversion Dam facility powerhouse yard with the office/shop building at left, the existing switchyard just behind it, and the powerhouse building to the left of the tree. (Photo by John Tiedeman, Reclamation)



**Figure 4.** General penstock installation area (outlined in green) behind the powerhouse. (Photo by John Tiedeman, Reclamation)



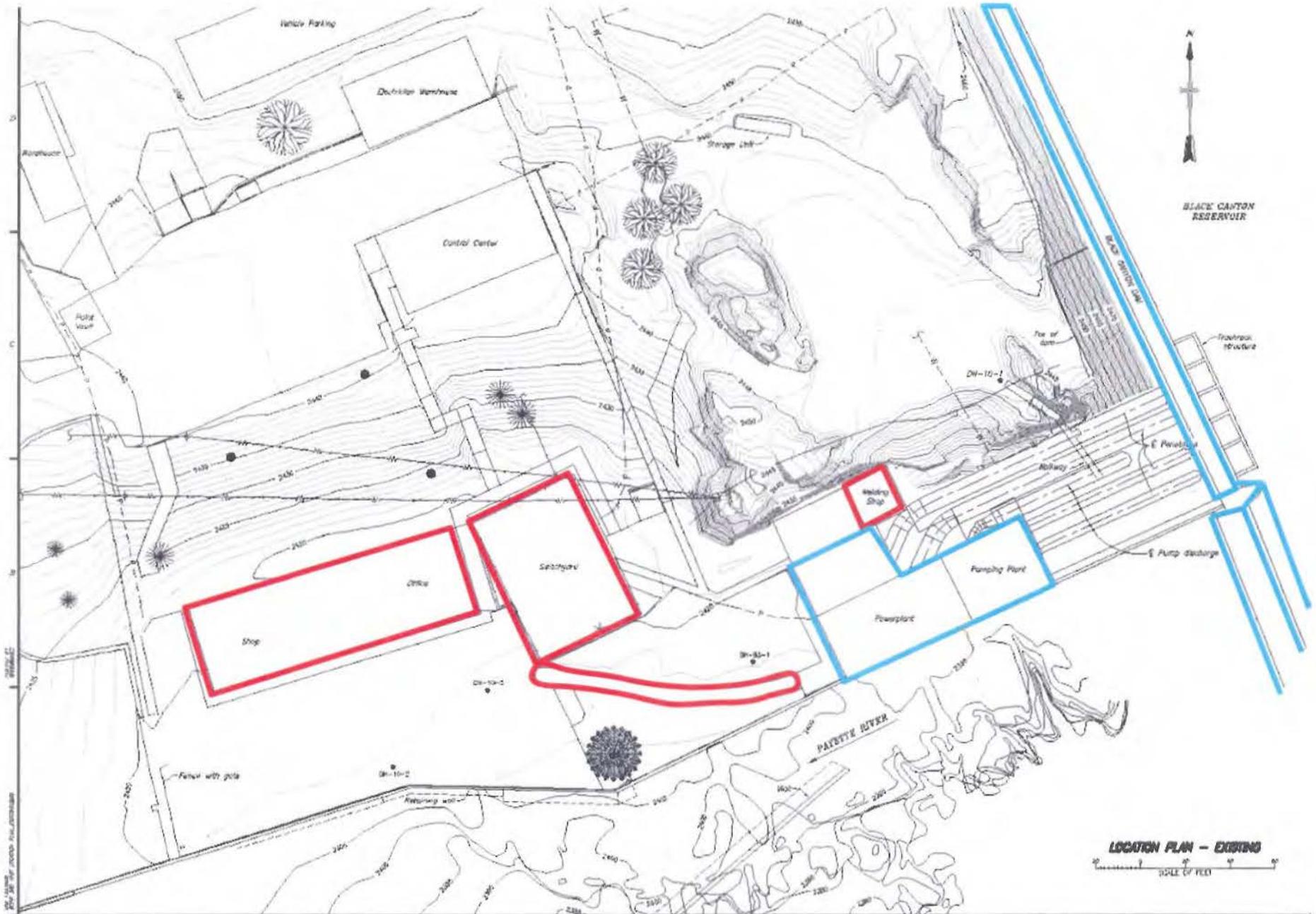
**Figure 5.** Artist's rendering of the new powerhouse (at left) in both design style and position relative to the existing powerhouse (at right). The dam is located directly behind the existing powerhouse, with the river in the foreground.



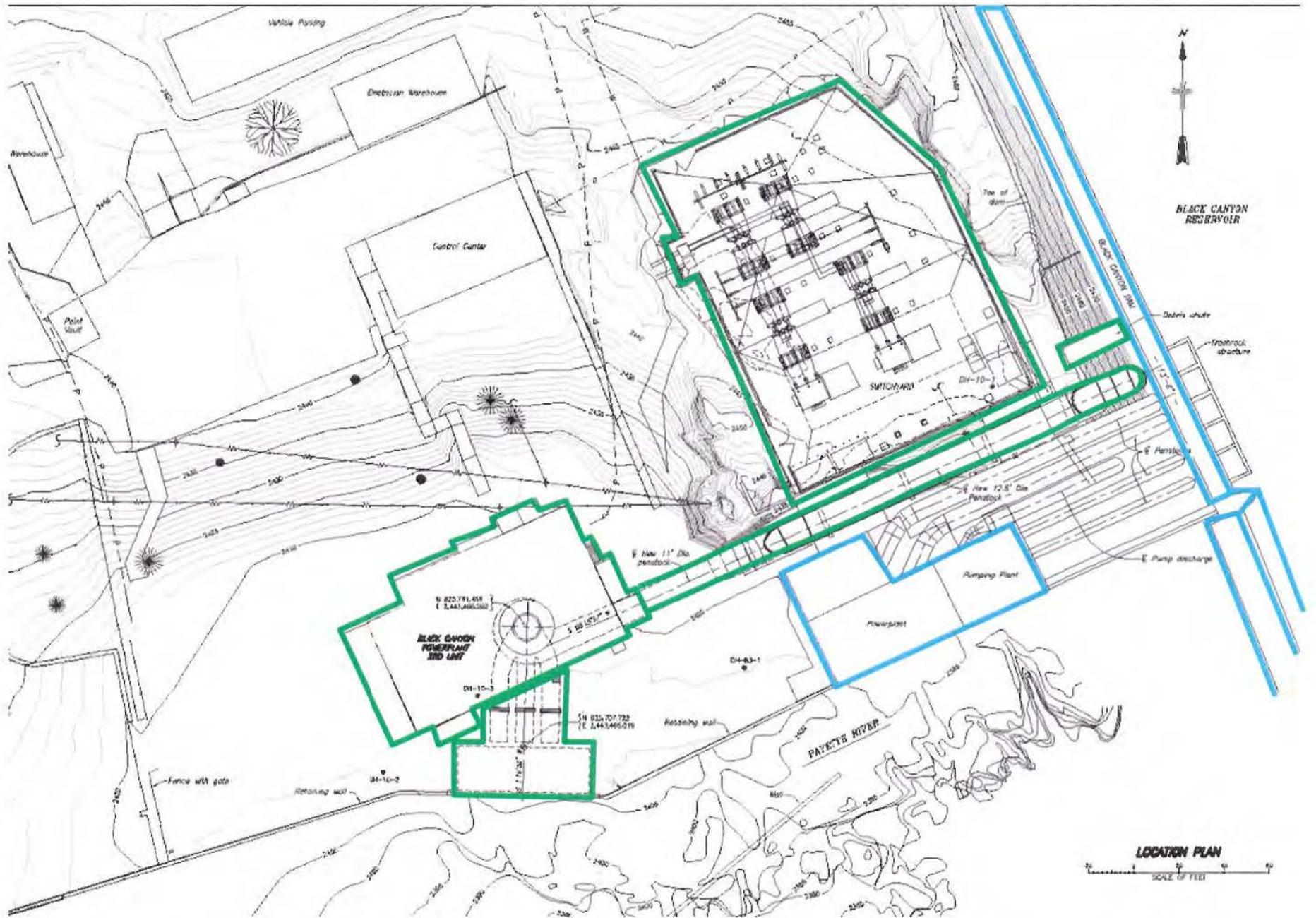
**Figure 6.** Interior view of the existing powerhouse with its internal crane system situated on a runner just below the roof frames. The top portion of a generating unit is seen at bottom left. (Photo by John Tiedeman, Reclamtaion)



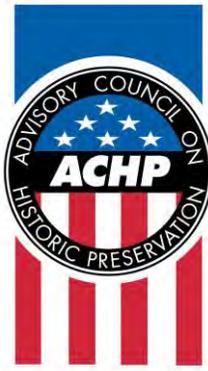
**Figure 7.** The location and nature of the existing (original) switchyard. This switchyard will be removed and a new one constructed atop the basalt bench in the background (right). (Photo by John Tiedeman, Reclamation)



**Figure 8.** Schematic drawing of the existing Area of Potential Effect. The Dam and Powerhouse are outlined in blue. The existing office/shop, switchyard, railroad section and welding shop are outlined in red to signify that these facilities will be removed during the proposed project.



**Figure 9.** Schematic drawing of the conceptual Area of Potential Effect. The new facilities, including the powerhouse building, penstock, switchyard and debris chute, are outlined in green.



*Preserving America's Heritage*

November 30, 2010

Mr. Jerrold D. Gregg  
Area Manager  
Bureau of Reclamation  
Snake River Area Office  
230 Collins Road  
Boise, ID 83702-4520

***Ref: Proposed Addition of Third Hydroelectric Generating Unit at Black Canyon Diversion Dam  
Emmett, Gem County, Idaho***

Dear Mr. Gregg:

On November 15, 2010, the Advisory Council on Historic Preservation (ACHP) received your notification and supporting documentation regarding the adverse effects of the referenced project on properties listed on and eligible for listing in the National Register of Historic Places. Based upon the information you provided, we have concluded that Appendix A, *Criteria for Council Involvement in Reviewing Individual Section 106 Cases*, of our regulations, "Protection of Historic Properties" (36 CFR Part 800), does not apply to this undertaking. Accordingly, we do not believe that our participation in the consultation to resolve adverse effects is needed. However, if we receive a request for participation from the State Historic Preservation Officer (SHPO), Tribal Historic Preservation Officer, affected Indian tribe, a consulting party, or other party, we may reconsider this decision. Additionally, should circumstances change, and you determine that our participation is needed to conclude the consultation process, please notify us.

Pursuant to 36 CFR §800.6(b)(1)(iv), you will need to file the final Memorandum of Agreement (MOA), developed in consultation with the Idaho SHPO, and any other consulting parties, and related documentation with the ACHP at the conclusion of the consultation process. The filing of the MOA and supporting documentation with the ACHP is required in order to complete the requirements of Section 106 of the National Historic Preservation Act.

Thank you for providing us with the opportunity to review this undertaking. If you have any questions, please contact Tom McCulloch at 202-606-8554, or via email at [tmcculloch@achp.gov](mailto:tmcculloch@achp.gov).

Sincerely,

Raymond V. Wallace  
Historic Preservation Technician  
Office of Federal Agency Programs





# United States Department of the Interior

## BUREAU OF RECLAMATION

Snake River Area Office  
230 Collins Road  
Boise, Idaho 83702-4520



MAY 27 2011

SRA-6116  
LND-1.10

Ms. Suzi Pengilly  
Deputy State Historic Preservation Officer  
Idaho State Historical Society  
210 Main Street  
Boise, ID 83702-7264

Subject: Invitation to Consult Regarding Proposed Third Generating Unit and New Powerplant  
at Black Canyon Diversion Dam, Emmett, Idaho – Boise Project, Payette Division

Dear Ms. Pengilly:

The Bureau of Reclamation wishes to officially notify the State Historic Preservation Officer (SHPO) about plans to construct a third, separate hydroelectric generating unit at Black Canyon Diversion Dam (Figure 1). The dam is located in Gem County on the Payette River near Emmett, Idaho about 24 miles northwest of Boise (Figure 2). Pursuant to the regulations outlined in 36 CFR 800, Reclamation invites the SHPO to join in consultation with Reclamation regarding hopeful prevention—as well as necessary mitigation—of adverse effects resulting from the proposed action.

### **Historic Significance**

With the discovery of gold in the Boise Valley in the early 1860s, the increasing population created a need for agricultural production to feed the growing community. By 1870, farming in the Boise Valley was well established, but most farming was limited to lands along the river and the development of new lands was hindered by lack of reliable irrigation facilities. This problem also plagued the areas outside the Boise Valley, including the Payette River to the north. The formulation of the Reclamation Service in 1902 paved the way for large-scale water control features and irrigation systems to be developed. Black Canyon Diversion Dam on the Payette River was authorized for construction on June 26, 1922, and is part of the 121,000-acre Payette Division of the Boise Project. The Payette Division includes lands between the Payette and Boise Rivers and lands north of the Payette River which are serviced by the Emmett Irrigation District. The dam was constructed from 1922-1924, and the initial hydroelectric powerhouse was completed in 1925. The primary function of the facility is to provide Payette River stream flow for agricultural irrigation, with hydroelectric power generation designated as a secondary function.

Black Canyon Diversion Dam is a concrete gravity type dam with an ogee overflow spillway. The dam has a structural height of 183 feet. The original storage capacity was 44,700 acre-feet but heavy siltation has reduced the capacity to a volume of 29,600 acre-feet. Water is diverted by gravity into the Black Canyon Main Canal on the south side of the Payette River and by two

direct connected turbine-driven hydro-pumps, located within the existing powerhouse, to serve the Emmett Irrigation District Canal on the north side of the river. The two-unit powerplant, housed within the same powerhouse, had an initial total capacity of 8,000 kilowatts. The unit's electrical components were upgraded in 1995 to provide the additional capability of generating up to 10,000 kilowatts of power, with a potential to generate up to 10,200 kilowatts with further upgrade of the turbines. The powerplant supplies power to the Southern Idaho Federal Power System for Reclamation project uses and for non-project purposes.

### **Description of Undertaking**

The proposed project is the expansion of the Black Canyon Diversion Dam facility (Figure 3) to allow for additional hydroelectric generation. This operational improvement would increase plant efficiency, flexibility, reduce spillage, provide for additional renewable hydropower, and assist in providing salmon augmentation flows for downstream utilization.

The final design is currently being created by Reclamation's Denver-based Technical Service Center (TSC). Plans will include installation of a third 10 Megawatt (MW) or 12.5 MW generating unit in a new powerhouse building, a new 12.5 foot diameter penstock, a steel debris chute, and a trash-rake debris removal system. The demolition and relocation of a combination office/shop building, and the removal of the existing switchyard, and installation of a new switchyard will also take place. Installation of the penstock would include punching a hole through the dam near the location of the existing penstocks (just to the north).

The normal pool level of Black Canyon Reservoir at the forebays is 2,483 feet. The reservoir would have to be lowered below an elevation of 2,468 feet to enable the construction of the penstock penetration. (It is important to note that this lowered elevation is considered to be within the normal operation of the reservoir, and lowering the reservoir to this level occurs every few years for regular maintenance activities.) The penstock will be founded on the front face of the dam and on rock parallel to the existing penstocks, although partly buried in the ground near the generating unit. Careful removal of existing rock mass will be required in proximity to the base of the dam, in the area where the penstock is buried near the generating unit, and for the generating unit itself, which will be accomplished through use of explosive agents due to the extreme hardness of the rock.

The existing powerhouse (Figure 4) will be unaffected, except by the construction of the new powerhouse within its viewshed. Reclamation will take steps to lessen the visual impact of the new powerhouse building. First, it will be offset from the front of the existing powerhouse so as not to obstruct the public's view. Second, the new powerhouse will be designed to capture the look and feel of its fellow (Figure 5). According to the Reclamation publication "Analysis/Review/Update of 2003 Feasibility Study for Construction of a 3<sup>rd</sup> Hydroelectric Generating Unit at Black Canyon Diversion Dam, Emmett, Idaho," the new powerhouse would architecturally reflect and promote the existing historic character of the site (Figure 6).

On page 25 of that report, it is stated that:

"In order to preserve the historic qualities of the site, the powerhouse superstructure will be architecturally similar to the existing powerhouse with precast concrete walls and a

metal sloped roof structure with insulation and membrane water proofing. The powerhouse substructure will be constructed of cast-in-place concrete.”

The overall footprint of the new powerplant is slightly larger than its existing counterpart to accommodate the new generating unit. The current design includes an interior crane system similar to the one existing in the original powerhouse (Figure 7).

In addition, the existing (original) switchyard (Figure 8) would be removed and a new, larger switchyard would be created to the north of the existing powerhouse on top of a basalt bench.

A third component is the demolition and relocation of the combination office/shop building. This structure was added to the facility in the mid to late 1960's to provide offices, training facilities, and a maintenance work area in support of the dam. The current proposal is to construct a new office building outside of the fenced facility to the south, but still on Reclamation property. A new two-story shop building would be constructed to the north of the existing building, partially into the basalt ridge.

The last component is the installation of a trash-rake gripper style removal system with a debris chute.

Construction on this project is slated to begin in 2013 and continue for a two-year construction window. Figures 9 and 10 provide visual information regarding the changes that would occur with the proposed work.

### **Identification of the APE and Historic Properties Within**

For Section 106 purposes, the area of potential effect (APE) for the present project is considered to be the dam, the powerhouse yard, and the switchyard. The historic properties located within the APE include a portion of the dam, the existing powerhouse, the existing switchyard, and a portion of the original railway used to transport equipment into the existing powerhouse. The dam and powerplant were determined eligible for listing on the National Register of Historic Places by the Idaho State Historic Preservation Officer on August 22, 1998. This eligibility was granted due to the pivotal role the dam and powerplant played in the development of the Payette River Valley, the exceptional condition and physical appearance of the original equipment, and the historic and technological contribution of the structure.

On April 21, 2010, Reclamation engineering and cultural resources staff first consulted with Idaho SHPO personnel regarding this proposed project. During that meeting it was agreed that this proposed action would be deemed an adverse effect. This decision was based upon the fact that completion of the action will result in the alteration of part of an original significant historic structure (drilling a hole in the dam), and negative visual impacts to a second significant historic structure (the existing powerplant).

### **Current Design Information**

In early March of this year, Reclamation received preliminary architectural drawings (or “elevations”) of the new powerplant. These drawings were forwarded on to you via email, and

are also included as figures in this document. The architects are attempting to capture the historic look and feel of the existing powerplant in this new structure while also drafting a building that can function according to the specified need.

Figure 11 shows the architectural drawing for the new powerhouse in its first design stage. The walls are to be pre-cast concrete, chosen because of the flexibility of that method to mimic the look of the existing structure with the window details and original material (the existing structure is cast-in-place concrete). This method is also more cost-effective than either cast-in-place concrete or metal. The roof will be a standing seam metal roof (panel size has not been chosen, but offered sizes range from 14"-24"). Roof and wall color will likely be chosen to most closely match those of the existing powerplant (see Figure 5).

Several design features of the original structure (Figure 12) were not included in this new structure. The following information is from Reclamation's TSC, which is working directly with the architect: "The architect chose not to show a circular opening at the peak of the end walls as is shown on the original architectural drawing. He did this because as can be seen in the photos (Figures 4 and 5) the existing structure has been modified by adding a square ventilation fan over the circular opening. For the new design he did not want to call attention to the modification of the original design so he left it out of the current design. Another architectural decision is to not call for windows in the new superstructure walls as is the case for the existing building. Instead his design models the window openings with recesses in the wall that have a similar shape to the existing windows." In addition, no cupolas were included in the design because they are not necessary to the function of the structure and would only provide a potential leak problem in the future. The roll-up doors on both the west and east elevations will be similar in style and look to the roll-up door on the existing powerplant (see Figure 4).

### **Recommended Actions to Mitigate Adverse Effects**

Prior to this letter, Reclamation and SHPO have already been in contact several times about certain particulars of this proposed project, in effect conducting unofficial consultation resulting in very useful guidance. During the initial on-site meeting with SHPO staff last year (April 21, 2010), Reclamation personnel introduced the proposed project and discussed basic details. The goal of the meeting was to attempt to preliminarily identify and possibly pre-empt any adverse effects. Several items were noted.

The proposed size and placement of the new powerhouse in relation to the existing powerhouse caused concern to SHPO personnel. As presented at that time, the new building would be larger and its location directly in front would almost completely obscure the view of the existing historic powerhouse. Discussion ensued about moving the footprint of the new building to the north far enough to keep the original powerhouse in view of the Public Park and parking lot just downstream. That view is a critical element in the experience of the area. Project management agreed to revisit the building plans to see if this could be accomplished, and as a result of this consideration the current proposal now offsets the footprint of the new powerhouse far enough to the north that the existing powerhouse will still be visible to the public from the nearby park.

The fact that no HABS/HAER documentation yet exists for Black Canyon Diversion Dam was also a concern to the SHPO, and it was agreed by both parties that this should be undertaken

prior to project actions. Reclamation project management has since secured funding for HABS/HAER documentation of the powerhouse and dam in their current state and this will be accomplished as part of the mitigation effort.

Thus, in accordance with procedures specified in 36 CFR Part 800, Reclamation invites the Idaho SHPO to consult on this project, essentially formalizing the existing working relationship already underway. As final design of the project specifics continues, further consultation is planned with SHPO to identify new or unexpected effects. In addition, Reclamation will be working in consultation with the SHPO to develop a Memorandum of Agreement pursuant to 36 CFR Part 800, which would formalize the mitigation measures mentioned in the preceding paragraph.

Please direct any questions to Ms. Jenny Huang, Archeologist, at 208-383-2257 or via email at [JHuang@usbr.gov](mailto:JHuang@usbr.gov).

Sincerely,

**C.J. BEARDSLEY**

Christopher J. Beardsley  
Deputy Area Manager

Enclosures

cc: Mr. Don Watts  
Preservation Planner  
State Historic Preservation Office  
Idaho State Historical Society  
210 Main Street  
Boise, ID 83702  
(w/encls)





RECEIVED

JUN -8 11

TQ	INIT	DATE
1100		
10100	emailed	6/9/11
10135	11	11

June 7, 2011

C.L. "Butch" Otter  
Governor of Idaho

Janet Gallimore  
Executive Director

**Administration**  
2205 Old Penitentiary Road  
Boise, Idaho 83712-8250  
Office: (208) 334-2682  
Fax: (208) 334-2774

**Membership and Fund Development**  
2205 Old Penitentiary Road  
Boise, Idaho 83712-8250  
Office: (208) 514-2310  
Fax: (208) 334-2774

**Historical Museum and Education Programs**  
610 North Julia Davis Drive  
Boise, Idaho 83702-7695  
Office: (208) 334-2120  
Fax: (208) 334-4059

**State Historic Preservation Office and Historic Sites Archeological Survey of Idaho**  
210 Main Street  
Boise, Idaho 83702-7264  
Office: (208) 334-3861  
Fax: (208) 334-2775

**Statewide Sites:**  
• Franklin Historic Site  
• Pierce Courthouse  
• Rock Creek Station and  
• Stricker Homesite

**Old Penitentiary**  
2445 Old Penitentiary Road  
Boise, Idaho 83712-8254  
Office: (208) 334-2844  
Fax: (208) 334-3225

**Idaho State Archives**  
2205 Old Penitentiary Road  
Boise, Idaho 83712-8250  
Office: (208) 334-2620  
Fax: (208) 334-2626

**North Idaho Office**  
112 West 4th Street, Suite #7  
Moscow, Idaho 83843  
Office: (208) 882-1540  
Fax: (208) 882-1763

Christopher J. Beardsley, Deputy Area Manager  
U.S. Bureau of Reclamation  
Snake River Area Office  
230 Collins Rd.  
Boise ID 83702-4520

RE: Invitation to Consult Regarding Proposed Third Generating Unit and New Powerhouse at Black Canyon Diversion Dam, Emmett, Idaho – Boise Project, Payette Division.

Dear Mr. Beardsley,

Thank you for the formal invitation to consult regarding the above project, the adverse effect, and the proposed mitigation. The early consultation initiated on this project resulted in a design which vastly minimized the adverse effects of the new construction on a significant historic property.

We would also like to take this opportunity to commend you and your staff (Jenny Huang) for maintaining an extraordinarily effective line of communication with our office regarding this project. We look forward to continuing our discussions with your agency on this project and to develop the Memorandum of Agreement.

If you have any questions, please contact us.

Sincerely,

Susan Pengilly  
Deputy State Historic Preservation Officer





**APPENDIX E**  
**EA DISTRIBUTION LIST**

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## **Federal Agencies and Elected Officials**

Andrew M. Montano, PMP  
Environmental Protection Specialist  
Bonneville Power Administration  
905 NE 11Th Ave  
Portland, Oregon 97232

Mr. Mark Jones  
Manager Federal Hydro Projects  
Bonneville Power Administration  
PO Box 3621  
Portland, Oregon 97208-3621

Mr. John Williams  
Constituent Account Executive  
Bonneville Power Administration  
1109 W. Main Street  
Boise, Idaho 83702

Mr. Brian T. Kelly, Director  
U.S. Fish and Wildlife Service  
Snake River and Fish And Wildlife Office  
1387 S. Vinnell Way, Suite 368  
Boise, Idaho 83709

Mr. James H. Werntz, Director  
Environmental Protection Agency  
Idaho Operations Office  
950 West Bannock Suite 900  
Boise, Idaho 83702

Mr. Greg Martinez  
Regulatory Project Manager  
U.S. Army Corps of Engineers  
Boise Regulatory Office  
10095 W. Emerald Street  
Boise, Idaho 83704

Mr. Jim Fincher  
District Manager  
Bureau of Land Management  
3948 Development Avenue  
Boise, Idaho 83705

Mr. Keith Lannom  
Forest Supervisor  
Payette National Forest  
800 W. Lakeside Avenue  
Mccall, Idaho 83638-3602

Mr. Dean Fox  
Superintendent  
Fort Hall Agency-BIA  
PO Box 220  
Fort Hall, Idaho 83202-0220

Mr. Joseph McDade  
Superintendent  
BIA-Eastern Nevada Agency  
1555 Shoshone Circle  
Elko, Nevada 89801

Mr. Greg LaFrance  
Superintendent  
Northern Idaho Agency-BIA  
PO Drawer 277  
Lapwai, Idaho 83540-0277

Honorable Mike Crapo  
United States Senator  
Attn Mr Layne Bangerter  
251 East Front St Suite 205  
Boise, Idaho 83702

Honorable Jim Risch  
United States Senator  
Attn Mr Mike Roach  
350 N 9<sup>TH</sup> Street Suite 302  
Boise, Idaho 83702

Honorable Raul Labrador  
Member United States House of Representatives  
Attn Kristy Sterns  
33 E Broadway Ave. Suite 251  
Meridian, Idaho 83642

Honorable Mike Simpson  
Member United States House of Representatives  
Attn Mr John Revier  
802 W Bannock Suite 600  
Boise, Idaho 83702-5820

Ms. Nancy Merrill  
Director  
Idaho Department of Parks and Recreation  
PO Box 83720  
Boise, Idaho 83720-0065

### **State and Local Agencies and Officials**

Mr. Virgil Moore  
Director  
Idaho Department of Fish and Game  
PO Box 25  
Boise, Idaho 83707

Mr. Gary Spackman  
Interim Director  
Idaho Department of Water Resources  
322 E. Front Street  
Boise, Idaho 83720

Mr. Scott Reinecker  
Supervisor  
Idaho Department of Fish and Game  
Southwest Region  
3101 S. Powerline Road  
Nampa, Idaho 83686

Mr. John Westra  
Western Regional Manager  
Idaho Dept. of Water Resources  
2735 Airport Way  
Boise, Idaho 83705-5082

Mr. Joe Kozfkay and Rick Ward  
Idaho Department of Fish and Game  
Southwest Region  
3101 S. Powerline Road  
Nampa, Idaho 83686

Mr. Dave Jones  
District Engineer  
Idaho Transportation Department  
PO Box 8028  
Boise, Idaho 83707-2028

Mr. Curt Fransen  
Director  
Idaho Dept. of Environmental Quality  
1410 N. Hilton  
Boise, Idaho 83706

Mr. Norm Semanko  
Executive Director  
Idaho Water Users Association  
1010 W. Jefferson Street, Suite 101  
Boise, Idaho 83702

Mr. Lance Holloway  
Surface Water Manager  
Idaho Department of Environmental Quality  
1445 North Orchard  
Boise, Idaho 83706

Mr. John Bowling  
Engineering Leader  
Idaho Power  
PO Box 70  
Boise, Idaho 83707

Mr. Ethan Morton  
Deputy SHPO & Compliance Coordinator  
Idaho State Historical Society  
210 Main Street  
Boise, Idaho 83702-7264

Honorable C. L. Butch Otter  
Governor of Idaho  
Boise, Idaho 83702

Gem County Commissioners  
Gem County Courthouse  
415 East Main  
Emmett, Idaho 83617

Payette County Commissioners  
1130 3<sup>rd</sup> Avenue North  
Payette, Idaho 83661

Malheur County Commissioners  
251 B Street West  
Vale, Oregon 97918

Sheriff Chuck Rolland  
Gem County Sherriff's Office  
415 E. Main  
Emmett, Idaho 83617

Sheriff Charles Huff  
Payette County Sheriff  
1130 3rd Avenue North, Rm. 101  
Payette, Idaho 83661

Mr Brad Hawkins-Clark  
Gem County City of Emmett  
501 E Main St  
Emmett, Idaho

Gem County Emergency Medical  
330 E Main St.  
Emmett, Idaho 83617

Mr. Mike Shepherd  
City of Weiser Water Department  
55 West Idaho St.  
Weiser, Idaho 83672

Mr. Bill Taylor  
City of Weiser Water Department  
55 West Idaho St.  
Weiser, Idaho83672

Honorable Bill Butticci  
Mayor of Emmett  
501 E. Main  
Emmett, Idaho83617

Honorable Joe Dominick  
Mayor of Ontario  
Ontario City Hall  
444 SW 4<sup>th</sup> Street  
Ontario, Oregon 97914

Honorable Mary Hanson  
Mayor of Horseshoe Bend  
PO Box 246  
Horseshoe Bend, Idaho83629

Honorable Ken Bishop  
Mayor of Fruitland  
PO Box 342  
Fruitland, Idaho 83619

Honorable Jeffrey T Williams  
Mayor of Payette  
700 Center Avenue  
Payette, Idaho 83661

## **Tribes**

Honorable Nathan Small  
Chairperson  
Shosone- Bannock Tribal Council  
PO Box 306  
Fort Hall, Idaho 83203

Honorable Dennis Smith Sr.  
Chairperson  
Shoshone-Paiute Tribal Council  
PO Box 219  
Owyhee, Nevada 89832

Honorable Silas C Whitman  
Chairperson  
Nez Perce Tribal Executive Committee  
PO Box 305  
Lapwai, Idaho 83540

Honorable Jason S. Walker  
Chairperson  
Northwestern Shoshone Tribe  
505 Pershing Ave. Suite 200  
Pocatello, Idaho 83201

Honorable Charisse Soucie  
Chairperson  
Burns Paiute Tribal Council  
100 Pasigo St.  
Burns, Oregon 97720

### **Organizations**

Mr. Justin Hayes  
Ms. Marie Kellner  
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Boise, Idaho 83701

Mr. Bill Sedivy  
Executive Director  
Idaho Rivers United  
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Boise, Idaho 83701

Idaho Wildlife Federation  
PO Box 6426  
Boise, Idaho 83707

Mr. James Piotrowski  
President  
Ted Trueblood Chapter Trout Unlimited  
1608 N. 15<sup>th</sup> St.  
Boise, Idaho 83702

Golden Eagle Audubon Society  
PO Box 8261  
Boise, Idaho 83707

Idaho Statesman  
1200 Curtis Road  
Boise, Idaho 83706

Messenger Index  
120 North Washington Avenue  
Emmett, Idaho 83661

Idaho Press Tribune  
Attn: Bryan Dooley  
1618 N. Midland Blvd.  
Nampa, Idaho 83651

Argus Observer  
1160 SW 4<sup>th</sup> Street  
Ontario, Oregon 97914

Ben Tansey, Senior Editor  
Clearing Up Newsletter  
117 W. Mercer St. Suite 206  
Seattle, Washington 98119-3960

### **Businesses and Individuals**

Mr. Ron Shurtleff  
Watermaster  
Idaho Water District #65  
102 Main Street  
Payette, Idaho 83661

Mr. Dennis Ujiiye  
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Mr. Don Olberding  
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**APPENDIX F**  
**COMMENT LETTERS AND RECLAMATION'S**  
**RESPONSES TO 2015 DRAFT EA**

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To be included in the FONSI/Final EA.

